

PAST PAPERS

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Past Papers

Faculty of Humanities & social Sciences Department of Logistics & Transportation

Bsc.(Hons) Logistic & Transportation (Year 2 – Semester II)

2022

	Approving Authority	Senior Director - Quality Mana	agement & Administration
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Faculty of Management and Social Sciences
Department of Logistics & Transport
BSc Hons in Logistics and Transportation
Course CODE: COM551



Year 2 Semester II

REPEAT EXAMINATION

Quality management-LTQM2215

- This paper consists of SEVEN (07) questions on FOUR (04) pages.
- Answer FOUR (04) Questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write Legibly.

Date: 2022.10.25

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

Toyota Motor Corporation is a world famous organization stands as a leader in quality implications. They have a special system called "Toyota Production System" also known as TPS.

Develop a write up on TPS highlighting its core quality practices.

(25 Marks)

Question 02

- (a) Distinguish the terms "conformance and non-conformance" (04 Marks)
- (b) In inspection, some non-conformance is waived off due to several parties' involvement. Briefly explain them with examples. (06 Marks)
- (c) Recommend five (05) inspection methods for a warehouse (05 Marks)
- (d) Draw a sample "inspection sheet" for a product or a service as per your choice.

(10 Marks)



Question 03

Explain the below stages of the History of Quality Management in detail.

- (i) Craftsmanship Model
- (ii) The factory system
- (iii) Quality development in World War II period
- (iv) Statistical approach of quality
- (v) Quality implications in Japan

(25 Marks)

Question 04

(a) Identify four (04) principles of lean manufacturing

(04 Marks)

- (b) "Lean can be applied to an administration work flow" Do you agree with the above statement? Justify your answer briefly with example. (06 Marks)
- (c) BBC pharma is leading pharmaceutical company and amidst the Covid-19 hit in Sri Lanka, they started sending medicines to the door steps of the customers but many customers raised a complaint that the deliveries are incorrect and the new business development was seemed like a failure. The quality director of the company raised here and pointed out that "every failure is an opportunity for process improvement". As a result of it the root cause of the matter was to be identified.

You are required to apply a fish bone diagramme (cause and effect diagramme) for the situation hypothetically and show the possible root causes for the problem.

(15 Marks)

Question 05

Write an essay on "New trends in quality" for the reference of Sri Lanka Standards Institution (SLSI) (25 Marks)



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- (i) 05'S
- (ii) Kaizen
- (iii) PDCA Cycle
- (iv) International Standards Organization
- (v) Generic Benchmarking

(25 Marks)

Question 07

(a) Briefly explain Five Process Affecters with examples

(10 Marks)

(b) Organizing quality activities should be done with high people involvement in an organization. Explain briefly the execution of quality circles in an organization. Discuss about the quality tools that are used in quality circles. (15 Marks)

-----END OF THE QUESTION PAPER-----





Year 2 Semester II

Semester End Examination

Procurement Management - LTPM2214

- This paper consists of SEVEN (07) questions on FIVE (05) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2022.03.22

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

Strategic analysis means the process of handling research on a company and its operating environment to formulate a strategy. The definition of strategic analysis may differ from an academic or business perspective, but the process involves several common factors. Strategy is the grand design or an overall 'plan', which an organization selects in order to move or react towards the set objectives by using its resources. Strategic procurement ensures timely supply of goods and services in line with the organization's business goals, while reducing risk within the supply chain.

- (a) Companies prefer using strategic procurement for a number of reasons.
 - (i) Define the term "strategy".

(01 Mark)

- (ii) What are the common factors involving in strategic analysis?
- (02 Marks)
- (iii) Give three methodologies which are used to study the market efficiently.

(02 Marks)



- (iv) It is recommended to use SMART goals when setting up your procurement strategy. What does mean by SMART here? (02 Marks)
- (v) Name main three types of purchasing systems used in different organizations. (02 Marks)
- (vi) What does mean by "purchasing devolution". (01 Mark)
- (b) "The Kraljic Portfolio purchasing model was formed by Peter Kraljic and it appeared in the Harvard Business Review in 1983".
 - (i) Draw a basic matrix diagram of Kraljic portfolio model. (06 Marks)
 - (ii) Write the characteristics of bottleneck items with appropriate examples.

 (04 Marks)
 - (iii) Explain the concept of "Total Cost Ownership" using an appropriate example. (i.e.: Hospital Industry). (05 Marks)

Question 02

Acquisition of external resources by the government using public funds, grants & gifts under public procurement rules is the scope of public procurement management. It doesn't mean solely that pubic body – buying something. The purpose of public procurement may be making value for money.

- (a) Governments are expected to carry it out efficiently and with high standards of conduct in order to ensure high quality of service delivery and safeguard the public interest.
 - (i) Point out five major public procurement objectives. (05 Marks)
 - (ii) Define the term "contract". (05 Marks)
 - (iii) Name five key contract pricing mechanisms. (05 Marks)
- (b) Explain new developments in public sector procurement. (10 Marks)



Question 03

It is of high importance to acquire resources of the right quality, delivered at the right quantity, to the right place, at the right time and even more important at the right price. The buyer doesn't look at the price the same way the seller does. To a buyer, price is an element in the total cost of ownership and this will be compared to the value of the product or service which has to offer.

(a) Divide factors affecting pricing decisions into internal & external factors (Five factors per each). (10 Marks)

(b) Illustrate price analysis and cost analysis separately. (15 Marks)

Question 04

International trade is the exchange of goods and services between countries or else economic transactions that are made between countries. Global sourcing is one part of international trade. Sourcing overseas refers to buying materials, products or services from manufacturers or suppliers that are located outside of your home country. Nowadays, a large number of organizations consider sourcing as a viable option for cutting down their expenses. However, the procurement journey of organizations is not so simple as it may seem. Large-size business firms especially MNCs face numerous hardships when they try to customize their cross-border sourcing activities. Incoterms are incorporated in contracts for the delivery of goods worldwide and provide guidance to importers, exporters, lawyers, transporters, insurers and students of international trade.

- (a) When global sourcing being practiced, agreeing to correct INCOTERMS is a must.
 - (i) INCOTERMS are segregated into two different types mainly. What are they? (02 Marks)
 - (ii) Give four INCOTERMS for the above types given in (i). (08 Marks)
- (b) Explain why international sourcing is needed.

(15 Marks)

Page 3 of 5



Question 05

Choose the wrong supplier and you could face shipping delays, poor quality and product returns. But choose the right supplier and you'll be on your way to quality products and satisfied customers. When you're trying to find a manufacturer to produce your consumer products, due diligence is essential. You need to look for a supplier that matches your business needs as closely as possible.

- (a) One of procurement's most important duties has been identifying and aligning their organizations with reliable suppliers. These sources not only have to meet shipping timelines, pricing parameters, and quality standards, but the best ones also have to be able to do this over and over again on a long-term basis.
 - (i) List down 5 most important attributes to focus on during your supplier search? (05 Marks)
 - (ii) Give five different types of sourcing. (05 Marks)
- (b) Sourcing process is a strategic movement with sequence of steps. Justify the statement using proper examples & knowledge. (15 Marks)

Question 06

You are the procurement manager in a small manufacturing organization. The company is considering moving towards an E-procurement system. Imagine that you are assigned to write a report to be submitted to the CEO of the company, elaborating below mentioned;

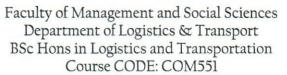
(a) Define the term E-procurement. (04 Marks)

(b) Write the benefits of E-procurement using appropriate examples. (09 Marks)



(c) List the barriers for E-procurement in third world countries.	(07 Marks)
(d) Explain the barriers for a successful E-auction?	(05 Marks)
Question 07	
(a) Define the term 'Outsourcing' with examples.	(03 Marks)
(b) Identify the benefits of outsourcing.	(05 Marks)
(c) Identify the pitfalls of outsourcing.	(05 Marks)
(d) List the precautions which should be taken by the organizations	proactively in
order to make sure that the concept of outsourcing theory works	in their
organization.	(07 Marks)
(e) List down ten key contractual elements that need to be included	in a Service
Level Agreement.	(05 Marks)
END OF THE QUESTION PAPER	







Year 2 Semester II

Semester End Examination

Human Resource Management - LTHR2212

- This paper consists of SEVEN (07) questions on TEN (10) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.

Date: 2022.03.21

Pass mark: 50%

Time: 02 Hours

Question 01:(Compulsory)

SELECT MOST APPROPRIATE ANSWER OUT OF THE GIVEN CHOICES.

- 1. Human Resource Management (HRM) is a process of and utilization of human resource in order to achieve organizational goals
 - (a) suitably, productive
 - (b) suitably, optimum
 - (c) productive, optimum
 - (d) effective, efficient

2. Job is;

- (a) a group of related activities and duties
- (b) an effective and efficient utilization of work
- (c) a group of related activities performed by a person
- (d) an effective and efficient utilization of a person for work activities



- 3. A principal of managing a probationer;
 - (a) To evaluate job
 - (b) To improve performance
 - (c) To improve job performance
 - (d) To evaluate job performance
- 4. Job Analysis is a process of examining jobs in order to identify
 - (a) the results that are expected to be achieved
 - (b) the results that can be achieved
 - (c) the results that are achieved
 - (d) the results that can not be achieved
- 5. Objectives of Human Resource Planning;
 - (a) To ensure optimum use of human resource currently employed; To get the right person for the job vacancy
 - (b) To get the right person for the job vacancy; To cost the human resource component in new projects
 - (c) To establish or maintain an image as a good employer; To get the right person for the job vacancy
 - (d) To ensure optimum use of human resource currently employed; To cost the human resource component in new projects



- 6. Importance of Recruitment in HRM
 - (a) To discover qualified people; To attract an adequate number of job applicants
 - (b) To discover qualified people Job commitment; To ensure optimum use of human resource currently employed
 - (c) To ensure optimum use of human resource currently employed; To attract an adequate number of job applicants
 - (d) To attract an adequate number of job applicants; To get the right person for the job vacancy
- 7. can be used to familiarize with the nature and the type of the organization
 - (a) Departmental plan
 - (b) Strategic plan
 - (c) Tactic plan
 - (d) Operational plan
- 8. Which step is repeated in Hiring Process?
 - (a) Entering the Job Contract
 - (b) Notification of Job offer
 - (c) Deciding the points to be included to the Appointment letter
 - (d) Waiting till get reply
- 9. Three purposes of performance evaluation
 - (a) Administrative, Development, Information
 - (b) Administrative, Training, Information
 - (c) Planning, Development, Information
 - (d) Administrative, Planning, Information



- 10. Two consequences of poor HRP
 - (a) Over staff, High productivity
 - (b) Law productivity, Optimum level of staff
 - (c) Over staff, Law productivity
 - (d) High productivity, Optimum level of staff
- 11. First step of Human Resource Planning (HRP)
 - (a) Estimate Supply of HR
 - (b) Forecast Future Needs for HR
 - (c) Decide Strategies
 - (d) Compare the Forecasted Demand of HR with Supply
- 12. Characteristics of performance evaluation criteria
 - (a) Relevance, Sensitivity
 - (b) Relevance, Timely
 - (c) Timely, Sensitivity
 - (d) Timely, Correctly
 - 13. Selection means choosing the most person for an organization the results that are expected by job holder
 - (a) qualified
 - (b) appropriate
 - (c) educated
 - (d) experienced



- 14. Two main things of Human Resource Planning (HRP)
 - (a) Management and skill inventory
 - (b) Forecasting number and types of employees
 - (c) General and specific statement
 - (d) Statements and succession planning
- 15. Recruitment is a method of finding qualified people for job vacancies
 - (a) Most
 - (b) Suitably
 - (c) Correctly
 - (d) Timely

(01 Mark*15 = 15 Marks)

- 16. Last step of Hiring
 - (a) Appointment for the waiting list
 - (b) Notification of Job Offer
 - (c) Preparation of the Appointment
 - (d) Entering the Job Contract
- 17. Recruitment process starts from;
 - (a) Identify Job Vacancies
 - (b) a traditional work schedule in which employee works for fewer days per week but more hours for each day of working
 - (c) Familiarize with the nature and the type of the organization
 - (d) Identify jobs available to be analyzed



- 18. What are two shocks can be reduced through "Induction"
 - (a) Cultural, Real
 - (b) Cultural, Personal
 - (c) Real, Personal
 - (d) Personal, Behavioral
- 19. Three stages of Schein's Socialization Model
 - (a) Commencement, Socialization, Mutual Acceptance
 - (b) Entry, Induction, Mutual Acceptance
 - (c) Entry, Socialization, Mutual Acceptance
 - (d) Entry, Socialization, Agreement
- 20. Forecasting technique which can be used to predict future requirement of HR
 - (a) Succession planning
 - (b) Internal HR audit
 - (c) Skill inventory
 - (d) Delphi Method

(2*5 Marks)

Question 02

Janaka is the underwriting manager for a large insurance company located in the Colombo city. Recently one of his best employees had given two weeks' notice of her intention to leave. She was expecting a baby soon, and she and her husband had decided that she would quit work and stay at home with her new baby and her other two young children. Today Janaka was scheduled to start interviewing applicants for the job. The Page 6 of 10



first applicant was Delki Pushpa. She arrived at the company's office promptly at 9 a.m., the time scheduled for her interview. Unfortunately, just before she arrived Janaka received a phone call from his boss, who had just returned from a three week vacation. He wanted Janaka to bring him up to date on what had been going on. The telephone conversation lasted 30 minutes. During that time, Delki was seated in the company's reception room.

At 9.30, Janaka went to the reception room and invited her into his office. The following conversation occurred:

Janaka: Would you like a cup of tea?

Delki: No, I've already had one.

J: You don't mind if I have a cup, do you?

D: No, go right ahead. (Janaka pauses, and rings his secretary Manjalee.)

J: Manjalee, would you prepare a cup of tea for me?

M: I'll bring it in shortly. You have a call on line 1.

J: Who is it?

M: It's Tony Patabathi, our computer company representative. He wants to talk to you about the delivery date on our new computer set.

J: I'd better talk to him. (*Turning to Delki*.) I'd better take this call. I'll only be a minute. (*He picks up his phone*.) Well, Tony, when are we going to get our machines?

This phone conversation goes on for almost 10 minutes. After hanging up, Janaka turns again to Delki to resume the interview.

J: I'm sorry, but I needed to know about those machines. We really do need them. We only have a short time, so why don't you just tell me about yourself.



At that point, Delki tells Janaka about her education, which includes an undergraduate degree in Commerce and an MBA, which she will be receiving shortly. She explains to Janaka that this will be her first full time job, just then the phone rings, and Janaka's secretary tells him that next interviewee is waiting.

J: (*Turns to Delki*) Thank you for coming in. I'll be in touch with you as soon as I interview the other applicants for this job. However, I need to ask a couple of quick questions.

D: OK.

J: Are you married?

D: I am divorced.

J: Do you have children?

D: Yes, two boys.

J: Do they live with you?

D: Yes.

J: The reason I am asking is that this job requires some travel. Will this pose a problem?

D: No.

J: Thanks, and I'll be in touch with you.

(a) Outline the inadequacies of this interview?	(10 Marks)
	(4535 1)

(b) What do you suggest to deal with the inadequacies? (15 Marks)

Question 03

(a) Define the term of "Human Resource Management (HRM)."	(04 Marks)
(b) Identify five unique characteristics of Human Resource.	(05 Marks)
(c) Briefly explain 4 strategic goals of HRM.	(16 Marks)



Question 04

(a) Why job designing is significant? Briefly explain.

(05 Marks)

(b) Identify the techniques of Job Design.

(05 Marks)

(c) It is more likely that making the job more productive by using more efficiency elements causes productive by using more efficiency elements causes it to be less satisfying. Contradictorily, making the job more satisfying by using more behavioral elements more likely proves to be less productive. It means that more likely proves to be less productive. It means that attempting to achieve both productivity and employee satisfaction to the highest extent is mutually exclusive (contradictory).

What should the Human Resource Specialist do?

(15 Marks)

Question 05

(a) Define the term "Job Analysis."

(04 Marks)

(b) Briefly explain the 2 main outputs of Job Analysis.

(06 Marks)

(c) Briefly explain the steps of Job analysis process.

(15 Marks)

Question 06

(a) Identify three objectives of Human Reosurce Planning (HRP).

(03 Marks)

(b) One importance of HRP is controling the cost of employee. Breifly expalin.

(06 Marks)

(c) Identify four main steps of HRP and expalin two steps breifly.

(16 Marks)



Question 07

(a) Define the term "Recruitment."	(04 Marks)
(b) Breifly explain the 2 main importance of Recruitment.	(08 Marks)
(c) Breifly explain the recruitment process.	(13 Marks)
END OF THE QUESTION PAPER	





Year 2 Semester II Semester End Examination Shipping Management – LTSM2209

- This paper consists of SEVEN (07) questions on SIX (06) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.

Date: 2022.03.18

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

Shipping Management is the process of planning & execution of transporting cargo from an origin to destination to ensure the smooth functioning of the same. Different parties involve in shipping. Ship Agents, Principals, Freight Forwarders & Cargo Owners are some of them.

- (a) Understanding the principal-agent relationship is an essential task in shipping industry.
 - (i) Who is a ship agent?

(03 Marks)

(ii) Write down five duties of a ship agent.

(05 Marks)

(iii) Sea-port operations are affected by a vast area of geopolitical, economic & technological developments. Also, changes in global production & international trade affect port activity levels & operations. The demand for port traffic is decided by world trade. What is the economic term used to express this nature of shipping? (02 Marks)

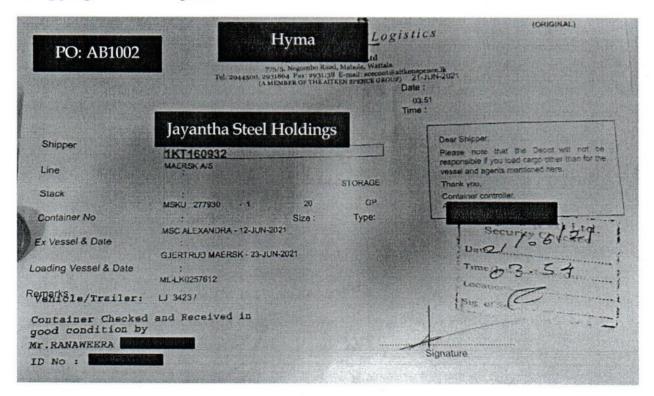


- (b) There is a specific document in the Carriage of goods by Sea which regulates the contractual relationship between the carrier and the shipper/receiver. It contains essential information about the shipment. It evidences the loading of goods on a ship.
 - (i) What is the specific document's name as per the above information? (02 Marks)
 - (ii) What are the main three functions of this document? (03 Marks)
 - (iii) Give five facts indicating as content information in this specific document.

(10 Marks)

Question 02

Analyze the details attached in the below draft of a container release order given by a shipping line to an exporter.





- (a) With this release order, the shipper can collect the container for stuffing the cargo. Each container will be having their unique number, the liner will give the details of the containers and will drop a mail to the respective exporter.
 - (i) What is the cargo type of this shipment out of these cargo types; breakbulk, roll-on/roll off, liquid cargo, containerized cargo, dry bulk cargo? (01 Mark)
 - (ii) What is the container number of the released container to Jayantha Steel Holdings & name the four specific parts of the container number?

 (05 Marks)
 - (iii) What is the given seal number by the liner to seal the container? (01 Mark)
 - (iv) What is the designation of Mr. Ranaweera? (01 Mark)
 - (v) What is the container type of the allocated container (Mention the full name)? (01 Mark)
 - (vi) What is the name of the ship which is assigned at the origin to load the container given in the R/O? (01 Mark)
- (b) A port authority is responsible for setting up the pricing structure for the port users. It provides infrastructural services, services to vessels and cargo & nautical services.
 - (i) Name three types of port tariffs. (03 Marks)
 - (ii) Describe four factors influencing the level of port tariffs. (12 Marks)



Question 03

In 2007, International Chamber of Commerce established UCP 600 to reduce the doubts caused by individual countries promoting their own national rules on documentary credit practice. UCP is the most successful set of private rules for trade ever developed.

- (a) UCP had been revised six times in the history so far.
 - (i) What is the expanded name of short form UCP? (02 Marks)
 - (ii) How many articles are there in UCP 600? (02 Marks)
 - (iii) Define four major parties involved in documentary credit transactions. (06 Marks)
- (b) UCP 600 play a vital role in international trade today.
 - (i) Explain the importance of UCP 600 in shipping industry. (05 Marks)
 - (ii) Describe any four articles of UCP 600. (10 Marks)

Question 04

Charterparties are contracts for the use of a whole or large part of operations of a vessel. Further, they are considered as agreements between ship owner & hirer/charterer about hiring a ship.

- (a) Charter parties are not transferable & have few main types.
 - (i) Write down main types of charterparties. (03 Marks)
 - (ii) What does mean by "Notice of Readiness"? (04 Marks)
 - (iii) What does mean by "Lay Time"? (03 Marks)
- (b) Responsibilities are segregated between charterer and shipowner and based on those different types of charterparties are available.
 - (i) Describe the difference between Demurrage & Dispatch. (09 Marks)



(ii) Fill the following table by indicating who bears the respective responsibilities mentioned in the first column. (Ship Owner or Charterer) Type 1, Type 2 & Type 3 should be the answers given to a(i).

(06 Marks)

Table 1.00: Different responsibilities of ship owner & charterer under each main charterparty

Responsibility	Type 1:	Type 2:	Type 3:
Fuel			
Crew Costs			
Port Dues			
Ship Management			

Question 05

Note of Protest is a tool of a Ship's Master. He must understand, when to note a protest. It covers circumstances beyond master's control which may cause/have caused loss or damage to the ship or cargo or may have caused the Master to leave an unsafe port, which may render the owners liable for legal action by another party.

- (a) Critically evaluate when to raise a note of protest by a ship's master with proper examples. (10 Marks)
- (b) Discuss the term "smuggling", motives of smuggling & preventive measures for smuggling. (15 Marks)



Question 06

Cargo handling equipment varies depending upon the type of cargo.

