CINEC CAMPUS
Beyond A Graduate

PAST PAPERS

Faculty	Department / Section/Division
Not Applicable	Learning Resource Centre

Past Papers

Faculty of health science

Bachelor of Science honours in Industrial Pharmaceutical Sciences

Year 4 – Semester I

Document Control & Approving Authority	Senior Director – Quality Management & Administration

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CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences
Bachelor of Science Honours in Industrial Pharmaceutical Sciences
IPS 4143 – Pharmacognosy I
Batch – 02 and 03
4th year 1st semester - End Semester - SEQ Examination

INDEX NUMBER: .....

Date : **21st August 2023**
Time : **09.00 a.m. – 12.00 p.m. (Three hours)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01 **(100 marks)**

1.1 Define the term 'Pharmacognosy'. (10 marks)

1.2 What are crude drugs? (20 marks)

1.3 State five different plant based crude drugs. (30 marks)

1.4 Discuss on "There are both advantages and disadvantages of crude drugs". (40 marks)

Question 02 **(100 marks)**

2.1 Define the term 'Phyllotaxy'. (10 marks)

2.2 State five different key features of plant kingdom members. (20 marks)

2.3 Briefly explain about Pharmacopeia, Botanical floras and Monographs. (30 marks)

2.4 Discuss about "In some plants, the stem is modified to perform special functions". (40 marks)

Question 03 **(100 marks)**

3.1 List the carbohydrate synthesis pathways. Write the net reaction for one pathway. (10 marks)

3.2 Briefly describe "polysaccharides and their classification" with examples. (20 marks)

3.3 List 3 plant sources of lipids and explain the extraction procedure of lipids from plant sources (vegetable oils and fats). (30 marks)

3.4 Discuss the statement "Lipids are biologically important compounds". (40 marks)

Question 04 **(100 marks)**

4.1 What are the different methods of plants propagation? (10 marks)

4.2 Name four different growth promoters. (20 marks)

4.3 State five different functions of Abscisic acid. (30 marks)

4.4 Explain the importance of better cultivation of medicinal plants. (40 marks)

Question 05 **(100 marks)**

5.1 List the three types of tannins. (10 marks)

5.2 Name 3 chemical tests for tannins and write a short note on one test. (20 marks)

5.3 You are provided with two unknown crude drug samples. One is a tannin. The other is a resin. Write how you would differentiate between tannins and resins without the use of standard chemical tests. (30 marks)

5.4 Discuss about "Tannins and resins which shows high medicinal values". (40 marks)

Question 06 **(100 marks)**

6.1 What is the main difference between organized and unorganized drugs? (10 marks)

6.2 State five different ways that can be used to classify crude drugs. (30 marks)

6.3 Adulteration is a common occurrence in herbal drug marketing field. Define the following terms. (20 marks)

6.3.1 "Adulteration"

6.3.2 "Adulterants"

6.3.3 "Direct Adulteration"

6.3.4 "Indirect Adulteration"

6.4 List 3 reasons for crude drug evaluation. Explain two methods of crude drug evaluation (include examples). (40 marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences
Bachelor of Science Honours in Industrial Pharmaceutical Sciences
IPS 4133 Pharmaceutical Biotechnology

Batch – 02 & 03
4th Year 1st Semester
End Semester SEQ Examination

Date : **28th of August 2023**
Time : **9.00 am. – 12.00 pm. (Three Hours)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

QUESTION 01 **(100 marks)**

1.1. Define the terms of Transcription and Translation. (10 marks)
1.2. Compare and contrast the DNA replication and transcription mechanisms. (30 marks)
1.3. Explain the process of post-transcriptional modification. (30 marks)
1.4. Write short notes on following. (30 marks)
  1.4.1 DNA Polymerase
  1.4.2 DNA Helicase
  1.4.3 mRNA