- (a) Dangerous goods transportation must be correctly documented and handled from the time of booking until the time of final delivery.
 - (i) Define the term "Dangerous Cargo". (02 Marks)
 - (ii) Illustrate handling methods of dangerous cargo. (08 Marks)
- (b) Reefer Cargo are the goods which are probably perishable, extremely sensitive, or possibly have a higher value than most other commodities. That's why we stress the importance of special cargo handling for reefers. Justify this statement with using proper examples as per your opinion and knowledge.

(15 Marks)

Question 07

Shipping industry has a different vocabulary set which are used to express or name different conditions, scenarios, intermediaries and shipping related employees. Write down short notes for five preferred topics from the below. (Use suitable diagrams when necessary).

(a) Ship Manifest	(05 Marks)	
(b) Free Pratique	(05 Marks)	
(c) Letter of Credit	(05 Marks)	
(d) Pilotage	(05 Marks)	
(e) Maritime Piracy	(05 Marks)	
(f) Break-bulk cargo	(05 Marks)	
(g) Received for shipment bill of lading & shipped bill of lading	(05 Marks)	
(h) Load Line Certificate	(05 Marks)	
END OF THE QUESTION PAPER		

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Faculty of Management and Social Sciences
Department of Logistics & Transport
BSc Hons in Logistics and Transportation
Course CODE: COM551



Year 2 Semester II

Semester End Examination

E-Commerce - LTEC2210

- This paper consists of SEVEN (07) questions on SIX (06) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2022.03.16

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

a) What are the four generic strategies for achieving a profitable business.

(02 Marks)

b) Give two examples for disruptive technologies.

(02 Marks)

- c) Write down one strength and one weakness of online payments. (02 Marks)
- d) Who are the five parties involved in online credit card transactions?

(02 Marks)

e) List down six dimensions of e-commerce security.

(03 Marks)

f) What is the use of encryption?

(02 Marks)

g) Write down two responsibilities of ICTA.

(02 Marks)



h) List four candidate ethical principles.

(02 Marks)

- i) What are the four major dimensions of ethical, social and political issues. (02 Marks)
- j) Why some people don't shop online? Briefly explain two reasons.

(02 Marks)

k) Write down four functions of a firm's website.

(02 Marks)

1) What is sniffing?

(02 Marks)

Question 02

- a) What is E commerce and the role of E commerce in today's society. (06 Marks)
- b) What is the difference between e commerce and e business?

(04 Marks)

c) Explain one type of ecommerce business model using an example.

(05 Marks)

d) List out the major differences between B2C and B2B business models.

(04Marks)

e) Briefly explain three unique features of e commerce technology using examples.

(06 Marks)



Question 03

a) Briefly explain what is a business model. (03 Marks)

- b) List down two B2B business models that help to connect trading partner community. (04 Marks)
- c) Explain three types of major B2C business models providing examples for each. (09 Marks)
- d) Explain three types of major B2B business models providing examples for each. (09 Marks)

Question 04

a) List two differences between online store and a physical store.

(02 Marks)

- b) Briefly explain the online credit card transaction process. (08 Marks)
- c) Briefly explain three limitations of online credit card transaction process.

(06 Marks)

d) List down three other online payment systems apart from credit cards.

(03 Marks)

e) Discuss in detail about two of online payment systems that you have listed in above part d. (06 Marks)



Question 05

Online giant eBay provides the world's largest online marketplace. eBay owns the largest online banking service, PayPal, which is used to facilitate transactions between online buyers and sellers. Unfortunately, managing the largest online bank and marketplace makes eBay a huge target for hackers and fraudsters. Credit/debit card fraud, computer fraud, confidence fraud, and financial institutions fraud round out the top seven categories of complaints referred to law enforcement during recent years.

For an instance, a Romanian hacker called Vladuz who hacked into eBay systems and masqueraded as an official eBay representative. The damage Vladuz caused is estimated at 1 million dollars. He was eventually apprehended and awaits trial.

However, eBay keeps fraud under control by investing heavily in information security tools and practices. On its web site, eBay states that PayPal uses "the world's most advanced proprietary fraud prevention systems to create a safe payment solution." The company also invests in an automated security system to keep hackers out of the network. The system uses more than a dozen scanning applications to monitor vulnerabilities on eBay's global network and on all partner networks that connect to eBay's extranet. The security software that patrols eBay's systems provides continuous reports to security engineers. The software also creates reports for system administrators and executives that provide an overview of network conditions and illustrate the impact of information security investment. Additionally, the security software measures eBay's compliance with government regulations involving information security. The battle to protect valuable and private information online is one in which all levels of management in businesses and governments are or should be fully engaged.



a) What do you mean by a computer crime?

(04 Marks)

b) What is eBay?

(04 Marks)

c) Explain the type of computer crimes that eBay is basically experiencing.

(02 Marks)

d) Who is a hacker? Explain with example from case.

(03 Marks)

e) Explain three famous destructive codes of IS used by hackers.

(06 Marks)

f) Explain three security measures taken by eBay to control internet related computer crimes. (06 Marks)

Question 06

One of the success stories of digitalization of government services in Sri Lanka is the E- Hospital project conducted in the Western Province installing successful hospital information system. Now there are 3 institutions which have implemented this system, DH Dompe, BH Avissawella, and BH Panadura respectively.

In these hospitals, Hospital Health Information and Management System (HHIMS) runs which gives benefit to both patient and hospital employees. In this system, all the patients can get a bar-coded electronic health card, for free of charge after entering data in the first visit and also subsequent visits. This system ultimately guides to have a complete medical record for each patient.

This system also connects to the dispensary to drug dispensing. In Dompe hospital, this system develops to take electronic appointment system also.



a)	What are the major management challenges that migh	t occur when
	implementing this type of project in Sri Lanka?	(05 Marks)

- b) Discuss the merits and demerits in terms of
 - a. Security
 - b. ethical considerations
 - c. customer experience

with reference to the patients and hospital staff in this type of project? (10 Marks)

c) List out five potential business opportunities that could derive from this business model. (10 Marks)

Question 07

Write short notes.

(5*5 Marks)

- a) Frauds in online credit card transactions
- b) Tension between eCommerce security and other values.
- c) Role of ICTA
- d) What will the Marketing look like in 2030?
- e) Process of analysing an ethical dilemma.

END OF THE QUESTION PAPER	END O	F THE	QUESTION	PAPER
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Library



Faculty of Management and Social Sciences
Department of Logistics & Transport
BSc Hons in Logistics and Transportation
Course CODE: COM551

Year 2 Semester II

Semester End Examination

Transport Economics - LTTE2211

- This paper consists of SEVEN (07) questions on SIX (06) pages.
- Answer FOUR questions including Question 01
- · Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legible.

Date: 2022.03.14

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

Write the correct answer in the answer book.

- The gap between utility and price arise
 - (a) Utility gap
 - (b) Price gap
 - (c) Bargain
 - (d) Satisfaction.
- People do not travel for the demand for transport and logistics is depend on demand for other goods and services. Therefore, transport demand is said to be
 - (a) Direct demand
 - (b) Derived demand
 - (c) Unlimited demand
 - (d) Effective demand





- 3. The main function of the entrepreneur is to
 - (a) make routine pricing decisions.
 - (b) innovate.
 - (c) purchase capital.
 - (d) create market demand.
- 4. The real value of variable is calculated by,
 - (a) Price of the product multiplied by the quantity of the product
 - (b) Nominal value of the product divided by the price of the product.
 - (c) The nominal value multifield by the price of it
 - (d) None of above
- 5. Generalize price of a transport mode is not included,
 - (a) Monetary cost
 - (b) Time cost
 - (c) Security cost
 - (d) Externalities
- 6. Which one of following a characterizes for only 1st degree price discriminations,
 - (a) Output is sold to different consumers at different prices
 - (b) Output sold for the maximum price each consumer is willing to pay
 - (c) Price differs across the commodity unit not across consumers
 - (d) Price differ across the consumers not across commodity units.



The following are the research outcomes in relation to demand pattern.

Table 1.1: Summary of demand elasticities

	Short run	Long run
Petrol demand with respect to petrol price	-0.75	-0.85
Petrol demand with respect to passenger income	0.47	0.93
Car trips with respect to petrol price	-0.60	-0.29

Answer Questions 7-9 using above Table1.1

- 7. Price elasticity of petrol demand is,
 - (a) More inelastic in short run than long run
 - (b) Inelastic and positive.
 - (c) More response in both time
 - (d) It violates the law of demand.
- 8. Petrol is being a
 - (a) Luxury product
 - (b) Necessity product
 - (c) Giffen product
 - (d) Superior product
- 9. Which one of following is incorrect,
 - (a) Petrol consumption is relative more response to change price than income in long run.
 - (b) Petrol consumption is relatively less response in short run than long run to the change in price.
 - (c) Car trips are inelastic to the change in petrol price in both time.
 - (d) Petrol is a complement product.



10. Supply of transport is consists,

	(a) Frequen	cy		
	(b) Coverage			
	(c) Infrastructures			
	(d) All of ab	ove		
		(20 Marks	;)	
True	of False Que	stions. Please tick ($$) the correct answer.		
Answ	er all the par	ts of the question.		
1.	. Aviation sector has declined by 77% in 2020.			
	True []	False []		
2.	. The demand curve faced by a firm which is in perfectly competitive market is			
	negatively sloped,			
	True []	False []		
3.	When the income of consumer falls, the demand for normal services falls.			
	True []	False []		
4.	 Logistics Firms in the perfectly competitive market can do price discrimination. 			
	True []	False []		
5.	The demand	d for a transport mode decreases when price of its substitute price	9	
	decreases.			
	True []	False []		
		(05 Mark	s)	



Question 02

(a) Explain that importance of Transport and Logistics services in an economy.

(07 Marks)

(b) Explain that how you could use determinates of transport demand for the development of aviation industry of the Sri Lanka after the Covid 19.

(10 Marks)

(c) What do you mean by excess supply? illustrate with diagram and explain the reasons for excess supply in the transport field (08 Marks)

Question 03

(a) When take a pricing decision by the airline company, managers have to consider about degree of responsiveness of air transportation of their to price of air ticket price of their own, price of the competitors' ticket price, price of the supported modes and income of the customers/ passengers. Justify this statement.

(10 Marks)

- (b) What do mean by elasticity of transport supply? Explain that factors which are determine the elasticity of supply with examples. (10 Marks)
- (c) Explain the behavior of shipping supply curve with elasticities. (05 Marks)

Question 04

"Price discrimination is the term used to describe a pricing policy in transport market" explain the concept, condition required, importance and examples related to the statement. (25 Marks)



Question 05

It can be seen different cost and benefits are creating by the transport and logistics services in the economy. The government intervenes to control / promote those externalities in transport market through their economic policies. Justify your answer with appropriate examples, diagram/s and your suggestions to control/ promote them for the sustainable development (25 Marks)

Question 06

Shipping is the most economical mode of transport for cargo that accounts for approximately 80% of the world trade. However, due to the uniqueness of shipping supply and complicated demand characteristics due to its derived demand nature the pricing in liner shipping has become highly volatile and complicated.

- (a) What are the corrective measures applied by shipping lines to address this problem? (05 Marks)
- (b) Explain four types of corrective measures identified in (a). (20 Marks)

Question 07

Write short notes on any five (05) of the followings.

- (a) Cost classification in airline
- (b) Public Private Partnership program
- (c) Cross price elasticity in transport market.
- (d) Product differentiation.
- (e) Cost level and structure in Railway
- (f) Cost level and structure in Logistics company
- (g) Cost level and structure in public bus transportation. (25 Marks)

-----END OF THE QUESTION PAPER-----



CINEC Contraction

Year 2 Semester II

Semester End Examination Port Loading and Unloading Techniques – LTPT2213

- This paper consists of SEVEN (07) questions on THREE (03) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2022.03.10

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

- a) What are the different Cargo Terminal Handling facilities at?
 - Port of Hambantota

(5 Marks)

II. Port of Trincomalee

(5 Marks)

b) Explain the difference between Direct and Indirect Terminal Operation and give examples

(10 Marks)

c) What are the container sizes & types of containers?

(5 Marks)

Question 02

- a) List out modern cruise terminal facilities that should be available in a port to handle cruise passengers? (05 Marks)
- b) Name five different Liquid Bulk cargo types & briefly explain the operation?

(05 Marks)

c) Name five different Dry Bulk cargo types & briefly explain the operation?

(05 Marks)

- d) Describe following abbreviations used in Port Business
 - 1) LOA 2) ETA
- 3) ETB
- 4) ETC
- 5) CFS

- 6) EIR
- 7) SWL
- 8) OOG
- 9) IMO
- 10) RTG

(10Marks)



Question 03

1	TATT	and the second s	0	TT . 1	TT 11'	g facilities at?
21	Mhat are th	O CHIPPONT	Ontainer	orminal	Handling	r tacilities at/
al	vviiat are u	ie current	Comamici	1 CIIIIIIIIIII	1 Idildilli	L'acmines at.

I.	JCT	- (5 Marks)
II.	ECT	(5 Marks)
III.	SAGT	(5 Marks)
IV.	CICT	(5 Marks)
b) What are	the advantages & disadvantage of Containerization?	(5 Marks)

Question 04

"Container Terminal"

a) Explain why container terminals need planning? (04Marks)

b) What are the six types of terminal planning (04Marks)

c) Name four sizes/generations of STS Ship to Shore Gantry Cranes & how many containers across a ship can be handled? (08Marks)

d) Name four spreader attachementss that fix to STS Gantry Crane? (04 Marks)

e) What is OOG and explain how those containers are handled in the terminal?

(5Marks)

Question 05

- a) Name Automated Container Terminal Handling Equipments under
 - I. Quay Transfer Operation
 - II. Storage / Stacking Operation

(10Marks)

b) Draw an overview of a container terminal operation and highlight Import/Export/Transhipment operation (flow chart)?

(10Marks)

c) Name the staff categories that need for Ship operation & Yard Operation

(05Marks)

Question 06

a) Name different types of RO -RO Vessles? (06Marks)

b) What are the different types of Terminal Planning required for a RO – RO Terminal? (06Marks)



c) What are the human resoures required for Automobile Handing RO-RO Terminal? (06Marks)

d) List out safe operation best practices adopted for safe damage/accident free operation? (07Marks)

Question 07

"General Cargo/Break Bulk Cargo/Conventional Cargo Handing Multi Purpose Terminal"

a) What is POSCOD stand for? (05 Marks)

b) Name different ship based cargo handing equipments? (05 Marks)

c) Name different shore based cargo handing equipments & gears?

(05Marks)

d) How to improve ship discharing and loading operation Hook Cycle Time? (05Marks)

e) What are the factors that affect quay transfer operation Cycle Time?

(05Marks)

-----END OF THE QUESTION PAPER-----









Year 2 Semester II Semester End Examination Quality Management – LTQM2215

- This paper consists of SEVEN (07) questions on NINE (09) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legible.
- Supporting documents are attached.

Date: 2022.03.08

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

Read the following extracted case information on Samsung washers and answer the questions given below.

Samsung, based in South Korea, is a large, multinational corporation that makes a variety of products, including household appliances such as washers and dryers. When Samsung's washers developed a problem with the spin cycle in 2017, the company warned customers that the machines could become unbalanced and tip over, and that children should be kept away. The problem persisted, however, and Samsung's responsibility and legal exposure increased. The eventual fix was to offer all owners of the particular washer model a full refund even if the customer did not have a complaint, and to offer free pick up of the machine as well. The recall covered almost three million washers, which ranged in price from \$450 to \$1500. By choosing to spend billions to rectify the problem, Samsung limited its legal exposure to potential lawsuits, settlement of which would likely have far exceeded the refunds it paid.



- (i) What is the underlying root cause for the above matter? (05 Marks)
- (ii) "Quality is free" is famous phenomena associated with cost of quality and cost of poor quality. How do you relate that here? (05 Marks)
- (iii) What are the possible hidden costs associated with the above scenario? (05 Marks)
- (iv) If you were the quality director of the company, explain how you are going to settle down the matter with "Gemba Kaizen" principles. (10 Marks)

Question 02

- (a) Distinguish the terms "conformance and non-conformance" (04 Marks)
- (b) In inspection, some non-conformance is waived off due to several parties' involvement. Briefly explain them with examples. (06 Marks)
- (c) Recommend five (05) inspection methods for a warehouse (05 Marks)
- (d) Draw a sample "inspection sheet" for a product or a service as per your choice. (10 Marks)



Question 03

(a) Identify four (04) principles of lean manufacturing

(04 Marks)

- (b) "Lean can be applied to an administration work flow"

 Do you agree with the above statement? Justify your answer briefly with example.

 (06 Marks)
- (c) BBC pharma is leading pharmaceutical company and amidst the Covid-19 hit in Sri Lanka, they started sending medicines to the door steps of the customers but many customers raised a complaint that the deliveries are incorrect and the new business development was seemed like a failure. The quality director of the company raised here and pointed out that "every failure is an opportunity for process improvement". As a result of it the root cause of the matter was to be identified.

You are required to apply a fish bone diagramme (cause and effect diagramme) for the situation hypothetically and show the possible root causes for the problem.

(15 Marks)

Question 04

Write an essay on "New trends in quality" for the reference of Sri Lanka Standards Institution (SLSI) (25 Marks)

Question 05

Write short notes on <u>05 selected topics</u> mentioned below

- (i) Smart cities
- (ii) ISO 9001 and system approach are linked closely
- (iii) ISO 14001 is included life cycle thinking
- (iv) ISO 45001 is closely connected with OHSAS
- (v) Force field analysis



(vi) 5S methodology

(vii) Overall equipment effectiveness (OEE)

(5*05 Marks)



Question 06

(a) The data below are 20 samples taken from a bottle filling process of a soft-drink manufacturing firm. For each sample the mean and the standard deviation are calculated. Soft drink volume in the bottle is taken as the important quality characteristic.

Table 6.01: Sample data

Sample		Sa	mple Val	ues	-	Mean	Standard
no.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5		Deviation
1	303	304	298	297	301	300.6	(f)
2	302	305	302	298	296	300.6	3.58
3	305	303	300	302	305	303	(g)
4	302	298	303	296	303	(a)	3.21
5	295	303	302	302	296	299.6	3.78
6	298	303	297	303	301	300.4	(h)
7	300	295	305	296	302	(b)	4.16
8	300	304	304	298	296	(c)	3.58
9	296	303	300	301	303	300.6	2.88
10	305	300	300	301	298	300.8	2.59
11	295	304	300	296	299	(d)	3.56
12	299	301	296	300	303	299.8	2.59
13	305	295	296	302	296	298.8	(i)
14	302	304	303	302	297	301.6	2.70
15	295	298	304	297	305	299.8	4.44
16	305	301	305	305	300	303.2	2.49
17	295	295	305	305	302	(e)	5.08
18	295	304	298	302	303	300.4	(j)
19	297	298	305	298	295	298.6	3.78
20	305	305	303	302	296	302.2	3.70



(i) Find the unknown values in the above table (i.e. (a), (b), (c), (d),, (j))					
	(05 Marks)				
(ii) Calculate \bar{S} for the above data.	(02 Marks)				
(iii) Calculate 3σ trial control limits for 's' chart.	(05 Marks)				
(iv) Discuss the validity of the trial control limits for s charts.	(02 Marks)				
(v) Calculate \bar{X} for the above data.	(02 Marks)				
(vi) Calculate 3σ trial control limits for \bar{X} charts.	(05 Marks)				
(vii) Discuss the validity of the trial control limits.	(02 Marks)				
(viii) If trial control limits are invalid explain how to re-calculate it.	(02 Marks)				

Question 07

Write the Correct answer in your answer book

(20 Marks)

- 1) Consider following statement.
 - Statistical Process Control helps determine if assignable causes are disturbing the process
 - b. Statistical Process Control helps determine if vendor performance is falling
 - c. Statistical Process Control helps determine if customers are happy

Which of the above statements are true?

- (A) a. only
- (B) b. only
- (C) c. only
- (D) a. and b. only



- 2) Drawing control charts requires
 - (A) Adjusting the machines
 - (B) Calculation of statistics from data
 - (C) Teamwork training of workers
 - (D)Top management involvement
- 3) An assignable cause is generally known to
 - (A) Vendors
 - (B) Product designer
 - (C) Workers
 - (D)Customers
- 4) A Pareto chart shows
 - (A)That the process is in control
 - (B) The vital few from the trivial many
 - (C) Process capability
 - (D)A line drawn as production proceeds
- 5) Inspection assures that
 - (A) The process is in control
 - (B) Workers are motivated
 - (C) Product meets specification
 - (D)Quality problems are solved
- 6) P Charts are based on
 - (A) Binomial Distribution
 - (B) Normal Distribution
 - (C) Poison Distribution
 - (D) Hypergeometric distribution



- 7) An assignable variation may be due to
 - (A) Variation in raw materials
 - (B) Limitations of the process
 - (C) Variation in skills of the employees
 - (D) All of the above
- 8) Control charts are used to monitor
 - (A) Random variation
 - (B) Natural variation
 - (C) Assignable variation
 - (D) All of the above
- 9) Magnificent Seven tools include
 - (A) Team meetings
 - (B) Management meeting regularly with workers
 - (C) Workers' toolkit
 - (D) Histogram
- 10) Which of the following chart types would be used to monitor the fraction of a production lot of desktops that had scratches on the surface.
 - (A)X bar charts
 - (B) P charts
 - (C) C harts
 - (D)S charts

Underline the correct answer

(05 Marks)

- 11) To evaluate the quality performance of operating and management personnel is the objective of attribute charts in production process control
 - (A)TRUE



(B)	FAI	LSE

- 12) An X-bar chart uses the count data
 - (A)TRUE
 - (B) FALSE
- 13) Total Quality Management focuses on Supplier, Employee and Customer.
 - (A)TRUE
 - (B) FALSE
- 14) Control limits are driven by the natural variability of the process
 - (A)TRUE
 - (B) FALSE
- 15) Control chart is a process monitoring and process controlling tool
 - (A)TRUE
 - (B) FALSE

-----END OF THE QUESTION PAPER-----

■ APPENDIX VI Factors for Constructing Variables Control Charts

Sample, No. Pactors for this integrations Pactors for Pactors f			,	Contract to the second													
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Observation		Factors for	or	Facto	ors for	Facto	re for C	ontrol	imits	Facto	ors for	,	Factors	for Cont	rol Limi	9
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	m Sample, n	A	A ₂	A ₃	c4	1/c4	B3	B4	B ₅	B	d_2	1/d2	<i>d</i> ₃	D_1	D_2	D_3	D_4
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2	2.121	1.880	2.659	0.7979	1.2533	0	3.267	0	2.606	1.128	0.8865	0.853	0	3.686	0	3.267
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	8	1.732	1.023	1.954	0.8862	1.1284	0	2.568	0	2.276	1.693	0.5907	0.888	0	4.358	0	2.574
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	4	1.500	0.729	1.628	0.9213	1.0854	0	2.266	0	2.088	2.059	0.4857	0.880	0	4.698	0	2.282
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2	1.342	0.577	1.427	0.9400	1.0638	0	2.089	0	1.964	2.326	0.4299	0.864	0	4.918	0	2.114
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	9	1.225	0.483	1.287	0.9515	1.0510	0.030	1.970	0.029	1.874	2.534	0.3946	0.848	0	5.078	0	2.004
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	7	1.134	0.419	1.182	0.9594	1.0423	0.118	1.882	0.113	1.806	2.704	0.3698	0.833	0.204	5.204	9200	1.924
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	∞	1.061	0.373	1.099	0.9650	1.0363	0.185	1.815	0.179	1.751	2.847	0.3512	0.820	0.388	5.306	0.136	1.864
0.949 0.308 0.975 0.9727 1.0281 0.284 1.716 0.276 1.669 3.078 0.3249 0.797 0.687 5.469 0.223 0.995 0.288 0.288 0.9276 1.0222 0.321 1.679 0.313 1.637 3.173 0.3152 0.787 0.811 5.535 0.256 0.886 0.266 0.886 0.9764 1.0222 0.324 1.646 0.346 1.610 3.288 0.3080 0.778 0.925 5.594 0.293 0.832 0.299 0.880 0.9794 1.0210 0.382 1.648 0.346 1.585 3.340 0.2938 0.779 0.925 5.647 0.307 0.880 0.223 0.817 0.9810 1.0194 0.406 1.594 0.399 1.563 3.407 0.2935 0.763 1.118 5.696 0.328 0.775 0.223 0.789 0.9823 1.0180 0.428 1.572 0.421 1.544 3.472 0.2880 0.776 1.203 5.847 0.798 0.9823 1.0180 0.448 1.552 0.440 1.526 3.532 0.281 0.750 1.282 5.872 0.307 0.794 0.718 0.9982 1.0194 0.446 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 0.0688 0.9864 1.0148 0.448 1.552 0.440 1.496 3.640 0.247 0.794 1.356 5.820 0.398 0.068 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.724 1.365 5.820 0.391 0.668 0.167 0.640 0.167 0.640 0.183 0.598 1.0114 0.544 1.440 0.554 1.448 3.819 0.2611 0.708 1.594 0.403 1.019 0.504 1.470 0.154 0.204 0.709 1.254 0.709 1.594 0.709 0.109 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.599 0.493 1.0114 0.545 1.445 0.549 1.429 0.2567 0.712 1.759 0.609 0.9892 1.0109 0.555 1.445 0.559 1.420 3.931 0.2544 0.708 1.806 0.565 0.459 1.020 0.565 0.153 0.666 0.9892 1.0105 0.555 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.565 0.459 1.020 0.566 0.162 0.153 0.606 0.9892 1.0105 0.555 1.445 0.599 1.429 3.931 0.2544 0.708 1.806 0.565 0.459 1.020 0.161 0.	6	1.000	0.337	1.032	0.9693	1.0317	0.239	1.761	0.232	1.707	2.970	0.3367	0.808	0.547	5.393	0.184	1.816
0.905 0.285 0.927 0.9754 1.0252 0.321 1.679 0.313 1.637 3.173 0.3152 0.787 0.811 5.535 0.256 0.886 0.266 0.886 0.9776 1.0229 0.354 1.646 0.346 1.610 3.28 0.3069 0.778 0.922 5.594 0.283 0.835 0.249 0.885 0.9776 1.0210 0.382 1.618 0.374 1.585 3.356 0.2998 0.770 1.025 5.647 0.307 0.882 0.249 0.885 0.9794 1.0210 0.382 1.618 0.374 1.585 3.356 0.2998 0.770 1.025 5.647 0.307 0.775 0.223 0.789 0.9823 1.0189 0.428 1.572 0.421 1.544 3.472 0.2880 0.756 1.203 5.741 0.347 0.770 0.194 0.718 0.9845 1.0168 0.448 1.552 0.440 1.526 3.540 0.277 0.194 0.718 0.9845 1.0167 0.446 1.534 0.458 1.511 3.588 0.2787 0.770 1.282 5.782 0.9845 1.0168 0.448 1.552 0.440 1.526 3.640 0.2777 0.194 0.718 0.9862 1.0149 0.497 1.503 0.490 1.483 3.689 0.2777 0.739 1.424 5.856 0.391 0.688 0.187 0.689 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 0.680 0.9862 1.0119 0.552 1.477 0.516 1.459 3.749 0.2677 0.729 1.549 5.921 0.415 0.645 0.680 0.9882 1.0119 0.552 1.447 0.516 1.449 0.559 1.448 3.888 0.259 0.716 1.710 6.006 0.443 10.600 0.153 0.600 0.9892 1.0109 0.552 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 0.600 0.153 0.600 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.0106 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.0106 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.0106 0.564 1.430 0.564 1.430 0.554 1.450 0.554 1.450 0.559 1.440 0.554 1.450 0.559 1.440 0.554 1.450 0.559 1.440 0.554 1.450 0.559 1.450 0.559 1.450 0.559 1.450 0.559 1.450 0.559 1.450 0.559 1.450 0.559 1.450 0.559 1.450 0.559 1.450 0.559 1.450 0.559 1.450 0.559 1.450 0.559 0.	10	0.949	0.308	0.975	0.9727	1.0281	0.284	1.716	0.276	1.669	3.078	0.3249	0.797	0.687	5.469	0.223	1.777
0.866 0.266 0.886 0.9776 1.0229 0.354 1.646 0.346 1.610 3.258 0.3069 0.778 0.922 5.594 0.283 0.832 0.249 0.850 0.9794 1.0210 0.382 1.618 0.374 1.585 3.336 0.2998 0.770 1.025 5.647 0.307 1.020 0.235 0.819 0.9823 1.0189 0.406 1.594 0.428 1.572 0.421 1.546 0.2880 0.776 1.025 5.647 0.307 0.775 0.223 0.789 0.9823 1.0189 0.428 1.572 0.421 1.544 3.472 0.2880 0.756 1.203 5.741 0.347 0.750 0.212 0.759 0.9845 1.0157 0.466 1.534 0.488 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 0.707 0.194 0.718 0.9864 1.0148 0.482 1.518 0.440 1.483 3.689 0.2711 0.739 1.424 5.856 0.391 1.0180 0.689 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 1.0653 0.0173 0.663 0.9876 1.0119 0.534 1.446 0.528 1.448 3.819 0.2647 0.724 1.665 5.971 0.425 1.0169 0.5882 1.0119 0.555 1.448 3.819 0.2647 0.716 1.710 0.006 0.443 1.0663 0.9887 1.0114 0.545 1.456 0.529 1.429 3.895 0.2567 0.716 1.710 0.006 0.443 1.0600 0.153 0.606 0.9896 1.0105 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.9899 1.0109 0.555 1.445 0.549 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 0.2547 0.712 1.759 0.014 0.015 0.060 0.9896 1.0105 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1.0109 0.556 1.435 0.540 0.441 1.0109 0.556 0.441 0.	11	0.905	0.285	0.927	0.9754	1.0252	0.321	1.679	0.313	1.637	3.173	0.3152	0.787	0.811	5.535	0.256	1.744
0.832 0.249 0.850 0.9794 1.0210 0.382 1.618 0.374 1.585 3.336 0.2998 0.770 1.025 5.647 0.307 1.080 0.235 0.817 0.9810 1.0194 0.406 1.594 0.399 1.563 3.407 0.2935 0.763 1.118 5.696 0.328 1.075 0.223 0.789 0.9823 1.0180 0.428 1.572 0.421 1.544 3.472 0.2880 0.775 1.203 5.741 0.347 1.050 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.832 0.2831 0.756 1.203 5.742 0.363 1.070 0.194 0.0984 1.0148 0.448 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 1.070 0.194 0.0180 0.0880 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.448 1.487 5.891 0.403 1.0180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2647 0.729 1.549 5.921 0.415 1.0640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.2047 1.7014 0.545 1.445 0.549 1.438 3.838 0.2577 0.702 1.659 5.979 0.443 1.0660 0.183 0.606 0.183 0.1019 0.534 1.466 0.559 1.420 3.931 0.2544 0.708 1.806 0.0896 1.0109 0.555 1.445 0.549 3.835 0.2567 0.712 1.759 0.043 0.0612 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.443 1.014 0.545 1.455 0.539 1.420 3.931 0.2544 0.708 1.806 0.056 0.443 1.014 0.545 1.455 0.539 1.420 3.931 0.2544 0.708 1.806 0.056 0.443 1.014 0.545 1.455 0.539 1.420 3.931 0.2544 0.708 1.806 0.056 0.443 1.014 0.545 1.435 0.549 1.400 3.931 0.2544 0.708 1.806 0.056 0.443 1.014 0.545 1.435 0.549 1.400 3.931 0.2544 0.708 1.806 0.056 0.459 1.016 0.167 0.1014 0.1	12	0.866	0.266	0.886	9776	1.0229	0.354	1.646	0.346	1.610	3.258	0.3069	0.778	0.922	5.594	0.283	1.717
0.802 0.235 0.817 0.9810 1.0194 0.406 1.594 0.399 1.563 3.407 0.2935 0.763 1.118 5.696 0.328 1.075 0.223 0.789 0.9823 1.0180 0.428 1.572 0.421 1.544 3.472 0.2880 0.756 1.203 5.741 0.347 1.050 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 1.018 0.203 0.739 0.9845 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 1.018 0.0298 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 1.018 0.688 0.187 0.689 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 1.061 0.611 0.014 0.0880 1.0119 0.534 1.466 0.528 1.448 3.819 0.2647 0.724 1.605 5.951 0.415 1.016 0.612 0.157 0.619 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2647 0.724 1.605 5.951 0.425 1.016 0.612 0.157 0.619 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1.018 0.600 0.183 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.443 1.018 0.600 0.183 0.606 0.9896 1.0105 0.565 1.435 0.539 1.420 3.931 0.2544 0.708 1.806 6.056 0.443 1.018 0.600 0.183 0.600 0.183 0.600 0.183 0.600 0.183 0.806 0.9896 1.0105 0.565 1.435 0.539 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.018 0.509 0.244 0.209 0.2544 0.25	13	0.832	0.249	0.850	0.9794	1.0210	0.382	1.618	0.374	1.585	3.336	0.2998	0.770	1.025	5.647	0.307	1.693
0.775 0.223 0.789 0.9823 1.0180 0.428 1.572 0.421 1.544 3.472 0.2880 0.756 1.203 5.741 0.347 1 0.750 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 1 0.750 0.212 0.763 0.9845 1.0157 0.466 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 1 0.770 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 1 0.688 0.887 0.882 0.10140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 1 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.729 1.549 5.921 0.415 1 0.655 0.167 0.647 0.9882 1.0119 0.553 1.476 0.528 1.448 3.819 0.2647 0.724 1.605 5.951 0.425 1 0.650 0.167 0.647 0.9887 1.0114 0.545 1.456 0.589 1.429 3.895 0.2567 0.712 1.759 0.043 1 0.600 0.153 0.606 0.9892 1.0109 0.555 1.455 0.539 1.429 3.895 0.2557 0.712 1.759 0.043 1 0.600 0.153 0.606 0.9896 1.0105 0.555 1.445 0.549 1.429 3.895 0.2557 0.712 1.759 0.043 1 0.600 0.153 0.606 0.9896 1.0105 0.555 1.445 0.549 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.555 1.445 0.549 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.556 1.455 0.540 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.556 1.456 0.560 0.560 0.560 0.560 0.459 1 0.560 0.	14	0.802	0.235	0.817	0.9810	1.0194	0.406	1.594	0.399	1.563	3.407	0.2935	0.763	1.118	969.5	0.328	1.672
0.750 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 1 0.728 0.203 0.739 0.9845 1.0157 0.466 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 1 0.707 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 1 0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 1 0.655 0.173 0.663 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 1 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.729 1.549 5.921 0.415 1 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.606 0.153 0.606 0.183 0.9867 1.0119 0.534 1.456 0.529 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.599 1.40-3 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.600 0.153 0.600 0.153 0.88 = $c_4 - \frac{4(n-1)}{a}$	15	0.775	0.223	0.789	0.9823	1.0180	0.428	1.572	0.421	1.544	3.472	0.2880	0.756	1.203	5.741	0.347	1.653
0.728 0.203 0.739 0.9845 1.0157 0.466 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 1 0.707 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 1 0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 1 0.655 0.173 0.663 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 1 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 1 0.626 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.724 1.605 5.951 0.425 1 0.606 0.153 0.606 0.9896 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.555 1.445 0.442 1 3.895 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.600 0.153 0.600 0.153 0.800 0.15	16	0.750	0.212	0.763	0.9835	1.0168	0.448	1.552	0.440	1.526	3.532	0.2831	0.750	1.282	5.782	0.363	1.637
0.679 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 1 0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 1 0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 1 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 1 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.650 0.167 0.647 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2557 0.716 1.710 6.006 0.443 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.443 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.607 0.607 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.607 0.607 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.607 0.607 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.607 0.607 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.607 0.607 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1 0.607	17	0.728	0.203	0.739	0.9845	1.0157	0.466	1.534	0.458	1.511	3.588	0.2787	0.744	1.356	5.820	0.378	1.622
0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 1 0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 1 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 1 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.652 0.162 0.163 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9892 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9892 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9892 1.0105 0.565 1.435 0.569 0.540 1.0105 0.565 0.459 1 0.540 0.569 0.55	18	0.707	0.194	0.718	0.9854	1.0148	0.482	1.518	0.475	1.496	3.640	0.2747	0.739	1.424	5.856	0.391	1.608
0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 1 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 1 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.159 0.600 0.159 0.600 0.159 0.600 0.159 0.600 0.159 0.600 0.159 0.600 0.159 0.600 0.159 0.600 0.159 0.150 0.1	19	0.688	0.187	869.0	0.9862	1.0140	0.497	1.503	0.490	1.483	3.689	0.2711	0.734	1.487	5.891	0.403	1.597
0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 1 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.626 0.162 0.167 0.647 0.9882 1.0114 0.534 1.456 0.528 1.448 3.819 0.2518 0.720 1.659 5.979 0.434 1 0.612 0.157 0.619 0.9892 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.600 0.153 0.606 0.9896 1.0105 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.567 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.567 1.435 0.54 $\frac{4(n-1)}{4n-3}$	20	0.671	0.180	0.680	6986.0	1.0133	0.510	1.490	0.504	1.470	3.735	0.2677	0.729	1.549	5.921	0.415	1.585
0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 $0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.599 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.599 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.54 $	21	0.655	0.173	0.663	0.9876	1.0126	0.523	1.477	0.516	1.459	3.778	0.2647	0.724	1.605	5.951	0.425	1.575
0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 $a_1 = \frac{3}{\sqrt{n}} a_2 = \frac{3}{\sqrt{n}} a_3 = \frac{3}{\sqrt{n}} a_4 = \frac{4(n-1)}{a_1 - 3}$ $B_3 = 1 - \frac{3}{\sqrt{n}} a_2 = \frac{3}{\sqrt{n}} a_3 = \frac{3}{\sqrt{n}} a_4 = \frac{3}{$	22	0.640	0.167	0.647	0.9882	1.0119	0.534	1.466	0.528	1.448	3.819	0.2618	0.720	1.659	5.979	0.434	1.566
0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.153 0.15	23	0.626	0.162	0.633	0.9887	1.0114	0.545	1.455	0.539	1.438	3.858	0.2592	0.716	1.710	900.9	0.443	1.557
0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 $A = \frac{3}{\sqrt{n}} A_3 = \frac{3}{c_4 \sqrt{n}} c_4 = \frac{4(n-1)}{4n-3}$ $B_3 = 1 - \frac{3}{c_4 \sqrt{2(n-1)}} B_4 = 1 + \frac{3}{c_4 \sqrt{2(n-1)}}$ $B_5 = c_4 - \frac{3}{2n-2} B_5 = c_4 + \frac{3}{2n-2}$	24	0.612	0.157	0.619	0.9892	1.0109	0.555	1.445	0.549	1.429	3.895	0.2567	0.712	1.759	6.031	0.451	1.548
$A = \frac{3}{\sqrt{n}} \qquad A_3 = \frac{3}{c_4\sqrt{n}} \qquad c_4 \stackrel{?}{=}$ $B_3 = 1 - \frac{3}{c_4\sqrt{2(n-1)}} \qquad B_4 = 1 + \frac{3}{c_4\sqrt{2(n-1)}} \qquad B_8 = c_4 + \frac{3}{c_4\sqrt{2(n-1)}} \qquad B_8 = c_4 + \frac{3}{c_4\sqrt{2(n-1)}} \qquad B_8 = c_8 + 3$	25	0.600	0.153	909.0	96860	1.0105	0.565	1.435	0.559	1.420	3.931	0.2544	0.708	1.806	950.9	0.459	1.541
$=1 - \frac{3}{c_4 \sqrt{2(n-1)}} B_4 = 1 + \frac{3}{c_4 - \frac{3}{2}} B_8 = c_4 + \frac{3}{2}$	For $n > 25$.						$A = \frac{3}{\sqrt{n}}$	$A_3 = \frac{1}{C_4}$	3 24	$\cong \frac{4(n-1)}{4n-3}$							
$\frac{3}{B_k} = c_A + \frac{3}{B_k}$						B_3	1	$\frac{3}{2(n-1)}$	**	$c_42(n-$	10						
						8	1	3	R	3							



Year 2 Semester I

REPEAT EXAMINATION

Financial Management – LTFM2201

- This paper consists of SEVEN questions on TWELVE (12) pages.
- Answer <u>FOUR</u> questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.

Date: 2021.04.22

Pass mark: 50%

Time: 02 Hours

Question One (Compulsory)

ABC is a listed company which operates hotels in a number of different countries in Asia. Each hotel is owned and managed by a separate subsidiary company that is wholly owned by ABC. The parent company is located and listed in Country A which is in Asia.

ABC is currently considering purchasing a hotel in Country X. Country X is in a fairly unstable region of the world and this would be the first time that ABC has run a hotel outside Asia. Under ABC's ownership, the hotel would seek to serve visitors to the country such as foreigners visiting the country and wealthy local business owners. The currency of Country X is the X\$.

The project team is currently evaluating the proposed purchase, looking at the financial appraisal and the wider implications.



More details on Proposed acquisition

ABC expects to pay X\$ 50 million for the hotel. ABC plans to spend X\$ 10 million to upgrade the facilities to an acceptable standard plus X\$ 8 million for equipment. It should be assumed that all these payments would be made on 01st of April 2021

Projected operating cash flows for the target hotel at the end of the 1st year onwards are as follows:

Year	1	2	3	4	5
Sales receipts (X\$ million)	10	15	20	28	25
Purchase payments (X\$ million)	5	6	8	11	12
Depreciation (X\$ million)	4	4	4	4	4

Assume that RS/X\$ = 1.000 on 1st of April 2021 and the interest rate in country X is 4% while the interest rate in the country where ABC is located is 3%.

Apply ABC's weighted average cost of capital (WACC) of 10% to RS. equivalent cash flows. Ignore taxes.

Required,

- a) Discuss the limitations of using ABC's WACC to value the new project (05 Marks)
- b) Calculate an appropriate WACC for the new project

(05 Marks)

c) Calculate the NPV and PI for the new project based on RS. as at 1st of April 2021 and give your recommendations on whether to accept or ignore the project. (Hint: initially convert all X\$ net cash flows in to RS. and then discount)

(10 Marks)



d) State two drawbacks of Payback Period method and two advantages of NPV method as investment appraisal techniques.

(5 Marks)

Question 02

a) Mr. Sam wants to invest his money worth RS 800,000 in a bank that promises to pay 10% interest rate compounded monthly. At the end of the 4th year, how much would be there in the Mr.Sam's account?

(04 Marks)

- b) Mr.Joe took a 5-year mortgage loan to finance the purchase of his house for RS 1,250,000 and agreed at an interest rate of 12% compounded annually.
 - I) Calculate annual payment of installment.

(04Marks)

II) Prepare the loan amortization schedule.

(05 Marks)

- c) Mr. Perera needs to select one of the following retirement packages.
 - Option 01: Take a lumpsum amount of Rs. 4 Million today.
 - Option 02: An annuity with 20 annual payments of RS 100,000 with first payment at the end of the first year.

If interest rate is 10%, which package would you recommend?

(04 Marks)

- d) If a Niran borrows RS 1,500,000 to buy a vehicle at 14% interest rate per annum compounded annually for 8 years,
 - I) Calculate annual payment of installment.
 - II) Calculate the principle payment and the interest payment separately for the second year.

(08 Marks)



Question 03

a) Discuss the benefits of "Financial Intermediaries" in the process of transferring funds from surplus to deficit parties, with appropriate examples.

(05 Marks)

b) "Investment is a critical activity of which the Financial Managers need to focus on different aspects". Clearly explain the importance of correct investment decisions for both short term and long term.

(05 Marks)

c) "Due to the separation of ownership and control in many corporations, a divergence frequently exists between the owner's goals and the manager's goals". Clearly explain the short term and the long-term solutions undertaken by the owners to mitigate the agency problem in organizations.