QUESTION 02 **(100 marks)**

2.1 What are the properties of enzymes which important for biotechnology? (20 marks)
2.2 State the four distinct types of specificity of enzymes and how they differ from each other. (20 marks)
2.3 Mention the steps of enzyme production through microorganisms. (10 marks)
2.4 Differentiate Submerged fermentation (SMF) and Solid state fermentation (SSF). (20 marks)
2.5 Describe the reasons why SSF is considered a promising method for the commercial production of enzymes. (30 marks)

QUESTION 03 **(100 marks)**

3.1 What are the enzyme properties that are important in biotechnology? (20 marks)
3.2 State different applications of pharmaceutical Biotechnology. (10 marks)
3.3 Write short notes on Upstream and Downstream processes. (40 marks)
3.4 Discuss the steps in the production of human penicillin by recombinant bacterial DNA. (30 marks)

QUESTION 04 **(100 marks)**

4.1 What are the enzymes required for following steps in Recombinant DNA Technology?

4.1.1 Restriction digestion

4.1.2. Ligation (20 marks)

4.2 What are the marker genes in following plasmids commonly used in Recombinant DNA Technology?

4.2.1. PUC18/PUC 19

4.2.2. PBR 322 (20 marks)

4.3 What are the characteristics should be present in a vector suitable for Recombinant DNA Technology? (30 marks)

4.4. Explain the "Selection" step for PBR 322 plasmids using media/s containing tetracycline and Ampicillin, if you have used them for recombinant DNA technology. (30 marks)

QUESTION 05 **(100 marks)**

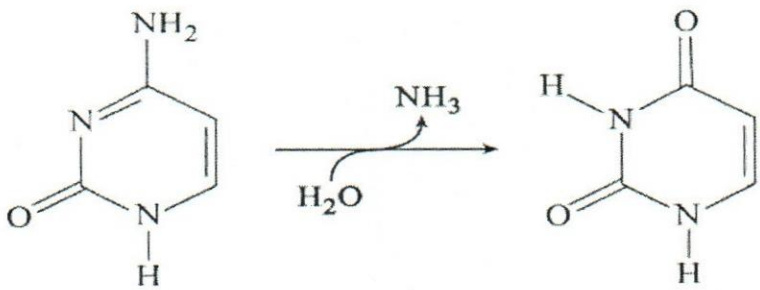
5.1 Draw a diagrammatic representation of **Lac operon** and label the different regions of the operon. (20 marks)

5.2. Briefly explain the regulation of Lac operon under the presence of lactose within the cell. (40 marks)

5.3. What is meant by PCR master mixture? (20 marks)

5.4. What are the advantages of using a PCR technique for the diagnosis of a disease condition? (20 marks)

QUESTION 06 **(100 marks)**



6.1. Identify the above DNA damage type. (10 marks)

6.2. Discuss the reasons which could lead to the occurrence of induced DNA damages. (20 marks)

6.3. Differentiate between silent and nonsense mutations. (20 marks)

6.4. Write short notes on following.

6.4.1. Depurination DNA damage (25 marks)

6.4.2. Nucleotide excision repair system (25 marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences
Bachelor of Science Honours in Industrial Pharmaceutical Sciences
IPS 4123 – Pharmaceutical Quality Control
Batch – 02 & 03
4th year 1st semester
End Semester SEQ Examination

INDEX NUMBER: .....

Date : **25th August 2023**
Time : **09.00 a.m. – 12.00 p.m. (Three hours)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01 **(100 marks)**

1.1. What is the difference between quality control and quality assurance in a pharmaceutical manufacturing company? (20 marks)
1.2. State **05** main components of Good Manufacturing Practices (GMP). (10 marks)
1.3. Define the following terms. (30 marks)
  1.3.1. Test article
  1.3.2. Test system
  1.3.3. Reference item
1.4. Describe the importance of following GMP in a pharmaceutical manufacturing area. (40 marks)