(10 Marks)

d) Derivatives are important financial instruments to be used to hedge "financial risks". Give your opinions.

(05 Marks)

Question 04

a) Mr.Jemy sold 150 shares at Rs. 70 each. these shares were bought 4 months ago, at RS 45 each. During the holding period company paid RS.300 as dividends. Calculate the rate of return and the annualized return for the investment.

(06 Marks)

b) The following are the returns of the share of XYZ Company for past five years.

1	2	3	4	5
4.3	8.6	-5.3	10	20.8
	4.3	1 2 4.3 8.6	1 2 3 4.3 8.6 -5.3	1 2 3 4 4.3 8.6 -5.3 10

Calculate the average returns, standard deviations and variances of the returns for the first and second years.

(03 Marks)



c) NZ is a reputed logistics company in Sri Lanka, they are going to invest the excess cash in different investment assets. Following estimates are available for possible Economic conditions in the near future related to the assets and the rate of return for Assets M and Y.

Economic condition	Probability	Rate of	Return
		Asset M	Asset P
Growth	0.3	10.4	22.1
Stagnation	0.2	11.8	8.9
Recession	0.5	-1.2	-1.7

Based on the above information determine,

- 1) The expected rate of returns for Asset M and P separately.
- 2) The variance and the Standard deviation of Asset M and P separately.

(08 Marks)

If investor is expecting to invest 40% of the capital on Asset M and remaining 60% for asset P,

- 3) Calculate the expected return of the portfolio.
- 4) The Standard deviation of the portfolio.

(08 Marks)



Question 05

a) Clearly discuss, how business risk will have an impact on the operations of a business.

(05 Marks)

b) Nimako (Ltd) has appointed you as its Finance Manager. Following data are given for 2 situations of the company.

Production capacity of the company

5,000 units

Actual production and sales

75% of the capacity

Selling price

RS 50 per unit

Variable cost

RS 25 per unit

Fixed costs

Under situation I

RS 25,000

Under situation II

RS 40,000

Required,

the directors expect you to calculate the operating leverage of the company for both the situations and give the opinions.

(10 Marks)

c) Following selected operating data, are given for Company N and T.

Particulars	Company N	Company T
Sales	RS 3,500,000	RS 4,000,000
Fixed costs	RS 1,000,000	RS 1,500,000

Variable expenses as a percentage of sales for firm N are 50 per cent and for firm T are 25 per cent.



Required,

Determine the breakeven level of sales and the degree of operating leverage. Which company has the greater level of business risk.

(10 Marks)

Question 06

a) The capital structure of an organization will be very important as it directly impacts on the "value of that organization". Do you agree with that? Give your opinions.

(05 Marks)

b) The operating leverage will influence the decisions taken by the financial manager. Clearly Explain.

(05 Marks)

c) Following information are related to JAT PLC as at 01.04.2021.

	RS 000'
1,000,000 Ordinary shares	50,000
Preference shares	10,000
10% debentures	6,000

- Moreover, the 1,000,000 shares are outstanding with a beta of 1.5. The expected return on the market is 12% and the risk-free rate is 5%.
- Issue price of Preferred stock is RS.40 and for preferred stocks, company pays a RS.4 dividend.
- Tax rate is 30%



Calculate Weighted Average Cost of Capital (WACC) for the company.

(10 Marks)

d) List the factors to be considered by a listed company, when establishing its target capital structure.

(05 Marks)

Question 07

a) Briefly explain the different types of budgets, which are prepared by an organization.

(05 Marks)

b) Avco Ltd, a company that produces two types of pillow covers: **Bed pillow covers** and **Sofa pillow covers**, is providing you following forecasted information on the production for the next year (2022).

	Pro	duct
	Bed pillow covers	Sofa pillow covers
Material X(Meters per unit)	2 m	1m
Material Y (Meters per unit)	0.5m	0.25m
Direct Labour hours per unit	3 hours	2 hours
Expected sales units	10,000	5,000
Selling price	RS.500	RS.750
Target ending inventory in units	5,000	500
Beginning inventory in units	2,000	800
Beginning inventory	RS 1,520,000	RS 444,000



Direct Mat	erial	
	Material X	Material Y
Beginning inventory (Total in Meters)	6,000m	600m
Ending inventory (Total in Meters)	15,000m	750m

Direct Material

- Material X RS 250 per meter
- Material Y RS 100 per meter

Direct Labour

- Direct Manufacturing Labour RS 20 per hour

Manufacturing Overhead Cost

 Manufacturing overheads will be RS 150 for a Bed pillow cover and RS 240 for Sofa pillow cover

Other Expenses

- Administrative expenses are estimated to be 15% of sales and selling and distribution expenses are estimated to be 10% of sales

Required to prepare,

- 1. Sales budget
- 2. Production budget
- 3. Material Usage budget
- 4. Material Purchase budget
- Direct Labour budget
- 6. Cost of Sales budget

7.	Budgeted	income	statement
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(20 Marks)

END OF TH	E QUESTION PAPER
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Formula sheet

1) Present Value of Future Cash flows

$$PV = FV (1+r)^{-n}$$

2) Future value of present cash flows

$$FV = PV (1+r)^n$$

3) Present value of an ordinary annuity

PV = Cash Flow *
$$1-(1+r)^{-n}$$

5) Expected Return

$$E(R) = \sum_{i=1}^{n} R_i P_i$$

6) Expected Risk for assets

$$\sigma^2 = \sum_{i=1}^n [R_i - E(R)]^2 P_i$$

7) Expected Risk of a portfolio

$$\sigma_P^2 = W_1^2 \sigma_1^2 + W_2^2 \sigma_2^2 + 2W_1 W_2 Cov_{1,2}$$



PRESENT VALUE TABLE

Present value of \$1, that is $(1+r)^{-n}$ where r = interest rate; n = number of periods until payment or receipt.

Periods					Interest	t rates (r)				
(n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
8 9 10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149

Periods	Interest rates (r)									
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
2 3 4 5	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.079	0.065
16	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.05
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.043
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.03
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.020



Cumulative present value of \$1 per annum, Receivable or Payable at the end of each year for n years $\frac{1-(1+r)^{-n}}{r}$

Periods	Interest rates (r)									
(n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
. 1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
3 4 5	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
8	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201
19	17.226	15.679	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365
20	18.046	16.351	14.878	13.590	12.462	11.470	10.594	9.818	9.129	8.514

Periods	Interest rates (r)									
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
4 5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
6	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
8	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	7.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870

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Faculty of Management and Social Sciences
Department of Logistics & Transport
BSc Hons in Logistics and Transportation
Course CODE: COM551

Year 2 Semester I

SEMESTER END EXAMINATION

Maritime Law - LTML2206

- This paper consists of SEVEN questions on FOUR (04) pages.
- Answer <u>FOUR</u> questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own
 decision, but clearly state it on the script.
- Write legibly.

Date: 2020.09.23

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

"Historically, the oceans have been and continue to be fundamental to human life. The ever increasing use of the oceans necessitates international rules governing various human activities in the oceans. The body of international rules that bind States and other subjects of international law in their marine affairs is called the international law of the sea. Like the international law of armed conflict and the law of diplomacy, the law of the sea is one of the oldest branches of public international law. Furthermore, like international human rights law and international environmental law, the law of the sea is a dynamic field of international law."

(a) (i)Briefly describe the deference between Maritime Law and the Law of the Sea.

(6 Marks)

- (ii) Write 5 international legal instruments (Conventions, treaties or Rules) related to the Maritime Activities. (5 Marks)
- (iii) Write 5 Sri Lankan legislations (Acts of Parliament) in relation to the Maritime Law. (5 Marks)



- (iv) Mention the name of the Court which the power vested to resolve the Admiralty Matters in Sri Lanka. (2 Marks)
- (b) Critically analyze the concept of innocent passage with the relevant provisions of the international legal instruments. (7 Marks)

Question 02

"UNCLOS provides two specific regimes which are fundamental to maritime security and order on the seas: the regime of consecutive maritime zones, and the jurisdictional trinity of flag, coastal and port state control. In fact, UNCLOS is the only international convention which stipulates a framework for state jurisdiction in maritime spaces."

- (a) Identify the National Legislation related to the Maritime Zones in Sri Lanka and describe the main elements of that Legislation. (07 Marks)
- (b) Sketch out the internationally accepted maritime zones. (08 Marks)
- (c) Briefly describe each of such maritime zone's powers and limitations.

(10 Marks)

Question 03

"The shipping industry is a vital cog to the world economy. Accordingly, it constitutes about 90% of the world's commercial trading. The practice of flags of convenience, which carries a big impact on the industry, deserves to be scrutinized. The term refers to the flag of any country allowing the registration of foreign-owned and foreign-controlled vessels under conditions which, for whatever reasons, are convenient and opportune for the persons registering the vessels."

- (a) What are the types of the registration of Ships in the world? (04 Marks)
- (b) Identify the deference between such types of registration. (06 Marks)
- (c) Identify the National legislation (Act) related to the registration of Ships in Sri Lanka (02 Marks)
- (d) Identify four (4) duties of the Flag State under the UNCLOS (06 Marks)



(e) Write a short essay about the legal impacts of the registration of Ships

(07 Marks)

Question 04

"Currently marine pollution is an increasing threat to a healthy marine environment. Indeed, marine pollution may severely damage the environment, including ecosystems, and human health. It would be no exaggeration to say that the welfare of coastal populations relies essentially on a sound marine environment. Thus there appears to be a general sense that the protection of the marine environment is considered as a common interest of the international community as a whole. Despite its vital importance, the regulation of marine pollution has attracted little attention until recently because of low awareness of environmental protection. It is only since World War II that international regulation of marine pollution has begun to develop."

(a) Identify four (4) Sources of Marine pollution according to the UNCLOS. (04 Marks)

(b) Critically evaluate the development of the International Law in relation to the protection of marine environment. Your answer must be supported by the relevant international Treaties (Conventions) related to the Marine environment protection. (06 Marks)

(c) Write a short essay on the MARPOL Convention.

(08 Marks)

(d) Critically evaluate the legal framework on protection of Marine Environment in Sri Lanka.

(07 Marks)

Question 05

- (a) Define the following terms briefly:-
 - (i) Ship
 - (ii) Vessel
 - (iii) Ship under construction

(iv) SALEFORM (2x4 Marks)

(b) What is the relevant Act related to the Maritime Mortgages in Sri Lanka? (02 Marks)



(c) Briefly discuss the Rights of the mortgagee	(04 Marks)
(d) What are the remedies available for breach of mortgage contract	(04 Marks)
(e) Discuss the role of maritime lien in Maritime Law	(07 Marks)
Question 06	
(a) Define the term charter-party and identify and briefly discuss	s the deferent
between deferent types of charter-parties.	(07 Marks)
(b) Write a short essay about the seaworthiness using Case law.	(07 Marks)

(c) State the main three functions of the Bill of Lading. (d) Briefly discuss the deference between Charter-party, Bill of Lading and Seaway bill.

(06 Marks)

(05 Marks)

Question 07

Write Five (5) Short notes on following

(5*5 Marks)

- (a) Action in rem
- (b) Action in personam
- (c) Mareva injunctions
- (d) Maritime Arbitration
- (e) International Maritime Organization
- (f) Alternative dispute resolution (ADR)
- (g) Hague-Visby Rules
- (h) Commercial High Court of Sri Lanka

-----END OF THE QUESTION PAPER-----





Year 2 Semester I

SEMESTER END EXAMINATION

Intermediate Economics - LTIE2202

- This paper consists of SEVEN questions on SEVEN (07) pages.
- Answer <u>FOUR</u> questions including Question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- · Write legibly.
- Use MCQ answer sheet to answer Question 01

Date: 2020.09.18

Pass mark: 50%

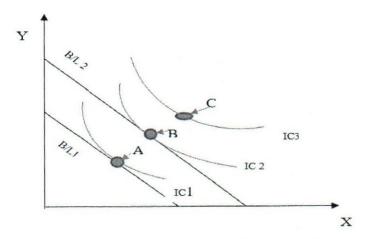
Time: 02 Hours

Question 01: (compulsory)

- 1. Indifference curve is used to explain,
 - 1. seller's behavior
 - 2. Consumer' behavior
 - 3. Producer's behavior
 - 4. All of above
- 2. The indifference curve is downward sloping because of,
 - 1. Diminishing marginal rate of technical substitution
 - 2. Diminishing marginal returns
 - 3. Diminishing marginal rate of substitution
 - 4. Diminishing marginal utility

Refer the following diagram, answer the question 3,4 and 5





- 3. Assume that consumer has B/L 2 level of income, which one of below incorrect,
 - 1. Consumer can consume combination A
 - 2. Consumer can consume either combination A or B
 - 3. Consumer's equilibrium is point B
 - 4. Consumer can consume either combination A, B or C.
- 4. Product X and Y being a
 - 1. Normal product to consumer
 - 2. Inferior product to consumer
 - 3. Both are being substitute to each other
 - 4. Both are complements
- 5. Curve which derived by connecting points A and B is called as,
 - 1. Price consumption curve
 - 2. Income consumption curve
 - 3. Engel curve
 - 4. Demand curve
- 6. Which one is correct about law of production in short run,
 - 1. It is called as Law of economies of scale.
 - 2. It is called as Law of diminishing marginal productivity.
 - 3. It is called as Law of diminishing marginal utility.
 - 4. It is called as Law of returns to scale



When	price of a product falls, more of it is purchased because of
1.	The substitution effect
2.	The income effect
3.	Neither substitution effect nor income effect
4.	Both the substitution and income effects
	 2. 3.

- 8. When Average cost is greater than marginal cost,
 - 1. Average cost failing
 - 2. Average cost rising
 - 3. Average cost is at minimum
 - 4. Average cost at maximum
- 9. Precautionary money demand means, demand for money
 - 1. to do planned, certain transactions
 - 2. to do unplanned, uncertain transaction
 - 3. to do speculation investment
 - 4. to do planned, uncertain transaction.
- 10. In game theory, a choice that is optimal for a firm no matter what its competitors do is referred to as
 - 1. the dominant strategy.
 - 2. the game-winning choice.
 - pareto efficient.
 - Nash equilibrium.

(20 Marks)

11. Price	consumption	curve is always downward sloping.
	True []	False []
12. Den	nand curve is	downward sloping because of price effect.
	True []	False []



13. Decre	ase in gover True []	nment taxes considered as an e False []	expansionary fiscal policy
14. The Is inputs		is depending on the total outla False []	ay and the price of the two
	equilibrium tion betweer True []		ayers when there is no co- (05 Marks)
diagra (b) Illustr a. b.	ado you mea am/s . rate behavior X is a Nece X and Y Co	on by consumer's equilibrium? To following products using consity and Y is a Luxury In the many the many to each other The both the state of the	Explain that using appropriate (10 Marks) consumer's equilibrium, (15 Marks)



Question 03

(a) Explain price effect of a product with examples (07 Marks)

(b) Derive a demand curve for a product X (in Horizontal axis) which has elastic demand. (06 Marks)

(c) According to the behavior of price effect, products can be distinguished as Normal, Inferior and Giffen products. Explain. (12 Marks)

Question 04

(a) Explain the concept of Marginal Rate of Technical Substitution with an example (05 Marks)

(b) What is mean by Producer's equilibrium? And explain that ways of change in equilibrium. (10 Marks)

(c) Explain the term "Economic region of production". (04 Marks)

(d) Explain the Law of Production in Long run using production expansion path (06 Marks)

Question 05

(a) Derive the IS curve using Keynesian cross and investment function.

(05 Marks)

(b) You are given following information about a country. Where C- consumption, Y- national income, Yd- disposable income, i- interest rate, T- taxes, Iinvestment, G- government expenditure, Ms- real money supply, Md- real money demand.

C = 40 + 0.75Y

T = 80

I = 140 - 10i

G = 100



Ms = 85

Md = 0.2Y - 5i

What are the short run equilibrium values of national income, interest rate, disposable income, consumption and Investment? (15 Marks)

(c) Government want to increase real GDP of a country without change in the interest rate in the country. Explain the possible policy activities should follow by the government.(05 Marks)

Question 06

(a) What do mean by the Game Theory and its importance

(05 Marks)

You are given following game. The payoffs of game represent the profits of each firm.

	Firm 2								
		Low	er the	High price					
Firm 1	Lower the price	10	10	100	-50				
Fir	High price	-50	100	50	50				

(a) Define each strategies of game	(04 Marks)
(b) Find dominate strategy for Firm 1 and 2	(04 Marks)
(c) What is the Nash Equilibrium of above game?	(02 Marks)
(d) Show the above game in extensive form	(05 Marks)
(e) Explain the meaning of repeat game using above	(05 marks)



Question 07

Write short notes on any FIVE (05) of the following

- (a) Production Expansion path
- (b) Expansionary Fiscal and Monitory Policy.
- (c) Open Market Operations.
- (d) Opportunity cost
- (e) Derivation of LM curve
- (f) Properties of Iso-quant

-----END OF THE QUESTION PAPER-----

(5X5 Marks)

Time: 02 Hours



Faculty of Management and Social Sciences Department of Logistics & Transport BSc Hons in Logistics and Transportation Course CODE: COM551

Year 2 Semester I

Intermediate Economics – LTIE2202

MCQ Answer Sheet

• Cross (x) the relavant box according to your answer

Date: 2020.09.18	Pass mark: 50%	
Question 01		
1. A B C	D	11. T
2. A B C	D	12. T
3. A B C	D	13. T
4. A B C	D	14. T
5. A B C	D	15. T
6. A B C	D	
7. A B C	D	
8. A B C	D	
9. A B C	D	
10. A B C	D	

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Faculty of Management and Social Sciences
Department of Logistics & Transport
BSc Hons in Logistics and Transportation
Course CODE: COM551

Year 2 Semester I

SEMESTER END EXAMINATION

Intermediate Economics - LTIE2202

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Date: 2020.09.18

Pass mark: 50%

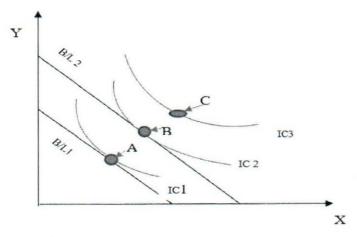
Time: 02 Hours

Question 01: (compulsory)

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 - 4. Nash equilibrium.

(20 Marks)

11.	Price consumption c	urve is always downward sloping.
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12.	Demand curve is d	lownward sloping because of price effect. False []



13. Decrea	ase in govern True []	ment taxes cons False []	idered as an exp	pansionary fiscal	policy
14. The Is inputs			the total outlay	and the price of t	the two
	equilibrium tion between True []	players.	on for both pay	vers when there is	no co- (05 Marks)
` '		n by consumer's	equilibrium? E	Explain that using	appropriate (10 Marks)
(b) Illustr a. b.	rate behavior X is a Neces X and Y Cor	of following prosity and Y is a L mpliment to each estitute to each o	uxury h other	nsumer's equilibr	,



Question 03

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(05 Marks)

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$$G = 100$$



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- (f) Properties of Iso-quant

(5X5 Marks)
-----END OF THE QUESTION PAPER-----



Year 2 Semester I

Intermediate Economics - LTIE2202

MCQ Answer Sheet

• Cross (x) the relavant box according to your answer

Duce. Lolloring	Date:	2020	.09.18
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Pass mark: 50%

Time: 02 Hours

0	01
Question	UI
2	

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Year 2 Semester II

REPEAT Examination

Human Resource Management - LTHR2212

- This paper consists of SEVEN (07) questions on THREE (03) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.

Date: 2020.08.29

Pass mark: 50%

Time: 02 Hours

Question 1 (Compulsory)

Critical Incident - Angry Driver

Mr. Gunadasa is a van driver who had been employed by a firm in the garment industry for over seven years. No complaints against this driver so far. The driver had to perform a duty of going and bringing lunch packets of dinner before 7.00 p.m. for employees of the firm. One day the driver got delay to bring the packets of dinner. Consequently, there was an argument between the driver and one of the female employees. Driver had got angry and told off in an inappropriate way.

The incident happen between the driver and the female employee was reported to the Factory Manager who penalised the driver immediately by fining Rs.1000 from his salary due for the month. The driver complained about the fine to his co-workers and with their backing decided to go and see the GM who had hired him for the firm.

(a) Do you agree with the disciplinary action inflicted on the driver by the Factory Manager?



(b) Why?

(c) If you are GM, what do you do in this regard as short term measures as well as long term measures?