Question 02 **(100 marks)**

2.1. What is a quality management system in a quality control laboratory? (10 marks)
2.2. Assume that you are the head of a quality control laboratory.
  2.2.1. State **05** responsibilities of the head of a quality control laboratory. (25 marks)
  2.2.2. Briefly describe the maintenance, and storage of laboratory materials & equipment in the quality control laboratory. (35 marks)
2.3. Write a short note on how you would ensure the safety in a quality control laboratory while you are working on it. (30 marks)

Question 03 **(100 marks)**

3.1 Briefly describe the importance of referring to appendices available in British Pharmacopoeia. (15 marks)
3.2. State **05** characteristics of effective pharmaceutical products distribution. (20 marks)
3.3. Draw the elements of pharmaceutical products distribution system. (15 marks)
3.4. Write short notes on the following.
3.4.1. Distribution channels. (25 marks)
3.4.2. Distribution records. (25 marks)

Question 04 **(100 marks)**

4.1. Briefly describe the importance of conducting friability, thickness, and hardness tests for tablets. (25 marks)
4.2. Write all the quality test parameters considered in the following quality control tests according to United States Pharmacopeia. (30 marks)
4.2.1. Dissolution test for uncoated tablets.
4.2.2. Friability test for uncoated tablets.
4.3. Briefly describe the importance of conducting rheology test for pharmaceutical emulsions. (20 marks)
4.4. Outline the method followed by *in vitro* skin penetration test for pharmaceutical creams. (25 marks)

Question 05 **(100 marks)**

5.1. State **05** unique characteristics of parenteral preparation. (15 marks)
5.2. There is a complaint with severe adverse reactions after using a certain type of drug containing vials in a hospital. Investigators found that there are tiny cracks on those used vials.
5.2.1. What is the main defect you can come across with this investigation? (20 marks)
5.2.2. Briefly describe one test method to identify this defect. (30 marks)
5.3. Describe one pyrogen testing method with its principle. (35 marks)

Question 06 **(100 marks)**

6.1. State **04** common quality issues that challenge pharmaceutical manufacturers. (20 marks)
6.2. Briefly describe the following terms used in assuring the quality of pharmaceutical packaging. (30 marks)
6.2.1. Sampling.
6.2.2. Testing program.
6.3. Briefly describe the CAPA concept used in modern quality systems of CGMPs. (20 marks)
6.4. Write short notes on the following.
6.4.1. Drug recalling. (20 marks)
6.4.2. Six-system inspection model. (10 marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences
B.Sc. (Hons) in Cosmetic Science
BCS 4133 – Cosmetic Analysis
Batch – 01
4th Year 1st semester
End Semester Examination - SEQ

Date : 23rd August 2023
Time : 9.00 am to 12.00 pm

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
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MATERIALS REQURIED

- You may use a scientific calculator. This must not be programmable and may be inspected during the examination. Programmable calculators, PDAs and mobile phones are not permitted in the examinations.

01. **(100 marks)**

1.1. What are the **02** major categories of cosmeceutical analysis? (10 marks)
1.2. What is the scope of cosmeceutical analysis in the cosmetic formulation industry? (15 marks)
1.3. State **04** applications of cosmeceutical analysis. (20 marks)
1.4. Discuss **05** factors affecting the cosmeceutical analytical method selection (25 marks)
1.5. Differentiate the **03** types of Cosmeceutical standards used in cosmeceutical analytical methods. (30 marks)

02. **(100 marks)**

2.1. What is an acid and a base based on Arrhenius theory. (15 marks)
2.2. Write dissociation constant (K_w) for water. (15 marks)
2.3. Calculate the pH when 48 ml of 0.1 M NaOH solution have been added to 50 ml 0.1 M HCl solution. (20 marks)
2.4. Find the pH at each of the following points in the titration of 25 ml 0.3 M HF with 0.3 M KOH solution.
Note: K_a Value of HF is 6.6×10^{-4}. (50 marks)
2.4.1. The initial pH
2.4.2. After adding 10 ml of 0.3 M KOH
2.4.3. After adding 25 ml of 0.3 M KOH