(25 Marks)

Source: Opatha (2012)

Question 02

(a)	What is an organization?	(3 marks)
(b)	Explain organizational resources with examples.	(4 marks)
(c)	Discuss the goals of Human Resource Management (HRM)	(6 marks)
(d)	Describe three functions of HRM	(6 marks)
(e)	"Compared to other resources, HR is relatively unique". Discuss.	(6 marks)

Question 03

(a)	Name the methods of job designing	(3 marks)
(b)	Explain Scientific method of job designing	(5 marks)
(c)	What are the disadvantages of specialization?	(5 marks)
(d)	"Job enrichment involves the increasing the authority". E	lucidate.
		(5 marks)
(e)	Prepare Job Description and Person Specification for 1	Logistic Manager.
		(7 marks)

Question 04

(a)	Write three objectives of Human resource planning	(3 marks)
(b)	Briefly explain the importance of Human resource planning	(5 marks)
(c)	As a HR Manager how would you forecast future demand of HR?	(5 marks)
(d)	If it is surplus condition of workforce in the organization, what are	the strategies
	to be taken?	(5 marks)
(e)	"Consequences of Human resources planning leads to recruitment	". Discuss
		(7 marks)

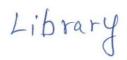


Question 05

(a) (b) (c) (d) (e)	Define the terms recruitment and selection What are objectives of recruitment Name four internal methods of recruitment Discuss three legal issues pertain to recruitment and selection Discuss any two selection methods in your choice	(5 marks) (4 marks) (4 marks) (6 marks) (6 marks)
Ques	tion 06	
, ,	What is hiring? Explain process of hiring How do you define the induction? "Until hiring is done there are no new employees placed on the job relevant duties and responsibilities". Discuss. "Induction contributes to organizational effectiveness by reducing shock". Elucidate the statement.	(6 marks)
Ques	tion 07	

Q

(a)	Explain purposes of performance of evaluation	(5 marks)
(b)	As a HR manager when you establish performance evaluation	on objectives, what
	are the areas that you should consider?	(5 marks)
(c)	"Formulating policies of performance evaluation is very im	portant in any
	organization". Discuss this statement.	(5 marks)
(d)	Discuss any two methods of performance evaluation.	(5 marks)
(f)	Anayse the problems associated with the performance eva-	luation. (5 marks)
	END OF THE QUESTION PAPER-	
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Year 2 Semester II REPEAT Examination Shipping Management – LTSM2209

- This paper consists of SEVEN (07) questions on THREE (03) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2020.08.25

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

Give a brief introduction to below with 4 examples to each:

- (a) BREAK BULK CARGOES:
- (b) DRY CARGOES
- (c) WET CARGOES
- (d) DIRTY CARGOES
- (e) CLEAN CARGOES
- (f) ODOROUS CARGOES
- (g) DELICATE CARGOES
- (h) GAS CARGOES
- (i) LIQUID BULK CARGOES
- (j) DRY BULK CARGOES
- (k) REFREGARATED FOOD CARGOES
- (I) SPECIAL PURPOSE CARGOE
- (m) PASSENGERS
- (n) UNITIZED CARGOES
- (o) VALUABLE CARGOES
- (p) DANGEROURS CARGES
- (q) OOG cargoes

(25 marks)



Question 02

What is meant by following notations in Bills of Lading:

- (a) Received for shipment bill of lading
- (b) Shipped on board bill of lading
- (c) Clean bill of lading
- (d) Claused bill of lading

(25 marks)

Question 03

- (a) Why refrigeration is necessary for transportation of goods by sea?
- (b) Discuss about reefer goods transported at sea and the safety precautions.

(25 marks)

Question 04

Give short introductions to following:

- (a) Hague rules
- (b) Hague Visby rues
- (c) Hamburg rules
- (d) Rotterdam rules

(25 marks)

Question 05

What is meant by:

- (a) A liner service
- (b) A Tramp service

(25 marks)



Question 06

Discuss the advantages and disadvantages when made a compression between E B/Ls and paper B/Ls

(25 marks)

Question 07

How are the dangerous goods classed by the IMO, and give an example cargo to each class?

(25 marks)

-----END OF THE QUESTION PAPER-----



Year 2 Semester II

REPEAT Examination

Procurement Management - LTPM2214

- This paper consists of SEVEN (07) questions on FIVE (05) pages.
- Answer FOUR questions including Question 01
- · Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own
 decision, but clearly state it on the script.
- Supporting documents are attached.

Date: 2020.08.25

Pass mark: 50%

Time: 02 Hours

Question 01: (Compulsory)

A hypothetical case on MAGA Pvt. Ltd. (For all Engineering Solutions)

This hypothetical case is related to MAGA Pvt. Ltd., with multi-disciplinary engineering works like roads and highways, bridges and flyovers, buildings, harbor and airports and other engineering works. The central procurement department at the Head Office operates the procurement of all goods and services needed for all the construction projects.

The procurement of goods and services at MAGA Pvt. Ltd., varies from day-to-day items to essential items, where they are being sourced locally and Internationally. The Procurement department has recognized the company needs for the coming month for a bridge construction project as: hiring of a concrete mixture, hiring of an excavator, purchasing of cement, steel bars, bricks, interlock blocks, water, spare parts for a fork lift truck and 100 safety helmets. Also, they wish to recruit the service of a senior civil engineer. Apart form 100 safety helmets and spare parts for folk lifts, all materials and services are purchased and hired from local suppliers.

Answer the following questions based on the case study:



- (a) Identify the procurement positioning of MAGA Pvt. Ltd. according to the Kraljic Portfolio purchasing Model (10 Marks)
- (b) Briefly describe the two (02) types of relationship approaches in procurement that MAGA Pvt. Ltd., should maintain with their suppliers (05 Marks)
- (c) Briefly discuss the advantages of having a central procurement department in MAGA Pvt. Ltd (05 Marks)

Answer part (d) with the knowledge of INCO terms 2010.

(d) Refer attachment 01

(05 Marks)

Question 02

(a) List down and explain the 03 levels of strategy.

(04 Marks)

- (b) Explain how the purchasing function will appear in <u>any two (02)</u> of the following different types of organizations
 - I. Distributive and retail industry
 - II. Major manufacturing organizations
- III. Extractive industries

(04*02 Marks)

- (c) List down and explain the four (04) various methods of organizing the procurement function in firms (05 Marks)
- (d) Write short notes on any two (02) of the following:

(04*02 Marks)

- (i) OCDS of National Procurement Guidelines in 2017
- (ii) Ethics of Procurement as stated by NPC
- (iii) Methods of National Procurement



Question 03

(a) Explain the factors affecting pricing decisions in detail (10 Marks)

(b)

(i) Distinguish between the two types of commodities with relevant examples

(04 Marks)

(ii) Suppose 02 kgs of soya beans is required per day for a small scaled soya ice-cream seller. Actual market prices of Soya Beans for 06 successive days is 150,130,155,145,145,130 LKR. With the budget buying policy, 300 LKR will be spent every day by the procurement department.

Calculate the average market price.

Among Budget Buying and Averaging Policies, determine which is the best to be used when compared with the average market price? (06 Marks)

(iii) Briefly explain a short-term price stabilization scheme for commodities where it is helpful in continuously maintaining prices under price fluctuations (05 Marks)

Question 04

- (a) Identify the common elements of a project and explain how project procurement is distinguished form the general procurement (06 Marks)
- (b) Distinguish between private sector project procurement and public sector project procurement (05 Marks)
- (c) Subcontracting is commonly used in project procurement activities. Explain the concept of subcontracting taking any of the projects of MAGA Pvt. Ltd. as an example. (06 Marks)
- (d) Negotiation skills are vital in procurement. Briefly explain. (02 Marks)
- (e) What is BATNA. Explain the four steps that to follow to determine your NATNA in a given negotiation. (06 Marks)



Question 05

(a) Define what is e-procurement as per the CIPS.

(03 Marks)

- (b) Briefly describe the process of an online reverse auction with special criteria applicable (06 Marks)
- (c) MAGA Pvt. Ltd. is presently doing the procurement activities through an electronic procurement platform. Explain the advantages, disadvantages and risks of using such a system in performing procurement activities for various projects undertaken by the MAGA Pvt. Ltd. (10 Marks)
- (d) Briefly explain the characteristics that a good supplier should possess, taking one (01) of the below industries as examples:
 - (i) Automobile Suppliers
 - (ii) Medical Suppliers to a Hospital

(06 Marks)

Question 06

(a) Discuss the two (02) types of capital equipment with examples.

(05 Marks)

(b) MAGA Pvt. Ltd is evaluating the options of hiring a 'Concrete Mixture Machine' to be used in an apartment project in Kotte. The procurement manager at the central procurement department in evaluating the shortlisted three suppliers with the initial capital costs and the expected net cash inflows for a period of 04 years. The information is given in the table 6.1.

Assume that the Cost of Capital = 10%



Table 6.1: CMM = Concrete Mixture Machine

		Total initial	Tota	Cash Infl	ows USD	('000)
Supplier	Options	cost of the option USD ('000)	Year 1	Year 2	Year 3	Year 4
1	CMM 01	950	440	335.5	260	270
2	CMM 02	755.5	330.5	255	235.5	165
3	CMM 03	820	335	280.5	255	200

Recommend which option is the most suitable to be implemented and support your answer with the relevant reasons.

(Hint: Use the Discounted Payback Period approach and the NPV approach in evaluating)

What other functions of the organization you would recommend discussing with, regarding this decision?

Note: refer the attachment 02 where necessary

(20 Marks)

Question 07

(a)

(i) Define the terms "Outsourcing" and "A Core Business Activity"?

(05 Marks)

(ii) Explain in detail why an organization uses the concept of outsourcing?

(08 Marks)

(iii) List down ten (10) key contractual elements in an SLA

(05 Marks)

(iv) List down four (04) strategies to avoid outsourcing pitfalls

(02 Marks)

(b) List down the sourcing principles from fair trade

(05 Marks)

-----END OF THE QUESTION PAPER-----



PV table

Faculty of Management and Social Sciences
Department of Logistics & Transport
BSc Hons in Logistics and Transportation
Course CODE: COM551

		All Property Control				7	Kale					
Periods	7	2%	3%	4%	5%	6%	7%	%3	9%	10%	12%	15%
_	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.8929	0
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.7972	0.7561
ω	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7118	0.0
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6355	0
ហ	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5674	0
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5066	0
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4523	0
80	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4039	0
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3606	0
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3220	0
1	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.2875	0
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2567	0
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2292	0
14	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2046	0
5	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.1827	0
16	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1631	0
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1456	0
18	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1300	0.0
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1161	0.0
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1037	0.0
25	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0588	0.0
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0334	0.0
33	0.7059	0.5000	0.3554	0.2534	0.1813	0.1301	0.0937	0.0676	0.0490	0.0356	0.0189	0.0
	0.6/1/	0.4529	0.3066	0.2083	0.1420	0 0977	2222	00000	00010	00001	20107	2



Year 2 Semester II

REPEAT EXAMINATION

Procurement Management LTPM 2214

Attachment 01 (Note: - Attach this answer sheet to the answer booklet provided)

Question 01 (Compulsory)

Index No:

(d) Fill in the blanks of the table given below with the respective responsibilities of the seller and buyer as of providing the service (You may denote 's' for the seller and 'b' for the buyer) (05 Marks)

		INCO	FOB	FAS	CPT	DDP	EXW
		Name of the Term					
		Used Mode of Transportation (All/ Maritime transport only)					
COST		Factory					
Г		1st Carrier					
		Origin Warehouse	- 1				
		Origin Terminal	- 1				
	Supply Chain	2 nd Carrier (Ship/ Air)	- 1				
	hain	Destination Terminal	- 1				
		Destination Warehouse	- 1				
		3 rd Carrier				+	+
		Consignee		+	1		+



Year 2 Semester II REPEAT Examination Quality Management – LTQM2215

- This paper consists of SEVEN (07) questions on FIVE (05) pages.
- Answer FOUR questions including Question 01
- · Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legible.
- Supporting documents are attached.

Date: 2020.08.28

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

- (a) Identify "quality features" in a hospital service, fast food company and an electronic equipment" (09 Marks)
- (b) Discuss eight dimensions on product quality

(16 Marks)

Question 02

Just in Time (JIT) is popular inventory management technique. Discuss the application of the technique with its benefits, drawbacks and strategies to mitigate those drawbacks. (25 Marks)

Question 03



Having an Environmental Management System (EMS) in an organization is a major quality requirement today.

Discuss, major environmental threats to the world today and strategies to mitigate negative environmental impacts by an organization in the modern industrial setting.

(25 Marks)

Question 04

Writes short notes on the below mentioned topics

- (a) Quality circles
- (b) Process approach to quality
- (c) 5why method
- (d) ISO
- (e) PDCA cycle

(05* 05 Marks)

Question 05

Supplier quality is critical in most organizations which are highly dependent on external suppliers on various resources. Assume that you are working in a pharmaceutical company and assigned the responsibility to evaluate a group of existing suppliers who supply medicines to your company.

Discuss five supplier evaluation criterion that you may use to evaluate your suppliers.

(25 Marks)

Question 06

(a) Data given below is about number of defective units found in quality inspection process carried out in a manufacturing firm of "glass frames".



Sample number i	Sample size	Number of defectives D _i	Probability Pi
1	47	9	
2	50	6	
3	48	10	
4	49	8	
5	46	5	
6	47	8	
7	45	5	
8	48	7	
9	46	10	
10	46	8	
11	46	6	
12	49	8	
13	46	9	
14	46	15	
15	47	20	
16	50	6	
17	48	10	
18	48	16	
19	48	11	
20	49	12	
21	50	10	
22	46	9	
23	47	6	
24	47	8	
25	46	12	

(a) Calculate the defective probability for each sample

(10 Marks)



(b) Calculate 3-o trial control limits for P- charts using average sample size.

(10 Marks)

(c) Discuss whether the process is in-control or out of control

(02 Marks)

(d) Discuss the validity of the trial control limits.

(03 Marks)

Question 07

Answer following questions using the data given in table 7.01

(a) Calculate mean and standard deviation for 20 samples (08 Marks)

(b) Calculate estimated values for process mean and standard deviation using the calculated values in part (a) (02 Marks)

(c) Calculate 3- σ trial control limits for S charts and \bar{X} charts (12 Marks)

(d) Discuss the validity of the trial cotrol limits calculated in part (c) above

(03 Marks)



Table 7.01

Sample Number	x_1	x_2	x_3	<i>x</i> ₄
1	6	9	10	15
2	10	4	6	11
3	7	8	10	5
4	8	9	6	13
5	9	10	7	13
6	12	11	10	10
7	16	10	8	9
8	7	5	10	4
9	9	7	8	12
10	15	16	10	13
11	8	12	14	16
12	6	13	9	11
13	16	9	13	15
14	7	13	10	12
15	11	7	10	16
16	15	10	11	14
17	9	8	12	10
18	15	7	10	11
19	8	6	9	12
20	13	14	11	15

-----END OF THE QUESTION PAPER-----

* APPENDIX VI

Factors for Constructing Variables Control Charts

name Factors for Control Limits Center Line Factors for Control Limits Factors for Control Limits Factors for Control Limits Factors for Control Limits Center Line Factors for Control Limits Center Line Factors for Control Limits n A A A A A A A B B B B A Inter Line B	Factors for Control Limits Center Line Factors for Control Limits Center Line Factors for Control Limits Center Line Center Line Control Lines 0.8862 0.7979 1.2533 0 3.266 0 2.276 1.693 0.5997 0.8883 1.725 1.023 1.954 0.8862 1.1284 0 2.568 0 2.276 1.693 0.5997 0.8883 1.242 0.741 0.9915 1.0818 0.3090 0 1.964 0.2466 0.799 0.864 0.3981 0.9915 1.0929 0.9950 0 1.999 0 0.0029 1.891 0.9951 1.0423 0.118 1.882 0.113 1.896 2.704 0.3968 0.8891 0.0499 0.9650 1.0363 0.1387 0.239 0.9650 1.0363 0.1387 0.239 1.761 0.232 1.707 0.3908 0.9951 1.0229 0.9650 1.0363 0.138 1.891 0.179 1.751 2.847 0.3912 0.799 0.9965 0.0363 0.1397 0.234 1.0529 0.354 1.0423 0.1391 1.679 0.331 1.639 0.3367 0.799 0.9965 0.0376 1.0229 0.354 1.646 0.346 1.610 3.258 0.3069 0.778 0.0499 0.880 0.9776 1.0229 0.354 1.646 0.346 1.610 3.258 0.3069 0.778 0.0599 0.9993 1.0119 0.3408 1.591 0.591 1.540 0.299 0.8993 1.0119 0.3408 0.981 1.0119 0.3409 0.511 1.540 0.299 0.3993 0.0393 0.0393 1.0199 0.9894 1.0119 0.349 0.440 1.250 0.340 0.299 0.3993 0.0393 0.031 0.049 0.049 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0809 0.0499 0.0809 0.0499 0.0809 0.0499 0.0809 0.0809 0.0499 0	Fractors for Control Limits Center-Line Exectors for Control Limits Center-Line Center-Line Exectors for Control Limits Center-Line Cente	servation		A				Charles Standard Lynning	1	-		-	-	-		CHAIL IOI NAMES		-
	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	THE PERSON		actors fe	11	Facto	rs for					Facto	rs for					
n A A ₂ A ₃ C ₄ B ₅ B ₆ d ₅ Id ₂ B ₇ B ₇ B ₈ B ₆ d ₅ Id ₂ B ₇	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$.=		ntrol Lin	nits	Cente	r Line	Facto	rs for C	ontroll	imits	Cente	r Line		Factors	for Cont	rol Limi	ts
2121 1.880 2.659 0.7979 1.2533 0 3.267 0 2.066 1.128 0.8885 0.853 0 3.686 0 1.732 1.023 1.654 0.884 0 2.568 0 2.776 1.693 0.8597 0.888 0 4.538 0 1.342 0.577 1.427 0.9400 1.0684 0 2.768 0.539 0.489 0 4.698 0	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	ample, n	Y	A2	A_3	5	Vc_4	B_3	B_4	Bs	B_6	d_2	1/42	d3	D_1	D_2	D_3	D_4
1.732 1.023 1.954 0.8862 1.1284 0 2.568 0 2.276 1.693 0.5907 0.8888 0 4.358 0 1.500 0.729 1.623 0.9213 1.0854 0 2.666 0 2.089 0.4897 0.889 0 4.988 0 1.242 0.483 1.287 0.9515 1.0510 0.030 1.970 0.029 4.887 0.880 0 4.988 0 1.144 0.419 1.82 0.919 0.029 1.0484 0 2.089 0.4897 0.880 0 4.918 0 1.061 0.373 1.029 0.9569 1.0343 0.234 0.794 0.236 0.037 0.337 0.039 0.348 0.707 0.368 0.349 0.348 0.369 0.348 0.369 0.348 0.369 0.348 0.369 0.348 0.369 0.348 0.369 0.348 0.369 0.348 0.369 0.348 <td>$\begin{array}{c ccccccccccccccccccccccccccccccccccc$</td> <td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td> <td>2</td> <td>2.121</td> <td>1.880</td> <td>2.659</td> <td>0.7979</td> <td>1.2533</td> <td>0</td> <td>3.267</td> <td>0</td> <td>2.606</td> <td>1.128</td> <td>0.8865</td> <td>0.853</td> <td>0</td> <td>3.686</td> <td>0</td> <td>3.267</td>	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2	2.121	1.880	2.659	0.7979	1.2533	0	3.267	0	2.606	1.128	0.8865	0.853	0	3.686	0	3.267
1.500 0.729 1.628 0.9213 1.0854 0 2.266 0 2.068 2.059 0.4857 0.889 0 4.698 0 1.342 0.577 1.427 0.9400 1.0638 0 2.089 0 1.894 2326 0.4299 0 4.698 0 4.698 0 1.125 0.483 1.287 0.9354 1.0310 0.030 1.874 2.734 0.3396 0.884 0 5.078 0 2.08 1.000 0.337 1.029 0.9650 1.0363 0.118 1.882 0.179 1.707 2.970 0.3367 0.204 0.707 0.006 0.136 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>6</td><td>1.732</td><td>1.023</td><td>1.954</td><td>0.8862</td><td>1.1284</td><td>0</td><td>2.568</td><td>0</td><td>2.276</td><td>1.693</td><td>0.5907</td><td>0.888</td><td>0</td><td>4.358</td><td>0</td><td>2.574</td></td<>	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6	1.732	1.023	1.954	0.8862	1.1284	0	2.568	0	2.276	1.693	0.5907	0.888	0	4.358	0	2.574
1.342 0.577 1.427 0.9400 1.0638 0 1.984 2.326 0.4299 0.864 0 4.918 0 1.225 0.483 1.287 0.9515 1.0510 0.030 1.970 0.029 1.844 2.534 0.3946 0.848 0 4.918 0 1.134 0.419 1.182 0.9594 1.0423 0.113 1.806 2.704 0.3698 0.833 0.204 5.078 0 1.006 0.337 1.039 0.9653 1.031 0.225 1.771 2.847 0.808 0.849 0.797 0.826 0.184 0.949 0.308 0.975 1.0281 0.226 1.669 3.078 0.3549 0.797 0.886 0.277 0.888 0.977 0.881 0.881 0.881 0.881 0.881 0.881 0.881 0.884 0.789 0.789 0.789 0.789 0.789 0.789 0.789 0.789 0.789 0.889 0.77	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	4	1.500	0.729	1.628	0.9213	1.0854	0	2,266	0	2.088	2.059	0.4857	0.880	0	4.698	0	2.282
1.225 0.483 1.287 0.9515 1.0510 0.030 1.970 0.029 1.874 2.534 0.3946 0.848 0 5.078 0 1.134 0.419 1.182 0.9594 1.0423 0.118 1.882 0.113 1.806 2.704 0.3698 0.833 0.204 5.076 0.076 1.001 0.333 1.099 0.9650 1.0643 0.185 1.815 0.179 1.751 2.847 0.3367 0.808 0.529 0.760 0.386 0.836 0.836 0.927 0.0284 1.761 0.226 1.707 0.369 0.779 0.808 0.534 0.809 0.789 0.829 0.780 0.348 0.369 0.386 0.379 0.809 0.789 0.389 0.389 0.389 0.389 0.789 0.889 0.378 0.809 0.779 0.809 0.779 0.809 0.779 0.809 0.779 0.809 0.779 0.809 0.779 0.799 0.809	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2	1.342	0.577	1.427	0.9400	1.0638	0	2.089	0	1.964	2.326	0.4299	0.864	0	4.918	0	2.114
1.134 0.419 1.182 0.9594 1.0423 0.118 1.882 0.113 1.806 2.704 0.3598 0.833 0.204 5.204 0.076 1.061 0.373 1.099 0.9650 1.0363 0.185 1.815 0.179 1.751 2.847 0.3512 0.820 0.388 5.306 0.136 1.000 0.337 1.032 1.0381 0.239 1.761 0.226 1.707 2.970 0.3367 0.820 0.386 0.186 0.236 0.778 0.236 0.787 0.836 0.979 0.832 0.276 1.669 3.078 0.349 0.687 0.848 0.979 0.832 1.716 0.276 1.669 3.078 0.888 0.979 0.832 1.679 0.313 1.669 0.770 0.836 0.770 0.883 0.289 0.770 0.838 0.289 0.770 0.789 0.978 0.289 0.789 0.789 0.789 0.789 0.789 1.563 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>1.134 0.419 1.182 0.9594 1.0423 0.118 1.882 0.113 1.806 2.704 0.3698 0.833 0.204 5.204 0.076 1.061 0.373 1.099 0.9660 1.0363 0.188 1.815 0.179 1.751 2.847 0.3512 0.820 0.388 5.306 0.136 0.999 0.9660 1.0363 0.204 1.021 0.22 1.707 2.970 0.889 0.947 5.393 0.184 0.949 0.308 0.975 0.9727 1.0281 0.229 1.766 0.226 1.669 3.078 0.3249 0.797 0.687 5.469 0.223 0.286 0.286 0.976 1.0220 0.324 1.716 0.226 1.609 3.078 0.3249 0.797 0.687 5.499 0.223 0.284 0.294</td><td>9</td><td>1.225</td><td>0.483</td><td>1.287</td><td>0.9515</td><td>1.0510</td><td>0.030</td><td>1.970</td><td>0.029</td><td>1.874</td><td>2.534</td><td>0.3946</td><td>0.848</td><td>0</td><td>5.078</td><td>0</td><td>2.004</td></td<>	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1.134 0.419 1.182 0.9594 1.0423 0.118 1.882 0.113 1.806 2.704 0.3698 0.833 0.204 5.204 0.076 1.061 0.373 1.099 0.9660 1.0363 0.188 1.815 0.179 1.751 2.847 0.3512 0.820 0.388 5.306 0.136 0.999 0.9660 1.0363 0.204 1.021 0.22 1.707 2.970 0.889 0.947 5.393 0.184 0.949 0.308 0.975 0.9727 1.0281 0.229 1.766 0.226 1.669 3.078 0.3249 0.797 0.687 5.469 0.223 0.286 0.286 0.976 1.0220 0.324 1.716 0.226 1.609 3.078 0.3249 0.797 0.687 5.499 0.223 0.284 0.294	9	1.225	0.483	1.287	0.9515	1.0510	0.030	1.970	0.029	1.874	2.534	0.3946	0.848	0	5.078	0	2.004
1,061 0.373 1,099 0.9650 1,0363 0.185 1,815 0.175 1,771 2,847 0.3512 0.820 0.388 5.306 0.136 1,000 0.337 1,032 0.9693 1,0317 0.239 1,761 0.232 1,707 2,970 0.3367 0.888 0.547 5.393 0.184 0,949 0.308 0.975 1,0281 0.284 1,716 0.276 1,669 3,078 0.3249 0.797 0.687 5.499 0.223 0,846 0.286 0.286 0.9776 1,0229 0.354 1,616 3,258 0.3969 0,778 0.223 0.789 0.989 0,398 0,398 0,398 0,398 0,398 0,406 1,594 0,399 1,504 0,406 1,594 0,399 0,298 0,398 0,398 0,398 0,398 0,398 0,398 0,398 0,398 0,398 0,398 0,398 0,398 0,398 0,398 0,398	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2	1.134	0.419	1.182	0.9594	1.0423	0.118	1.882	0.113	1.806	2.704	0.3698	0.833	0.204	5.204	0.076	1.924
1,000 0,337 1,032 0,9693 1,031 0,239 1,761 0,236 0,3367 0,808 0,547 5,393 0,184 0,949 0,308 0,975 0,9727 1,0281 0,276 1,769 0,707 0,349 0,797 0,687 5,469 0,223 0,949 0,308 0,975 0,027 1,0281 0,232 1,716 0,276 1,669 0,378 0,349 0,797 0,687 5,849 0,223 0,866 0,266 0,886 0,976 1,0229 0,332 1,646 0,346 1,610 3,258 0,3089 0,771 0,822 5,544 0,238 0,3089 0,778 0,293 0,770 0,998 0,771 0,023 0,778 0,298 0,771 0,023 0,778 0,037 0,048 0,048 1,552 0,441 1,544 3,472 0,288 0,778 1,118 0,448 1,552 0,441 1,542 0,288 0,778 1,444 1,4	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	00	1.061	0.373	1.099	0.9650	1.0363	0.185	1.815	0.179	1.751	2.847	0.3512	0.820	0.388	5.306	0.136	1.864
0.949 0.338 0.975 0.9721 1.0281 0.276 1.669 3.078 0.3249 0.797 0.687 5.469 0.223 0.905 0.285 0.927 1.0252 0.321 1.679 0.313 1.687 3.173 0.3152 0.787 0.881 5.469 0.223 0.866 0.266 0.886 0.9776 1.0229 0.346 1.610 3.258 0.3069 0.778 0.811 5.539 0.283 0.802 0.223 0.896 0.9794 1.0210 0.382 1.618 0.374 1.585 3.336 0.2998 0.778 0.2935 0.779 0.881 5.594 0.283 0.802 0.235 0.817 0.9810 1.0194 0.406 1.594 3.472 0.2989 0.776 1.284 3.477 0.2989 0.776 1.284 3.472 0.2880 0.776 1.18 0.592 5.544 0.283 0.720 0.212 0.763 1.988 1.0	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	6	1.000	0.337	1.032	0.9693	1.0317	0.239	1.761	0.232	1.707	2.970	0.3367	0.808	0.547	5.393	0.184	1.816
0.905 0.285 0.927 0.9754 1.0252 0.321 1.679 0.313 1.637 3.173 0.3152 0.778 0.815 5.535 0.256 0.866 0.266 0.886 0.9776 1.0229 0.354 1.646 0.346 1.610 3.258 0.3069 0.778 0.922 5.594 0.283 0.832 0.249 0.850 0.9794 1.0210 0.382 1.618 0.374 1.585 3.336 0.2998 0.770 1.025 5.647 0.307 0.802 0.223 0.817 0.9810 1.0194 0.406 1.594 0.399 1.563 3.407 0.2938 0.770 1.118 5.696 0.328 0.750 0.212 0.789 0.9835 1.0168 0.448 1.552 0.440 1.566 3.547 0.288 0.776 1.282 5.781 0.389 0.772 0.212 0.763 0.9845 1.0168 0.448 1.552 0.440 1.5	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	10	0.949	0.308	0.975	0.9727	1.0281	0.284	1.716	0.276	1.669	3.078	0.3249	0.797	0.687	5.469	0.223	1.777
0.866 0.266 0.886 0.9776 1.0229 0.354 1.646 0.346 1.610 3.258 0.3069 0.778 0.922 5.594 0.283 0.832 0.249 0.850 0.9794 1.0210 0.382 1.618 0.374 1.585 3.336 0.2998 0.770 1.025 5.647 0.307 0.802 0.235 0.817 0.9810 1.0194 0.406 1.594 0.399 1.563 3.407 0.2935 0.770 1.018 5.647 0.307 0.775 0.223 0.789 0.9823 1.0180 0.428 1.572 0.441 1.544 3.472 0.2880 0.763 1.118 5.696 0.328 0.775 0.213 0.9845 1.0168 0.448 1.552 0.440 1.544 3.472 0.2880 0.763 1.188 5.647 0.304 0.778 0.213 0.9845 1.0168 0.448 1.552 0.440 1.546 3.649 0.	0.866 0.266 0.886 0.9776 1,0229 0.346 1,646 0.346 1,610 3.258 0.3069 0.778 0.922 5.594 0.283 0.832 0.249 0.850 0.9794 1,0210 0.382 1,618 0.374 1.585 3.336 0.2998 0.770 1,025 5.647 0.307 0.802 0.223 0.878 1,0194 0.406 1.594 0.399 1.563 3.407 0.2935 0.770 1.025 5.647 0.307 0.750 0.223 0.789 0.9823 1,0180 0.428 1.572 0.421 1.544 3.472 0.2889 0.776 1.18 5.697 0.337 0.770 0.212 0.789 0.9885 1,0188 0.448 1.552 0.440 1.526 3.532 0.2881 0.776 1.282 5.782 0.363 0.770 0.194 0.738 1.618 0.448 1.552 0.440 1.526 3.531 0.771	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		0.905	0.285	0.927	0.9754	1.0252	0.321	1.679	0.313	1.637	3.173	0.3152	0.787	0.811	5.535	0.256	1.744
0.832 0.249 0.850 0.9794 1.0210 0.382 1.618 0.374 1.585 3.336 0.2998 0.770 1.025 5.647 0.307 0.802 0.235 0.817 0.9810 1.0194 0.406 1.594 0.399 1.563 3.407 0.2935 0.763 1.118 5.696 0.328 0.775 0.223 0.789 0.9883 1.0180 0.428 1.572 0.421 1.544 3.472 0.2880 0.756 1.203 5.741 0.347 0.750 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.741 0.347 0.750 0.212 0.763 0.9845 1.0167 0.446 1.546 3.640 0.2787 0.744 1.356 5.820 0.378 0.688 0.187 0.0482 1.518 0.449 1.503 0.440 1.449 3.640 0.2747 0.	0.832 0.249 0.850 0.9794 1.0210 0.382 1.618 0.374 1.585 3.336 0.2998 0.770 1.025 5.647 0.307 0.802 0.282 0.283 0.783 1.0194 0.406 1.594 0.399 1.563 3.407 0.2935 0.770 1.118 5.696 0.328 0.775 0.223 0.789 0.9823 1.0168 0.448 1.552 0.440 1.526 3.532 0.2830 0.756 1.203 5.741 0.347 0.778 0.202 0.778 0.298 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.787 0.786 1.203 5.782 0.383 0.347 0.347 0.789 0.778 1.486 3.640 0.2787 0.784 1.286 0.388 0.387 0.389 0.478 1.481 3.472 0.2880 0.778 1.486 3.640 0.778 0.789 1.424 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>12</td><td>0.866</td><td>0.266</td><td>0.886</td><td>0.9776</td><td>1.0229</td><td>0.354</td><td>1.646</td><td>0.346</td><td>1.610</td><td>3,258</td><td>0.3069</td><td>0.778</td><td>0.922</td><td>5.594</td><td>0.283</td><td>1.717</td></td<>	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	12	0.866	0.266	0.886	0.9776	1.0229	0.354	1.646	0.346	1.610	3,258	0.3069	0.778	0.922	5.594	0.283	1.717
0.802 0.235 0.817 0.9810 1.0194 0.406 1.594 0.399 1.563 3.407 0.2935 0.763 1.118 5.696 0.328 0.775 0.223 0.789 0.9823 1.0180 0.428 1.572 0.421 1.544 3.472 0.2830 0.756 1.203 5.741 0.347 0.750 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 0.750 0.212 0.763 0.9845 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 0.770 0.194 0.778 0.985 1.0148 0.448 1.511 3.588 0.2747 0.739 1.424 5.856 0.391 0.688 0.187 0.698 0.9862 1.0140 0.490 1.483 3.689 0.2741 0.739 1.	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	13	0.832	0.249	0.850	0.9794	1.0210	0.382	1.618	0.374	1.585	3.336	0.2998	0.770	1.025	5.647	0.307	1.693
0.775 0.223 0.789 0.9823 1.0180 0.428 1.572 0.421 1.544 3.472 0.2880 0.756 1.203 5.741 0.347 0.750 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 0.750 0.212 0.763 0.9845 1.0168 0.448 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 0.707 0.194 0.718 0.9854 1.0148 0.445 1.549 3.640 0.2747 0.739 1.424 5.856 0.391 0.688 0.187 0.689 0.9086 1.0140 0.497 1.503 0.490 1.483 3.689 0.2747 0.729 1.487 5.891 0.403 0.675 0.180 0.6880 1.0113 0.510 1.490 0.504 1.470 3.735 0.2647 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0.775 0.223 0.789 0.9823 1.0180 0.428 1.572 0.421 1.544 3.472 0.2880 0.756 1.203 5.741 0.347 1.00720 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 1.00728 0.203 0.739 0.9845 1.0157 0.466 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 1.0077 0.194 0.718 0.9845 1.0140 0.497 1.503 0.490 1.483 3.689 0.2747 0.739 1.424 5.856 0.391 1.0088 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 1.0087 0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.487 5.891 0.403 1.0085 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2647 0.729 1.487 5.891 0.435 0.660 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2647 0.720 1.659 5.971 0.415 0.615 0.187 0.619 0.9892 1.0109 0.545 1.455 0.539 1.420 3.895 0.2567 0.712 1.759 6.031 0.451 1.0080 0.153 0.606 0.9896 1.0105 0.565 1.436 0.539 1.420 3.895 0.2567 0.712 1.759 6.031 0.451 1.0080 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.0090 0.153 0.606 0.9899 1.0109 0.556 1.436 0.549 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.0090 0.153 0.600 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0.153 0.1000 0	4	0.802	0.235	0.817	0.9810	1.0194	0.406	1.594	0.399	1.563	3.407	0.2935	0.763	1.118	5,696	0.328	1.672
0.750 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 0.728 0.203 0.739 0.9845 1.0157 0.466 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 0.707 0.194 0.718 0.9862 1.0148 0.482 1.511 3.588 0.2747 0.739 1.424 5.850 0.378 0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2747 0.739 1.424 5.850 0.391 0.671 0.180 0.680 0.9869 1.0113 0.510 1.490 0.504 1.470 3.735 0.2647 0.729 1.549 5.921 0.403 0.640 0.167 0.663 0.987 1.0119 0.534 1.448 3.819 0.2618 0.720 1.	0.750 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 1 0.728 0.203 0.739 0.9845 1.0157 0.466 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 1 0.707 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 1 0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 1 0.657 0.180 0.680 0.9862 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.729 1.549 5.921 0.415 1 0.640 0.167 0.647 0.187 0.687 1.0119 0.534 1.466 0.528 1.448 3.819 0.2647 0.724 1.605 5.951 0.425 1 0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 0.600 0.153 0.606 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.445 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.540 0.554 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.566 0.540 0.556 0.540 0.556 0	0.750 0.212 0.763 0.9835 1.0168 0.448 1.552 0.440 1.526 3.532 0.2831 0.750 1.282 5.782 0.363 1 0.728 0.203 0.739 0.9845 1.0157 0.466 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 1 0.707 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 1 0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 1 0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.487 5.891 0.403 1 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.489 3.889 0.2597 0.729 1.549 5.921 0.415 1 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2647 0.724 1.605 5.951 0.425 1 0.660 0.167 0.647 0.9882 1.0119 0.534 1.466 0.538 1.448 3.819 0.2547 0.712 1.759 0.031 0.434 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.549 1.429 3.895 0.2567 0.712 1.759 0.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.549 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1 0.600 0.159 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.549 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.540 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 1 0.600 0.153 0.606 0.9896 1.0106 0.565 1.436 0.540 1.420 0.3931 0.2544 0.708 1.806 0.056 0.459 1 0.600 0.159 0.150 0	15	0.775	0.223	0.789	0.9823	1.0180	0.428	1.572	0.421	1.544	3.472	0.2880	0.756	1.203	5.741	0.347	1.653
0.728 0.203 0.739 0.9845 1.0157 0.466 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 0.707 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 0.688 0.187 0.698 1.0140 0.497 1.503 0.490 1.483 3.689 0.2747 0.734 1.487 5.891 0.403 0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.724 1.487 5.891 0.445 0.653 0.167 0.640 0.664 0.528 1.448 3.819 0.2647 0.724 1.605 5.951 0.415 0.640 0.167 0.647 0.9887 1.0119 0.534 1.448 3.819 0.2518 0.720 1.659 5.971 0.44	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	0.728 0.203 0.739 0.9845 1.0157 0.466 1.534 0.458 1.511 3.588 0.2787 0.744 1.356 5.820 0.378 0.707 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 0.688 0.187 0.689 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2647 0.724 1.605 5.951 0.435 0.606 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 0.602 0.153 0.606 0.9892 1.0109 0.555 1.445 0.559 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.549 1.429 3.931 0.2544 0.708 1.806 6.056 0.459 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.569 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 0.600 0.159 0.600 0.159 0.800 0.150 0.800 0.150 0.800 0.150 0.800 0.150 0.150 0.150 0.150 0.150 0.150 0.150 0.150 0.150 0.150 0.150 0.150	91	0.750	0.212	0.763	0.9835	1,0168	0.448	1.552	0.440	1.526	3.532	0.2831	0.750	1.282	5.782	0.363	1.637
0.707 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.729 1.549 5.951 0.415 0.640 0.167 0.643 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 0.626 0.167 0.633 0.9887 1.0114 0.549 1.429 3.895 0.	0.707 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 0.671 0.187 0.689 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.403 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.729 1.549 5.951 0.415 0.640 0.167 0.647 0.9882 1.0114 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.971 0.415 0.626 0.167 0.647 0.9887 1.0114 0.545 1.438 3.895 0.2567 0	0.707 0.194 0.718 0.9854 1.0148 0.482 1.518 0.475 1.496 3.640 0.2747 0.739 1.424 5.856 0.391 0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2647 0.724 1.605 5.951 0.425 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 0.606 0.167 0.619 0.9892 1.0119 0.555 1.445 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 0.612 0.157 0.619 0.9892 1.0119 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 0.600 0.153 0.606 0.9896 1.0105 0.566 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 0.056 0.459 0.600 0.153 0.606 0.9896 1.0105 0.566 1.435 0.569 1.40 0.3991 0.2544 0.708 1.806 0.056 0.459 0.600 0.159 0.	17	0.728	0.203	0.739	0.9845	1.0157	0.466	1.534	0.458	1.511	3.588	0.2787	0.744	1.356	5.820	0.378	1.622
0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.415 0.640 0.167 0.647 0.549 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.971 0.434 0.626 0.167 0.633 0.9887 1.0114 0.545 1.458 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 0.612 0.157 0.619 0.9892 1.0109 0.5549 1.429 3.895 0.	0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 0.655 0.173 0.683 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2677 0.724 1.565 5.951 0.415 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2647 0.724 1.665 5.951 0.415 0.640 0.167 0.647 0.9882 1.0114 0.545 1.456 0.539 1.438 3.858 0.2592 0.716 1.759 6.036 0.943 0.612 0.157 0.619 0.9896 1.0109 0.555 1.429 3.895 0	0.688 0.187 0.698 0.9862 1.0140 0.497 1.503 0.490 1.483 3.689 0.2711 0.734 1.487 5.891 0.403 10.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.489 3.778 0.2647 0.724 1.605 5.951 0.425 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.724 1.605 5.979 0.434 0.626 0.162 0.163 0.9887 1.0114 0.545 1.445 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 0.601 0.153 0.606 0.98892 1.0109 0.555 1.445 0.539 1.420 3.895 0.2567 0.712 1.759 6.031 0.451 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.409 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.409 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.569 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.409 0.600 0.153 0.600 0.443 0.708 1.806 0.056 0.459 1.409 0.600 0.159 0.708 1.806 0.056 0.459 1.409 0.600 0.159 0.708 1.806 0.056 0.459 1.409 0.600 0.159 0.708 1.806 0.056 0.459 1.409 0.600 0.159 0.708 1.806 0.056 0.459 1.409 0.600 0.159 0.708 1.806 0.056 0.459 1.409 0.600 0.159 0.708 1.806 0.056 0.459 1.409 0.600 0.159 0.708	18	0.707	0.194	0.718	0.9854	1.0148	0.482	1.518	0.475	1.496	3.640	0.2747	0.739	1.424	5.856	0.391	1.608
0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451	0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 0.665 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 0.640 0.167 0.647 0.0882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2648 0.724 1.605 5.979 0.434 0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.429 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.429 0.600 0.153 0.606 0.9896 1.0105 0.565 0.434 0.708 1.806 6.056 0.459 1.420 0.600 0.153 0.606 0.9896 1.0105 0.565 0.434 0.708 1.806 0.708 1.806 0.959 0.459 0.600 0.153 0.606 0.9896	0.671 0.180 0.680 0.9869 1.0133 0.510 1.490 0.504 1.470 3.735 0.2677 0.729 1.549 5.921 0.415 0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.409 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.409 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.409 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1.409 0.159 0.	61	0.688	0.187	869.0	0.9862	1.0140	0.497	1.503	0.490	1.483	3.689	0.2711	0.734	1.487	5.891	0.403	1.597
0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 1 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.626 0.162 0.633 0.9887 1.0114 0.545 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1	0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 1 0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 0.483 0.565 0.489 0.708 0.565 0.459 0.708 0.600 0.153 0.600 0.153 0.600 0.9896 0.9896 0.9896 0.9896 0.555 0.435 0.400 0.559 0.599 0.559 0.559 0.559 0.559 0.559 0.559 0.559 0.559 0.559 0.559 0.	0.655 0.173 0.663 0.9876 1.0126 0.523 1.477 0.516 1.459 3.778 0.2647 0.724 1.605 5.951 0.425 1 0.647 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.626 0.167 0.647 0.9882 1.0119 0.555 1.445 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.539 1.429 3.895 0.2567 0.712 1.759 6.031 0.443 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.567 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.567 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.567 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.567	20	0.671	0.180	0.680	6986.0	1.0133	0.510	1.490	0.504	1.470	3.735	0.2677	0.729	1.549	5.921	0.415	1.585
0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1	0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1	0.640 0.167 0.647 0.9882 1.0119 0.534 1.466 0.528 1.448 3.819 0.2618 0.720 1.659 5.979 0.434 1 0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 $a_1 = \frac{3}{\sqrt{n}} a_1 = \frac{3}{\sqrt{4n-3}} a_2 = \frac{3}{\sqrt{4n-3}} a_3 = \frac{3}{\sqrt{4n-3}} a_4 = \frac{3}{4n$	21	0.655	0.173	0.663	0.9876	1.0126	0.523	1.477	0.516	1.459	3.778	0.2647	0.724	1.605	5.951	0.425	1.575
0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1	0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 1 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 $A = \frac{3}{12}$ $A_1 = \frac{3}{12}$ $A_2 = \frac{3}{12}$ $A_3 = \frac{4(n-1)}{4}$	0.626 0.162 0.633 0.9887 1.0114 0.545 1.455 0.539 1.438 3.858 0.2592 0.716 1.710 6.006 0.443 0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 10.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 11.000 0.153 0.606 0.9896 1.0105 $A = \frac{3}{\sqrt{n}} A_1 = \frac{3}{c_4\sqrt{n}} c_4 \triangleq \frac{4(n-1)}{4n-3}$ $B_1 = 1 - \frac{3}{c_4\sqrt{2(n-1)}} B_4 = 1 + \frac{3}{c_4\sqrt{2(n-1)}}$ $B_2 = 1 - \frac{3}{c_4\sqrt{2(n-1)}} B_4 = 1 + \frac{3}{c_4\sqrt{2(n-1)}}$	22	0.640	0.167	0.647	0.9882	1.0119	0.534	1,466	0.528	1.448	3.819	0.2618	0.720	1.659	5.979	0.434	1.566
0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451	0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 $A_1 = \frac{3}{12}$ $A_1 = \frac{3}{12}$ $A_2 = \frac{3}{12}$ $A_3 = \frac{3}{12}$ $A_4 = \frac{3}{12}$ A_4	0.612 0.157 0.619 0.9892 1.0109 0.555 1.445 0.549 1.429 3.895 0.2567 0.712 1.759 6.031 0.451 1 0.600 0.153 0.606 0.9896 1.0105 0.565 1.436 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 0.600 0.153 0.606 0.9896 1.0105 $A = \frac{3}{\sqrt{n}} A_3 = \frac{3}{c_4\sqrt{n}} c_4 \approx \frac{4(n-1)}{4n-3}$ $B_3 = 1 - \frac{3}{c_4\sqrt{2(n-1)}} B_4 = 1 + \frac{3}{c_4\sqrt{2(n-1)}}$	23	0.626	0.162	0.633	0.9887	1.0114	0.545	1.455	0.539	1.438	3.858	0.2592	0.716	1.710	900.9	0,443	1.557
Car 4 1941 1941 1941 1941 1941 1941 1941 1	0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 $A = \frac{3}{12} A_1 = \frac{3}{12} c_4 \cong \frac{4(n-1)}{4n-3}$	0.600 0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459 1 $A = \frac{3}{\sqrt{n}} A_3 = \frac{3}{c_4 \sqrt{n}} c_4 \triangleq \frac{4(n-1)}{4n-3}$ $B_3 = 1 - \frac{3}{c_4 \sqrt{2(n-1)}} B_4 = 1 + \frac{3}{c_4 \sqrt{2(n-1)}}$	24	0.612	0.157	6190	0 9892	1,0109	0.555	1.445	0.549	1.429	3.895	0.2567	0.712	1.759	6.031	0.451	1.548
0.153 0.606 0.9896 1.0105 0.565 1.435 0.559 1.420 3.931 0.2544 0.708 1.806 6.056 0.459	$A = \frac{3}{12}$ $A_3 = \frac{3}{12}$ $C_4 \cong$	$A = \frac{3}{\sqrt{n}} A_3 = \frac{3}{c_4 \sqrt{n}} c_4 \cong \frac{4(n-1)}{4n-1}$ $B_3 = 1 - \frac{3}{c_4 \sqrt{2(n-1)}} B_4 = 1 + \frac{3}{c_4 \sqrt{2(n-1)}}$ $B_4 = 0 - \frac{3}{a_4 \sqrt{2(n-1)}} = 0 - \frac{3}{a_4$	25	0.600	0.153	909.0	96860	1.0105	0.565	1.435	0.559	1.420	3.931	0.2544	0.708	1.806	6.056	0.459	1.541
√n C4√n 3		3						B	1	2(n-1)	124 = 1	C4 1/2(n-	=						
\sqrt{n} $c_4 \sqrt{n}$ $4n - 1$ $-\frac{3}{c_4 \sqrt{2(n-1)}} B_4 = 1 + \frac{3}{c_4 \sqrt{2(n-1)}}$	$c_A\sqrt{2(n-1)} B_A = 1 + \frac{1}{c_A\sqrt{2(n-1)}}$	THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.						2	- 73 ==	3	$B_k = C_A +$		1:						