03. **(100 marks)**

3.1. What is meant by Aquametric analysis? (15 marks)
3.2. List **05** advantages of Karl fisher titration. (20 marks)
3.3. Write **05** applications of Karl fisher titration. (25 marks)
3.3. What type of samples can be separated by using gas chromatography? (20 marks)
3.4. The flow rate of the carrier gas through the column and the splitter output is 2ml/ mins and 50 ml/mins respectively. Calculate the percentage of sample reaching the column? (20 marks)

04 **(100 marks)**

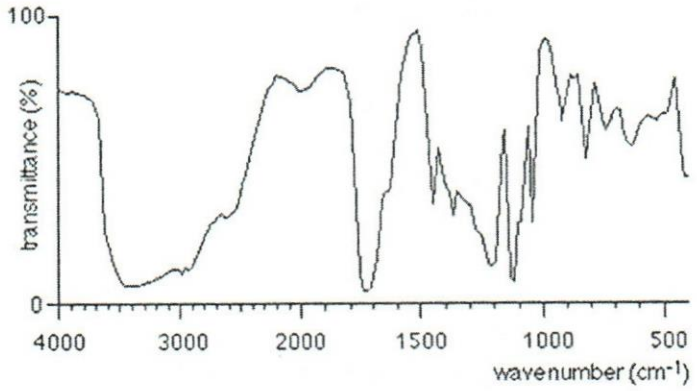
4.1. State **03** applications of Gas chromatography – Mass spectrometry (GC-MS). (15 marks)

4.2. Mass analysis spectrum of compound A showing a molecular ion peak (parent peak) 106m/z.
Calculate the molecular formula according to the rule of thirteen. Consider this structure contains aromatic rings. (30 marks)

4.3. In a cosmetic analysis experiment, a solution of a specific cosmetic product is prepared, and its absorbance is measured using a spectrophotometer at various concentrations. The absorbance values obtained are plotted against the concentration, resulting in a linear curve. The equation of the line is A = 0.025C + 0.012, where A is the absorbance and C is the concentration in mg/mL.

4.3.1 Calculate the concentration of the cosmetic sample that has an absorbance of 0.150. (25 marks)

4.3.2 IR spectrum of a compound ($C_3H_4O_3$) that is used to formulate above cosmetic product is given below. Based on that, comment on the functional groups of the compound. (30 marks)



05. **(100 marks)**

5.1 Answer the following questions related to gravimetric analysis.

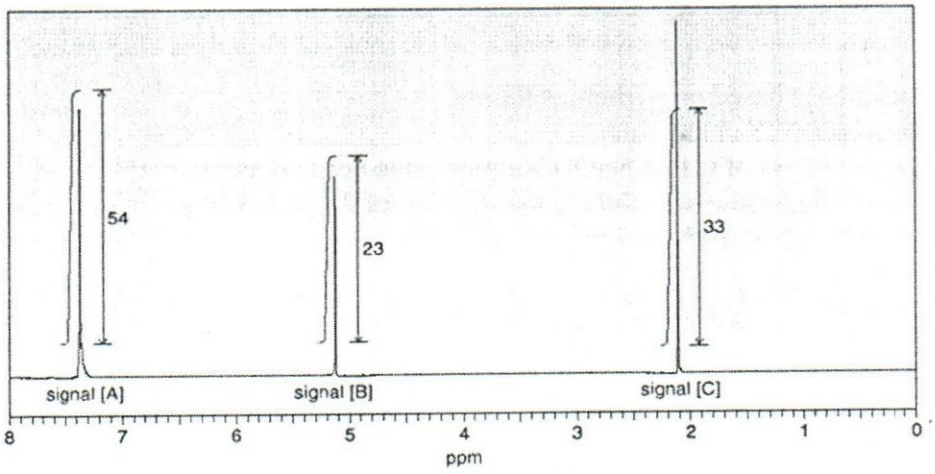
5.1.1 List **03** types of gravimetric analysis methods (15 marks)