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Faculty of Management and Social Sciences
Department of Logistics & Transport
BSc Hons in Logistics and Transportation
Course CODE: COM551

Year 2 Semester II REPEAT Examination E-Commerce – LTEC2210

- This paper consists of SEVEN (07) questions on THREE (03) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2020.08.27 Pass mark: 50% Time: 02 Hours

Question 01(Compulsory)

(a) Explain 'Internet' with use of a Diagram. (04 Marks)

(b) What is E Commerce? Explain. (04 marks)

(c) Explain Hourglass Model with use of a Diagram. (12 marks)

(d) List FIVE Advantages of Internet. (05 marks)

Question 02

(a) What is Business Plan? Explain (03 Marks)

(b) Write FOUR Business Models in emerging e- commerce areas. Explain each.

(c) Write THREE examples for B-B business model. (16 Marks) (06 Marks)

Question 03

(a) Explain FIVE actions that you can do to protect devices from malware attacks. (10 Marks)



(b) Write SIX information which is printed in the Digital Certificate.

(12 Marks)

(c) What is E Business? Explain

(03 Marks)

Question 04

(a) Write 3 Advantages of Credit Cards.

(03 Marks)

(b) What is Credit card Fraud? Explain

(05 Marks)

- (c) Write FOUR actions that you can follow, in order to prevent from Credit card Fraud. (08 Marks)
- (d) Name THREE Popular websites which you can use to perform E Commerce Transactions. (09 Marks)

Question 05

(a) Write THREE important concepts which helps to understand the Internet.

(09 Marks)

(b) Name First THREE Stages in Systems Development Life cycle.

(09 Marks)

(c) Who is a Software Engineer? Explain.

(03 Marks)

(d) What is WWW? Explain

(04 Marks)

Question 06

Write 10 important facts to be considered when designing a web site for a Primary school. (25 Marks)



Ouestion 0/	O	uestion	07
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(e) Cryptography

Write Short r	otes about following terms given. You may use diagrams in your notes
(a) Intran	et
(b) Social	Media
(c) Spywa	re
(d) Cyber	security

----- END OF THE QUESTION PAPER-----

(5*5 Marks)



Year 2 Semester II Semester End Examination Quality Management – LTQM2215

- This paper consists of SEVEN (07) questions on SEVEN (07) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legible.
- · Supporting documents are attached.

Date: 2020.03.11

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

(a) Define the term quality

(05 Marks)

(b) "Quality has many aspects of costs even though it is said that quality is free".

Explain this argument in brief with appropriate examples. (20 Marks)

Question 02

Toyota production system (TPS) is a world popular quality management practitioner. Explain its quality culture emphasizing various practices inculcated in the culture ensuring customer satisfaction. (25 Marks)



Question 03

Having an Environmental Management System (EMS) in an organization is a major quality requirement today. Discuss in depth, major environmental threats to the world today and strategies to mitigate negative environmental impacts by an organization in the modern industrial setting. (25 Marks)

Question 04

Writes short notes on five (05) of the below mentioned topics

- (a) SERVQUAL Framework
- (b) JIT system
- (c) 5why method
- (d) Fish bone diagram
- (e) Brain-storming
- (f) A standard

(05* 05 Marks)

Question 05

- (a) Explain six (06) process affecters with an example related to a warehouse. (12 Marks)
- (b) Draw a process map for below mentioned steps in a process.
 - (i) Initial customer inquiry
 - (ii) Providing info.
 - (iii) Wait for customer feedback (48 hrs)
 - (iv) Purchase intention? Yes/No
 - (v) Assist providing specific info. / record customers' info for future follow up
 - (vi) Send the order info. to warehouse services for confirmation (20 minutes)
 - (vii) Order confirmation Yes/No
 - (viii) Create sales order
 - (ix) Receive payments

(13 Marks)



Question 06

(a) The data below are 20 samples taken from a filling process of a Whey Protein manufacturing firm. For each sample the mean and the standard deviation are calculated. Weight of whey protein packet is taken as the important quality characteristic.

Table 6.01: Sample data

Sample		Sai	mple Val	ues		Mean	Standard
no.	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5		Deviation
1	504	499	505	505	499	502.4	3.130
2	503	505	505	495	499		
3	501	502	497	504	505	501.8	3.114
4	500	500	499	503	504	501.2	2.168
5	499	504	499	496	504	500.4	3.507
6	496	505	505	495	500		
7	499	501	498	503	499	500.0	2.000
8	499	503	498	495	496	498.2	3.114
9	501	499	503	505	502	502.0	2.236
10	498	502	498	505	496	499.8	3.633
11	498	501	499	496	496		
12	504	502	504	495	498	500.6	3.975
13	501	499	500	504	495	499.8	3.271
14	501	502	501	501	504	501.8	1.304
15	500	498	503	503	505		
16	503	505	498	503	496	501.0	3.808
17	505	500	500	504	498	501.4	2.966
18	505	495	497	505	495		
19	500	497	501	495	497	498.0	2.449
20	503	503	497	501	500	500.8	2.490

(i) Fill the blanks in the above table

(05 Marks)



(ii) C	alculate \bar{S} for the above data.	(02 Marks)
(iii)	Calculate 3σ trial control limits for 's' chart.	(05 Marks)
(iv)	Discuss the validity of the trial control limits for s charts.	(02 Marks)
(v) C	alculate $ar{ar{X}}$ for the above data.	(02 Marks)
(vi)	Calculate 3σ trial control limits for \bar{X} charts.	(05 Marks)
(vii)	Discuss the validity of the trial control limits.	(02 Marks)
(viii)	If trial control limits are invalid explain how to re-calculate it.	(02 Marks)
Ques	stion 07	
(a)	Find the correct answer for following MCQ questions.	(05 Marks)
1)	Statistical Process Control helps determine (A) If assignable causes are disturbing the process (B) If vendor performance is falling (C) If customers are happy (D) If customers are motivated	
2)	Drawing control charts requires (A) Adjusting the machines (B) Calculation of statistics from data (C) Teamwork training of workers (D) Top management involvement	
3)	A Pareto chart shows (A) That the process is in control (B) The vital few from the trivial many (C) Process capability (D) A line drawn as production proceeds	



- 4) P Charts are based on
 - (A) Binomial Distribution
 - (B) Normal Distribution
 - (C) Poison Distribution
 - (D) Hypergeometric distribution
- 5) An assignable variation may be due to
 - (A) Variation in raw materials
 - (B) Limitations of the process
 - (C) Variation in skills of the employees
 - (D) All of the above
- (b) Briefly explain the manufacturer's risk and consumer's risk in deciding control limits of the Shewart control charts. (02 Marks)
- (c) Discuss what is meant by Trial Control Limits

(04 Marks)

(d) The data given below are 20 samples taken from IC manufacturing process. Number of defective ICs produced each day over 20 days given below. Suppose that the size of the random sample is varying.



Table 7.01: Sample data

Sample No.	No. of defectives	Sample Size	Probability of defectives
1	14	50	
2	2	30	
3	12	50	
4	6	30	
5	13	50	
6	13	50	
7	8	30	
8	6	30	
9	7	40	
10	4	20	
11	1	20	
12	4	30	
13	10	50	
14	14	60	
15	13	60	
16	12	50	
17	3	20	
18	15	60	
19	15	60	
20	12	50	



(i) Calculate the probability of defective for 20 days. (Accuracy up	to 02 decimal
places)	(04 Marks)
(ii) Calculate \bar{P}	(01 Marks)
(iii) Write the distribution for the number of defective diodes.	(02 Marks)
(iv) Calculate 3σ control limits for p chart. (use average sample s	size method)
	(05 Marks)
(v) Discuss the validity of the trial control limits.	(02 Marks)
END OF THE QUESTION PAPER	

Factors for Constructing Variables Control Charts

		C	hart for	Chart for Averages		Chart	for Stan	Chart for Standard Deviations	viations				Cha	hart for Ranges	mges	
Obsamations	-	Factors for	7	Facto	Factors for					Fact	Factors for					
in	Co	Control Limits	iits	Cento	Center Line	Facto	rs for (Factors for Control Limits	imits	Cent	Center Line	_	Factors	for Cont	rs for Control Limits	56
Sample, n	A	A	A	°¢	1/c4	B_3	B_4	B_5	B_6	d_2	1/1/2	d_3	D_1	D_2	D_3	D_{\downarrow}
2	2.121	1.880	2.659	0.7979	1.2533	0	3.267	0	2.606	1.128	0.8865	0.853	0	3.686	0	3.267
33	1.732	1.023	1.954	0.8862	1.1284	0	2.568	0	2.276	1.693	0.5907	0.888	0	4.358	0	2.574
4	1.500	0.729	1.628	0.9213	1.0854	0	2.266	0	2.088	2.059	0.4857	0.880	0	4.698	0	2.282
5	1.342	0.577	1.427	0.9400	1.0638	0	2.089	0	1.964	2326	0.4299	0.864	0	4.918	0	2.114
6	1.225	0.483	1.287	0.9515	1.0510	0.030	1.970	0.029	1.874	2.534	0.3946	0.848	0	5.078	0	2.004
7	1.134	0.419	1.182	0.9594	1.0423	0.118	1.882	0.113	1.806	2.704	0.3698	0.833	0.204	5.204	0.076	1.924
~	1.061	0.373	1.099	0.9650	1,0363	0.185	1.815	0.179	1.751	2.847	0.3512	0.820	0.388	5.306	0.136	1.864
9	1.000	0.337	1.032	0.9693	1.0317	0.239	1.761	0.232	1.707	2.970	0.3367	0.808	0.547	5.393	0.184	1.816
10 (0.949	0.308	0.975	0.9727	1.0281	0.284	1.716	0.276	1.669	3.078	0.3249	0.797	0.687	5.469	0.223	1.777
= (0.905	0.285	0.927	0.9754	1.0252	0.321	1.679	0.313	1.637	3.173	0.3152	0.787	0.811	5.535	0.256	1.744
12 (0.866	0.266	0.886	0.9776	1.0229	0.354	1.646	0.346	1.610	3.258	0.3069	0.778	0.922	5.594	0.283	1.717
13 (0.832	0.249	0.850	0.9794	1.0210	0.382	1.618	0.374	1.585	3.336	0.2998	0.770	1.025	5.647	0.307	1.693
14	0.802	0.235	0.817	0.9810	1.0194	0.406	1.594	0.399	1.563	3.407	0.2935	0.763	1.118	5.696	0.328	1.672
15 (0.775	0.223	0.789	0.9823	1.0180	0.428	1.572	0.421	1.544	3.472	0.2880	0.756	1.203	5.741	0.347	1.653
16 (0.750	0.212	0.763	0.9835	1.0168	0.448	1.552	0.440	1.526	3.532	0.2831	0.750	1.282	5.782	0.363	1.637
17 (0.728	0.203	0.739	0.9845	1.0157	0.466	1.534	0.458	1.511	3.588	0.2787	0.744	1.356	5.820	0.378	1.622
18 (0.707	0.194	0.718	0.9854	1.0148	0.482	1.518	0.475	1.496	3.640	0.2747	0.739	1.424	5.856	0.391	1.608
19 (0.688	0.187	0.698	0.9862	1.0140	0.497	1.503	0.490	1.483	3.689	0.2711	0.734	1.487	5.891	0.403	1.597
20 (1.671	0.180	0.680	0.9869	1.0133	0.510	1.490	0.504	1.470	3.735	0.2677	0.729	1.549	5.921	0.415	1.585
21 ().655	0.173	0.663	0.9876	1.0126	0.523	1.477	0.516	1.459	3.778	0.2647	0.724	1.605	5.951	0.425	1.575
22 (0.640	0.167	0.647	0.9882	1.0119	0.534	1.466	0.528	1.448	3.819	0.2618	0.720	1.659	5.979	0.434	1.566
23 ().626	0.162	0.633	0.9887	1.0114	0.545	1.455	0.539	1.438	3.858	0.2592	0.716	1.710	6.006	0.443	1.557
24 0).612	0.157	0.619	0.9892	1.0109	0.555	1.445	0.549	1.429	3.895	0.2567	0.712	1.759	6.031	0.451	1.548
25	0.600	0.153	0.606	0.9896	0105	0.565	1.435	0.559	1420	3.93	02544	0.708	308	9503	0.459	1541



Year 2 Semester II

Semester End Examination

Port Loading and Unloading Techniques - LTPT2213

- This paper consists of SEVEN (07) questions on THREE (03) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2020.03.06 Pass mark: 50% Time: 02 Hours

Question 01(Compulsory)

Describe following abbreviations used in Port Operations

- 1) LOA
- 2) ETA
- 3) ETB
- 4) ETC
- 5) JCT

- 6) SAGT
- 7) CICT
- 8) GP
- 9) PVQ
- 10) ECT

- 11) CFS
- 12) EIR
- 13) SWL
- 14) PTI
- 15) OOG

- 20) IMOne
- 17) LO-LO
- 18) RTG
- 19) RMG
- 20 ASC

- 21) TMS
- 22) ISPS
- 23) CSI
- 24) ISO
- 25) STS Gantry Crane

(25 Marks)

Question 02

(a) Name different types of RO -RO Vessles?

(04 Marks)

- (b) What are the different types of Terminal Planning required for a RO RO Terminal? (05 Marks)
- (c) Name RO-RO terminal facilities?

(04 Marks)

- (d) What are the human resoures required for Automobile Handing RO-RO Terminal? (05 Marks)
- (e) List out safe operation best practices adopted for safe damage/accident free operation? (05 Marks)



(f) Give two examples for Direct & Indirect Operation for RO-RO Automobile handling? (02 Marks)

Question 03

(a) What are the acitivities involed in Direct and Indirect Terminal Operation?

(04 Marks)

(b) Name five different cargo handling terminals in a port?

(05 Marks)

(c) Select two and give examples for Direct and Indirect Terminal Operation?

(04 Marks)

- (i) LPG Handling
- (ii) Vehicle Handling (RO RO Operation)
- (iii) Dry Bulk Cement Handling
- (iv) Cruise Passengers Handling
- (d) Name four container terminals in the Port of Colomobo?

(04 Marks)

(e) Name four different Liquid BULK cargo handling terminals?

(04 Marks)

(f) List Liquid Bulk Terminal facilities?

(04 Marks)

Question 04

(a) Name different ship based cargo handing equipments?

(04 Marks)

(b) Name different shore based cargo handing equipments & gears?

(10 Marks)

(c) How to improve ship discharing and loading operation Hook Cycle Time?

(03 Marks)

(d) What are the factors that affect quay transfer operation Cycle Time?

(03 Marks)

(e) What is POSCOD?

(05 Marks)

Question 05

(a) What are the main terminal planning requirments for a container terminal?

(06 Marks)

(b) Name four sizes/generations of STS Ship to Shore Gantry Cranes?



	(04 Marks)
(c) Name four spreader attachementss that fix to STS Gantry Crane?	(04 Marks)
(d) What are the equipments used for Quay Transfer Operation?	,
(e) What are the equipments used for Storage Stacking Operation?	(03 Marks)
	(04 Marks)
(f) List different operational job titiles usend in a Container Terminal?	(04 Marks)
Question 06	
(a) List out modern cruise terminal facilities that should be available in a cruise passengers?	port to handle (10 Marks)
(b) Name four different Dry BULK cargo handling terminals?	(04 Marks)
(c) List Dry Bulk Terminal facilities?	(04 Marks)
(d) Name seven differnct types of ISCo Containers?	(07 Marks)
Question 07	
(a) Draw an overview of a container terminal operation import/Export/Transhipment operation (flow chart)?	and highlight
	(10 Marks)
(b) Name Automated Terminal Handling Equipments?	(05 Marks)
(c) Name differenct category of staff required for container terminal si	hip operaton? (05 Marks)
(d) Name STS ship to shore gantry crane characteristics?	(00 Marks)
	(05 Marks)
END OF THE QUESTION PAPER	





Year 2 Semester II Semester End Examination E-Commerce – LTEC2210

- This paper consists of SEVEN (07) questions on THREE (03) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2020.03.04 Pass mark: 50% Time: 02 Hours

Question 01(Compulsory)

(a) Explain 'Client Server Computing' with use of a Diagram.

(04 Marks)

(b) What is VPN? Explain.

(04 marks)

(c) Explain Hourglass Model with use of a Diagram.

(12 marks)

(d) List FIVE Internet Service Providers in Sri Lanka.

(05 marks)

Question 02

(a) What is Business Model? Explain

(03 Marks)

(b) Write EIGHT Key Elements in a business model. Explain each.

(16 Marks)

(c) Write THREE examples for B-C business model.

(06 Marks)



Question 03

(a) Explain FIVE Security threats in cyber environment. (10 Marks)
 (b) Explain SIX key dimensions in E Commerce security. (12 Marks)
 (c) What is Digital Certificate? Explain (03 Marks)

Question 04

- (a) "Credit cards are known as most convenient payment method in E Commerce transactions.' Do you agree? If/If not, give reasons for your answer. (03 Marks)
- (b) Show how Online Payment transaction works, using a diagram. (05 Marks)
- (c) Compare **CASH** and **CREDIT CARD**. Write Four points each in the comparison. (08 Marks)
- (d) Explain THREE methods used in E Commerce transactions.(Except Cash and Credit card) (09 Marks)

Question 05

(a) What is Systems Development Life Cycle? Explain.	(04 Marks)
(b) Name SEVEN Stages in Systems Development Life cycle.	(14 Marks)
(c) What is Prototyping? Explain.	(03 Marks)
(d) Write TWO Advantages and TWO Disadvantages in Prototyping.	(04 Marks)



Question 06

Write HTML Codes to design the below interface.

Note: The title, "Online Cake ordering form" is not centered.

Online Cake Ordering Form	
Client name: Address	
Select your order:	
Party Cake Cup Cake	
Thank you for your order!	
	(25 Marks)
Question 07	
Write Short notes about following terms given. You may use	e diagrams in your notes.
(a) Extranet	
(b) WhatsApp	
(c) Fiber Optic Cable	
(d) Cyber Crime	
(e) Encryption	(5*5 Marks)
END OF THE QUESTION PAPER	Q



Year 2 Semester II Semester End Examination Transport Economics – LTTE2211

- This paper consists of SEVEN (07) questions on SIX (06) pages.
- Answer FOUR questions including <u>Question 01</u>
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own
 decision, but clearly state it on the script.
- Write legible.