5.1.2 Write **03** important properties of gravimetric precipitation. (15 marks)

5.1.3 What are the steps involved in gravimetric analysis? (20 marks)

5.2 What are the **04** different types of information that can be obtained from ^1H NMR Spectrum? (20 marks)

5.3 A compound of molecular weight $C_9H_{10}O_2$ gives the following integrated ^1H NMR spectrum. Calculate the number of protons given to each signal. (30 marks)



06. **(100 marks)**

6.1 List **04** uses of chromatography technique. (10 marks)

6.2 Write short notes on the following.

6.2.1 Affinity chromatography (20 marks)

6.2.2 Anion chromatography (20 marks)

6.3 Explain the principle of gel electrophoresis. (25 marks)

6.4 Describe the factors affecting separation in gel electrophoresis. (25 marks)

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Faculty of Health Sciences
Bachelor of Science Honours in Industrial Pharmaceutical Sciences
IPS 4113 – Biopharmaceutics
Batch – 02 & 03
4th year 1st semester
End Semester - SEQ Examination

INDEX NUMBER: .....

Date : **23rd August 2023**
Time : **09.00 a.m. – 12.00 p.m. (Three hours)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01

1.1. Describe the importance of the plasma drug concentration-time curve. (40 marks)
  1.1.1. How does the curve relate to the pharmacological activity of a drug? (20 marks)
1.2. What is the purpose of pharmacokinetic models? (20 marks)
1.3. Draw a diagram describing a three-compartment model with first-order absorption and drug elimination from compartment two (02). (20 marks)

Question 02

2.1. What are the major rate limiting factors in drug distribution? (20 marks)
2.2. What is the relationship between tissue binding and apparent volume of distribution of a drug? (20 marks)
2.3. Briefly describe the concept of drug clearance. (25 marks)
2.4. Describe three (**03**) factors which influence the clearance of drugs. (35 marks)

Question 03

3.1. Briefly describe the term linear pharmacokinetics. (25 marks)
3.2. Write two (**02**) factors that influence distribution of drugs in the body. (10 marks)
3.3. If a single 200-mg dose is given to an adult male patient (68 kg) by IV bolus injection, what percent of the dose is lost in 24 hours? (Assume that the elimination half-life of the drug is 6 hours and follows first-order kinetics.) (30 marks)
3.4. A single IV bolus injection containing 250 mg of an antibiotic is given to an adult patient (63 years, 55 kg) for an infection. The apparent volume of distribution is 10% of the body weight and the elimination half-life is 2.5 hours. Assuming the drug is eliminated by first-order kinetics and described by a one-compartment model, calculate the following:
  3.4.1. The initial plasma concentration (C_p^0). (35 marks)

Question 04

A 65 kg patient with normal renal function is to be given a drug by IV infusion. The elimination half-life of this drug is 8 hours, and the apparent is 0.1 L/kg. The desired steady-state plasma level for this antibiotic is 10 *mg*/mL. The pharmacokinetics of this drug assumes a first-order process.

4.1. Assuming no loading dose, how long after the start of the IV infusion would it take to reach 95% of the *C*ss? (25 marks)

4.2. What is the proper loading dose for this antibiotic? (25 marks)

4.3. What is the proper infusion rate for this drug? (25 marks)

4.4. What is the total body clearance? (25 marks)

Question 05

5.1. Briefly describe the main pharmacokinetic parameters that influence,

5.1.1. Time for peak drug concentration. (25 marks)

5.1.2. Peak drug concentration. (25 marks)

5.2. A single oral dose (100 mg) of an antibiotic was given to an adult male patient (43 years, 72 kg). From the literature, the pharmacokinetics of this drug fits a one-compartment open model. The equation that best fits the pharmacokinetics of the drug is,

$$C_p = 45\ (e^{-0.17t} - e^{-1.5t})$$

From the equation above, calculate:

5.2.1. Time for peak drug concentration. (25 marks)

5.2.2. Peak drug concentration. (25 marks)

Question 06

6.1. The bioavailability of a new investigational drug was studied in 12 volunteers. Each volunteer received either a single oral tablet containing 200 mg of the drug, 5 mL of a pure aqueous solution containing 200 mg of the drug, or a single IV bolus injection containing 50 mg of the drug. Plasma samples were obtained periodically up to 48 hours after the dose and assayed for drug concentration. The average AUC values (0–48 hours) are given in the table below.

Drug product	Dose (mg)	AUC (µg.h/mL)	Standard deviation
Oral tablet	200	89.5	19.7
Oral solution	200	86.1	18.1
IV bolus injection	50	37.8	5.7

From these data, calculate:

6.1.1. The relative bioavailability of the drug from the tablet compared to the oral solution. (50 marks)

6.1.2. The absolute bioavailability of the drug from the tablet. (50 marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences

Bachelor of Science Honours in Industrial Pharmaceutical Sciences

IPS 4133 Pharmaceutical Biotechnology-Repeat

Batch – 01

4th Year 1st Semester

End semester SEQ Examination

INDEX NUMBER: .....

Date : **10th of February 2023**
Time : **9.00 am. – 12.00 pm. (Three Hours)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

QUESTION 01 **(100 marks)**

1.1. Describe the formation of lagging strand and leading strand of DNA replication. (25 marks)

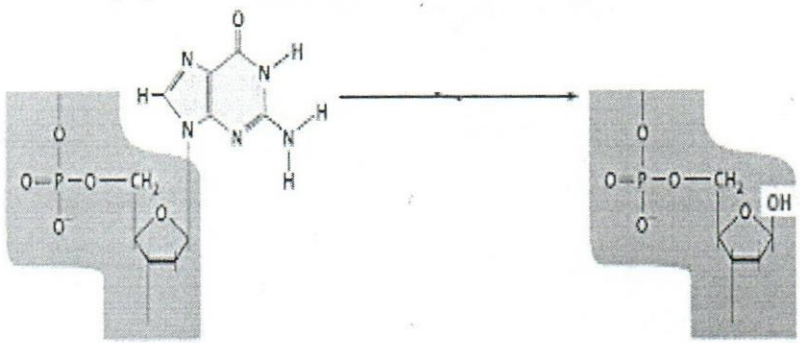
1.2. Describe a replication fork using a labelled diagram. (25 marks)

1.3. Compare and contrast between DNA replication and transcription. (25 marks)

1.4. What are the functions of DNA helicase, DNA polymerase, DNA ligase. (25 marks)

QUESTION 02 **(100 marks)**

Answer the following questions considering the given diagram.



2.1. Mention two examples for the above DNA damage. (10 marks)

2.2. Discuss the reasons which could lead to the occurrence of the above DNA damage. (20 marks)

2.3. Write short notes on following.

2.3.1. Mismatch repair system (20 marks)

2.3.2. Deamination (25 marks)

2.3.3. Induced DNA damage (25 marks)

QUESTION 03 **(100 marks)**

3.1. Briefly explain three stages of PCR. Clearly indicate different temperature conditions required at each step. You may use a diagram for explanation. (30 marks)