Date: 2020.03.02

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

TRANSATLANTIC FARES

The reduction in air fares has led to a significant increase in demand. From the mid-1990s the 'low cost airlines 'came to the fore. South West Airlines, easyJet and Ryanair led the field in the United States and the United Kingdom. But nearly 20 years earlier the same price elasticity effect had occurred when the reduction in transatlantic air fares led to a great increase in demand.

A large part of the demand was from people who had never before flown on that route because they considered the fares were too high. When the transatlantic fares war began in 1979 with the start of Laker Airways'Skytrain service, the only fares available were standard fares and some limited discount fares. In 1939 Pan Am provided a dining room, sleeping berths and a honeymoon suite on its flying boat service from New



York to Southampton. But it took 24 hours and cost £140. Even in the 1960s, the airlines continued to cater for the higher income groups and transatlantic flying was for business people and the wealthy private traveler, not for the middle-income family or the low-income student. 1980 saw thousands of new British travelers preparing to fly to America on a trip which 30 years previously they could not have afforded.

Table 1.1 shows how transatlantic fares have fallen. In 2004 prices the single fare by BOAC from London to New York in 1950 was £1500 (£125 in 1950 prices). The Lakerairways price in 1980 was £50 (or £600 in 2004 prices). The low fares market had begun. Airlines bought larger aircraft (eg the Boeing 747 'jumbo') that they had to fill. Thus the fares were considerably lower in real terms in 2004 compared with 50 years previously. Just as important, the fares to earnings and income elasticity ratio enabled a wide market to develop, and the impact of price elasticity in the low-cost airline market is clear (Tables 1.1 and 1.2).

The relationship to wages emphasizes the fact that in 1950 few could afford these air fares and so demand was restricted, but in 1980 this new passenger market was opened up and has continued into the 2000's. The later developments in the battle for transatlantic passengers involved the bigger airlines in a price war with new low fare operators. Thus, the trend begun by Laker Airways in 1980 continued to the present with airlines entering and leaving (eg People Express; Piedmont) the market and other major airlines introducing a low fare policy for economy class travelers. The major 'conventional' airlines in the transatlantic market from Great Britain to the USA – British Airways, United, Delta, Virgin and American Airlines – have all tried to retain their share of the highly elastic tourist market.



Despite recent agreements between some airlines (eg KLM-Northwest; British Airways – American Airlines) and the creation of 'alliances' (eg One World, Star Alliance, Sky Team) or code share partnerships (eg KLM/Northwest; South African/Delta/Lufthansa) there still remains fierce competition to attract new travelers and to attract those who already travel with other operators.

Table 1. Single transatlantic fares 1950–2004

Year	Route/airline	Quoted fare then	Equivalent cost 2004 prices*
1950	London/New York BOAC	125	1549
1960	London/New York BOAC	91	774
1970	London/New York BOAC	87	497
1980	Gatwick/Miami Laker	50	82
1997	London/New York BA/ Virgin/AA (average)	165	196
2004	London/New York	110-250	180

^{*}Adjusted for inflation

Sources: American Airlines, Virgin Atlantic Airways, British Airways. Laker Airways, author's archive, National Earnings Survey (2004).

Table 1:2 Real Cost of Air Travel

	Air fare (£)	Weekly wage average (£)	Ratio to wages
1950	125	10	12.5:1
1980	50	100	0.5:1
2003	225	560	0.4:1

Source: Department for Employment, National Earnings Survey (NES, 1996, 2004)



Discuss the economic impact of the transatlantic fares' changes in the airlines and its price volatility based on the above extract. (25 Marks)

Question 02

Table: 1 - Elasticity Co-efficient of Bus Transportation of Kenya.

	Short run	Long run
Demand for Bus Transportation (PED)	-0.16	-0.43
Bus traffic with respect to petrol price	-1.02	-0.36
Bus traffic with respect to Per Capita GDP	+0.75	+1.5
Bus traffic with respect to public bus ticket price	+0.5	+1.02

- (a) Briefly Explain the Transport Demand with the aid of an example (05 Marks)
- (b) Identify the determinants of price elasticity of transport demand (05 Marks)
- (c) What can you deduce from the coefficient of price elasticity demand of Bus Transportation. (05 Marks)
- (d) Explain the overall behavior of Bus traffic based on the information of the above table. (10 marks)

Question 03

- (a) Explain the term derived demand in Bus transportation with the aid of an example. (05 Marks)
- (b) Briefly explain how to calculate the Cargo Unit Transport Cost of an airline with the aid of an example. (05 Marks)
- (c) Briefly explain the deference between Potential Transport Demand and Realized transport demand. (05 Marks)



(d) "Growth factors of transport demand is crucial for the economic development of a third world country like Sri Lanka" Analyze the statement by highlighting the significance of the growth factors transport demand (10 Marks)

Question 04

- (a) "Transportation is directly the outcome of the functions of production and consumption" Briefly explain the statement with the aid of an example.

 (05 Marks)
- (b) Identify the Transport **Demand Patterns** to be influenced by transport operation of a country.

 (05 Marks)
- (c) Briefly explain the **First-Degree Price Discrimination** with the aid of an example from the Transport Industry. (07 Marks)
- (d) Explain that **Third Degree Price Discrimination** with reference to the airline Industry. You may quote your own examples to support your answer.

 (08 Marks)

Question 05

- (a) Explain what are the factors that involve in setting up an Airfreight rate and Identify the Freight Surcharges in airline Industry. (05 Marks)
- (b) Briefly explain the factors determining transport demand with the aid of an examples. (10 Marks)
- (c) "Improving transport Infrastructure is a solution for the enduring challenge of Transport Congestion". Discuss the statement with the suitable examples on your own. (10 Marks)

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Faculty of Management and Social Sciences
Department of Logistics & Transport
BSc Hons in Logistics and Transportation
Course CODE: COM551

Beyond A Graduate

Question: 06

(a) Briefly explain the term of **static capacity** and **dynamic capacity** in transportation.

(05 Marks)

hilling

(b) Briefly explain the term of **optimal capacity** and **normal capacity** in transportation. (05 Marks)

(c) Briefly explain the determinants of transport supply of elasticity with the aid of an example. (05 Marks)

(d) Analyze the economic impact of a change in a situation from short term to long term increase in bus transport demand of developing country.

(10 Marks)

Question 07

Write short notes on any <u>FIVE (05)</u> of the followings.

- (a) Induce Demand in Transportation
- (b) Budget Carriers in Airline
- (c) Incoterms (CIF)
- (d) Payback Period of a transport mode
- (e) Net Present Value
- (f) Competitive Pricing
- (g) Transport Supply
- (h) Off peak load Pricing
- (i) Transport Supply
- (j) Sea Freight Rebate

(5*5 Marks)

-----END OF THE QUESTION PAPER-----



Year 2 Semester II Semester End Examination Human Resource Management – LTHR2212

- This paper consists of SEVEN (07) questions on FIVE (05) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- · Write legibly.

Date: 2020.02.28

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

Case study - The super management trainee

Kathy had been an employment office manager for just ten weeks. She had spent the first weeks acquainting herself with office procedures and trying to get a feel for the needs of the employment office. The employment office handles recruiting and selecting for a large corporation, employing about 10000 persons. It screens about 10000 people a year and hires 10-15 percent of those screened.

Kathy noticed a position requisition for a management trainee for one of the offices on the south side of the city. This requisition had been in the file for six weeks and had remained unfilled. Kathy took it upon herself to fill the requisition as soon as possible. Two days later, a very likely looking candidate for the position was referred to her from testing.

The individual who had been referred to Kathy was Wilson, an aggressive young man of age 22. He had not finished college but had come within one semester of graduating.



When questioned, Wilson revealed the he had quit school to support his terminally ill mother after his father had died of cancer. Wilson was an impressive young man his firm handshake, pleasant smile and quick wit impressed Kathy immediately. His scores on the aptitude test were not as high as Kathy would have liked but she felt that personal qualities exhibited by Wilson overcome these difficulties. Kathy felt it was obvious that this individual was the kind of person who would make a good manager and thought no need to contact Wilson's former employers. Kathy sent Wilson to the manager of the office where the position was located. Shortly thereafter, Kathy received a phone call from the manager indicating that he shared her high opinion of this young man and Wilson was hired.

Three weeks later, Kathy received a telephone call from the manager. The manager most angrily suggested Kathy ought to be a more careful in the kinds of candidates chosen to be considered as management trainee prospects. Wilson had been discovered stealing from the company and had been fired last week.

Kathy was mystified and amazed that she could have misjudged someone so badly. She decided to check with former employers and found that the reasons why he had left the college were not true at all. She also found out that Wilson's father and mother were alive and well. Kathy spent a rather miserable day reflecting on the difficulty of selecting good employees.

- (a) Identify and figure out the selection process applied by the company.
- (b) Critically evaluate the selection process.
- (c) What are the areas to be improved by Kathy as employment office manager? How can they be prevented in future?

(25 Marks)

Source: Mathis and Jackson cited in Opatha 2012.



Question 02

Organizations are the most inventive social arrangements and consist of different skills and interests.

Briefly explain managerial levels in organizations quoting example for each		
Level.	(03 marks)	
Compare and contrast efficiency and effectiveness.	(04 marks)	
Discuss the importance of Human resource management.	(06 marks)	
Analyse line and staff positions in the organizations.	(06 marks)	
"HR Manager is a staff manager". Elucidate this statement.	(06 marks)	
	Level. Compare and contrast efficiency and effectiveness. Discuss the importance of Human resource management. Analyse line and staff positions in the organizations.	

Question 03

Job design affects efficiency, effectiveness, job satisfaction and health of the job holder.

(a)	What is Job Design?	(03 marks)
(b)	Explain three advantages of Job Rotation.	(03 marks)
(c)	Compare and contrast Job Enlargement and Job Enrichment.	(05 marks)
(d)	"Mainly there are two elements of Job Designing". Discuss	(07 marks)
(e)	Prepare Job Description and Person Specification for Logistic N	Manager.
		(07 marks)
		(07 marks)



Question 04

Human Resource Planning/Workforce Planning is a core process of human resource management that is shaped by the organizational strategy.

(a) What is Human Resource Planning? (03 marks)(b) Explain link between Human Resource Planning and Business Planning.

(04 marks)

(c) Briefly explain the factors affecting to Human Resource Planning.

(05 marks)

(d) How do you estimate HR supply?

(06 marks)

(e) If it is shortage condition of workforce in the organization, what are the strategies to be taken? (07 marks)

Question 05

Recruitment is a very vital HR function and a crucial employee resourcing strategy which leads to employees' performance.

(a) Why recruitment is very important? (03 marks)

(b) Briefly explain the information to request on a job application form

(04 marks)

- (c) Compare and contrast advantages and disadvantages of application forms.

 (05 marks)
- (d) "When recruiting employees organizations should consider the legal issues." Elucidate. (06 marks)
- (e) As a HR Manager, when recruiting Accounts Executive, what are the recruitment strategies to be applied? (07 marks)



Question 06

Hiring is done after selection and mostly responsibility lies with the senior management/top management.

(a)	Define the term, hiring.	(03 marks)
(b)	Why hiring is vital?	(04 marks)
(c)	Briefly explain the aims of induction.	(05 marks)
(d)	"Process of hiring consists of some important steps". Discuss.	(06 marks)
(e)	"Induction speed up the socialization process". Elucidate the st	atement.
		(07 marks)

Question 07

Performance Management involves in developing a shared understanding with the employer about what is to be achieved and how it is to be achieved.

What is the will/the aim of performance management? (a) (03 marks) Briefly discuss the importance of performance evaluation. (b) (04 marks) Explain how administrative purpose of performance evaluation helps the (c) other HR functions. (05 marks) Discuss any two methods of performance evaluation. (d) (06 marks) "There are problems associated with the implementation and management of (e) performance appraisal schemes" Analyze the statement. (07 marks)

-----END OF THE QUESTION PAPER-----



Year 2 Semester II Semester End Examination Shipping Management – LTSM2209

- This paper consists of SEVEN (07) questions on TWO (02) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2020.02.26

Pass mark: 50%

Time: 02 Hours

Question 01 (Compulsory)

(a) Give an introduction to what a "letters of credit" is?

(25 marks)

Question 02

Discuss the following:

- (a) Liner Service.
- (b) Tramp/Ad hoc/Casual service

(25 marks)

Question 03

In the event of a damage to cargo and/or ship, discuss in brief what special tasks are expected by the agent of the vessel. (25 marks)

Question 04

Why is it necessary for certain goods be kept under refrigeration?

(25 marks)



Question 05

- (a) Define term "dangerous goods" under world-wide transportation
- (b) What are the Responsible authority under the United Nations which provides recommendations, regulatory guidance for the carriage of dangerous goods.

 (25 marks)

Question 06

With regard to a ship's certification system, discuss what you understand by the following:

- Statutory certificates
- Mandatory certificates
- · Certificate of Class

(25 marks)

Question 07

Discuss various responsibilities of a:

- (a) Harbour Master
- (b) Harbour Pilot
- (c) Free Pratique, Quarantine Officer boarding the vessel

(25 marks)
 END OF THE QUESTION PAPER



Year 2 Semester II

Semester End Examination

Procurement Management - LTPM2214

- This paper consists of SEVEN (07) questions on SIX (06) pages.
- Answer FOUR questions including Question 01
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own
 decision, but clearly state it on the script.
- · Supporting documents are attached.

Date: 2020.02.24

Pass mark: 50%

Time: 02 Hours

Question 01: (Compulsory)

Access Engineering PLC

Access is one of Sri Lanka's fastest growing Business conglomerates, evolved and diversified into many fields, boosted by its core business area which was engineering and construction. The Company's strength, lies in securing major projects for infrastructure development in Sri Lanka that are mostly funded by bilateral and multilateral donor agencies.

(Source: Access Group of Companies, Company Profile)

A hypothetical case on Access Engineering PLC Procurement

This hypothetical case is related to Access Engineering PLC, with multi-disciplinary engineering works like roads and highways, bridges and flyovers, buildings, water and wastewater, harbor and airports, renewable energy and other engineering works. The central procurement department at the Head Office operates the procurement of all goods and services needed for all the construction projects.

The procurement of goods and services at Access Engineering PLC, varies from day-to-day items to essential items, where they are being sourced locally and



Internationally. The Procurement department has recognized needs for the coming month for an apartment project as: hiring of two concrete mixtures, hiring of two excavators, purchasing of cement, steel bars, bricks, interlock blocks, water, spare parts for 2 loader trucks and 50 safety helmets. Also, they wish to recruit the service of a senior civil engineer and 2 masons. Apart form 50 safety helmets, all materials and services are purchased and hired from local suppliers.

Answer the following questions based on the case study:

- (a) Briefly describe the two types of relationship approaches in procurement that Access Engineering PLC. should maintain with their suppliers (05 Marks)
- (b) Identify the procurement positioning of Access Engineering PLC. according to the Kraljic Portfolio purchasing Model (10 Marks)
- (c) Briefly discuss the advantages of having a central procurement department in Access Engineering PLC. (05 Marks)

Answer part (d) with the knowledge of INCO terms 2010.

(d) Refer attachment 01

(05 Marks)

Question 02

(a) Define what is 'outsourcing' and a 'core business activity'

(05 Marks)

(b) The logistics planning manager of an automobile manufacturing company suggests in outsourcing some of the activities that are currently performed by internal staff, to a 3rd party logistics provider. He decides to outsource finished goods inventory management, finished goods warehousing and procurement functions to be outsourced to a specialized party.

Critically comment on the above decision, while discussing the advantages, disadvantages, risks, challenges and strategies that could implement to avoid the negative impacts. (10 Marks)



- (c) List down any five (05) key contractual elements that a Service Level Agreement should contain in an outsourcing contract with examples (05 Marks)
- (d) List down and explain two (02) special characteristics of a service , that considers when purchasing a service from a 3rd party service provider (05 Marks)

Question 03

- (a)
- (i) Distinguish between the two types of commodities with relevant examples (03 Marks)
- (ii) Suppose 02 tons of copper is required per day for a micro electronic equipment production plant. Actual market prices of copper for 06 successive days is, 150,130,155,145,145,130 USD. With the budget buying policy, 300 USD will be spent every day by the procurement department.

Calculate the average market price.

Among budget buying and time budgeting policies, determine which is the best to be used when compared with the average market price? (06 Marks)

- (iii) With the highly fluctuating prices of petroleum related products, especially crude oil purchasing is done with the practice of hedging as a long-term price stabilization scheme. Explain the concept of hedging with futures contracts. (06 Marks)
- (b) Suppliers will fix the prices of their products and services based on many factors Explain five (05) such factors that affects their pricing decisions in detail

(10 Marks)



Question 04

- (a) Define what is e- procurement as per the CIPS. (03 Marks)
- (b) Briefly describe the process of an online reverse auction with special criteria applicable (06 Marks)
- (c) The Access Engineering PLC is presently doing the procurement activities through an electronic procurement platform. Explain the advantages, disadvantages and risks of using such a system in performing procurement activities for various projects undertaken by the Access Engineering PLC. (10 Marks)
- (d) Briefly explain the characteristics that a good supplier should possess, taking two of the below industries as examples:
 - (i) Hotel Food and Beverage Suppliers
 - (ii) Automobile Suppliers
 - (iii) Medical Suppliers at a Hospital

(06 Marks)

Question 05

(a) Briefly explain the 03 levels of strategy.

(03 Marks)

- (b) Explain two (02) external organizational environmental reasons that had made procurement function to shift to an extent of having more importance. (05 Marks)
- (c) List down the four (04) various methods of organizing the procurement function in a company and briefly explain any two (02) (04 Marks)
- (d) In 2020,2021 Sri Lanka is planning to explore and start the extraction process of oil in Mannar and Cauvery Basins. Briefly explain the characteristics of the procurement function in an Extraction industry in relation to the 2021 strategy of oil exploration in Sri Lanka. (05 Marks)
- (e) Write short notes on any two (02) of the following:

(4*2 Marks)

- (i) OCDS of National Procurement Guidelines in 2017
- (ii) Ethics of Procurement as stated by NPC



(iii) Methods of National Procurement

Question 06

(a) Discuss the two types of capital equipment with examples.

(05 Marks)

(b) Access Engineering PLC is evaluating the options of hiring two 'Excavator Machines' to be used in an apartment project in a suburban area of Kandy. The procurement manager at the central procurement department in evaluating the shortlisted three suppliers with the initial capital costs and the expected net cash inflows for a period of 04 years. The information is given in the table 6.1.

Assume that the Cost of Capital = 10%

Table 6.1: EXC = Excavator Machine (the table consist of total cash flows for two excavators)

	s at	Total initial	Tota	l Cash Infl	ows USD	('000)
		cost of the option USD		***		
Supplier	Options	('000)	Year 1	Year 2	Year 3	Year 4
1	EXC machine 1	1,000	440	335.5	260	270
2	EXC machine 2	755.5	330	255	235.5	165
3	EXC machine 3	820	335	280.5	255	200

Recommend which option is the most suitable to be implemented and support your answer with the relevant reasons.

(Hint: Use the Discounted Payback Period approach and the NPV approach in evaluating)

What other functions of the organization you would recommend discussing with, regarding this decision?

Note: refer the attachment 02 where necessary

(20 Marks)



Question 07

- (a) Explain how the project procurement distinguishes from other procurement areas with the common elements of a project (05 Marks)
- (b) Access Engineering PLC. plans to undertake a bridge renovation project in Kankasanthurei. The procurement activities for the project is given in the table 7.1 with their expected normal durations in days. Draw the network diagram and identify the critical path. (07 Marks)

Table 7.1:

Activity	Indicator	Normal Duration
A	1-2	4
В	1-3	1
C	2-4	1
D,	3-4	1
E	3-5	6
F	4-9	5
G	5-6	4
Н	5-7	8
I	6-8	1
J	7-8	2
K	8-10	5
L	9-10	7

- (c) Explain the concept of subcontracting taking Access Engineering PLC as an example. (05 Marks)
- (d) Negotiation skills are vital in procurement. Briefly explain.

(02 Marks)

(e)	What is BATNA. Explain the four steps that to follow t	o determine your NATNA
	in a given negotiation.	(06 Marks)

-----END OF THE QUESTION PAPER-----



Year 2 Semester II
SEMESTER END EXAMINATION

Procurement Management LTPM 2214

Attachment 01 (Note: - Attach this answer sheet to the answer booklet provided)

Index No:

Question 01 (Compulsory)

(d) Fill in the blanks of the table given below with the respective responsibilities of the seller and buyer as of providing the service (You may denote (05 Marks) 's' for the seller and 'b' for the buyer)

		RISK / OWNERSHIP OF THE GOODS	RSHIP OF	FTHEG	OODS						
						Su	Supply Chain	nin			
INCO	Name of the Term	Used Mode of Transportation (All/ Maritime transport only)	actory	st Carrier	rigin Varehouse	rigin erminal	hi Carrier Ship/ Air)	notination lanimae	estination Jarehouse	d Carrier	əəngizno
FOB				+	A				- 7	35	c
FAS				+	+						
CPT											
DDP						T					
EXW											
			-								



PV table

Faculty of Management and Social Sciences
Department of Logistics & Transport
BSc Hons in Logistics and Transportation
Course CODE: COM551

							alte .					
Perlods	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	15%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.8929	0.869
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.7972	0.756
ω	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7118	0.657
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6355	0.571
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0,6806	0.6499	0.6209	0.5674	0.497
O	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5066	0.432
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4523	0.375
8	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4039	0.326
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3606	0.284
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3220	0.247
=	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.2875	0.214
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2567	0.186
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2292	0.162
14	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2046	0.141
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.1827	0.122
16	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1631	0.106
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1456	0.092
18	0.8360	0.7002	0.5874	0,4936	0.4155	0,3503	0.2959	0.2502	0.2120	0.1799	0.1300	0.080
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1161	0.070
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1037	0.061
25	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0588	0.0304
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0334	0.015
35	0.7059	0.5000	0.3554	0.2534	0.1813	0.1301	0.0937	0.0676	0.0490	0.0356	0.0189	0.007
40	0.6717	0.4529	0.3066	0.2083	0.1420	0.0972	0.0668	0.0460	0.0318	0.0221	0.0107	0.003