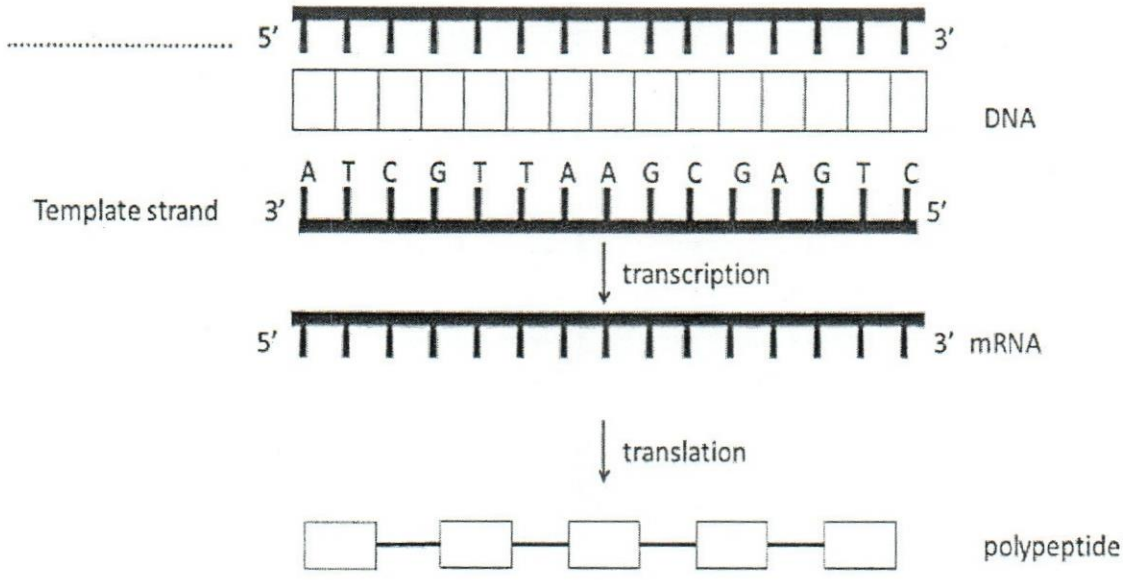
3.2. Complete the following diagram using the given instructions.

3.2.1. Fill the dotted line using suitable words. (10 marks)

3.2.2. Write the sequence of 5'-3' strand of the DNA molecule. (20 marks)

3.2.3. Write the sequence of mRNA molecule. (20 marks)

3.2.4. Complete the boxes to show the amino acid sequence for the corresponding mRNA molecule. (**Hint**: Use the genetic code given.) (20 marks)



QUESTION 04 **(100 marks)**

4.1. Explain the "**Selection**" step for PUC 18/PUC 19 plasmids using a media containing X-gal, if you have used them for recombinant DNA technology. (40 marks)

4.2. List the criteria which should be presented in a suitable vector for recombinant DNA technology. (20 marks)

4.3. Draw a diagrammatic representation of **operon** and label the different regions of the operon. (20 marks)

4.4. Briefly explain the regulation of Trp operon under the presence of trptophan within the cell. (20 marks)

1st letter	Second Letter: U		Second Letter: C		Second Letter: A		Second Letter: G		3rd letter
U	UUU	Phe	UCU	Ser	UAU	Tyr	UGU	Cys	U
	UUC		UCC		UAC		UGC		C
	UUA	Leu	UCA		UAA	Stop	UGA	Stop	A
	UUG		UCG		UAG	Stop	UGG	Trp	G
C	CUU	Leu	CCU	Pro	CAU	His	CGU	Arg	U
	CUC		CCC		CAC		CGC		C
	CUA		CCA		CAA	Gln	CGA		A
	CUG		CCG		CAG		CGG		G
A	AUU	Ile	ACU	Thr	AAU	Asn	AGU	Ser	U
	AUC		ACC		AAC		AGC		C
	AUA		ACA		AAA	Lys	AGA	Arg	A
	AUG	Met	ACG		AAG		AGG		G
G	GUU	Val	GCU	Ala	GAU	Asp	GGU	Gly	U
	GUC		GCC		GAC		GGC		C
	GUA		GCA		GAA	Glu	GGA		A
	GUG		GCG		GAG		GGG		G

QUESTION 05 **(100 marks)**

5.1. Mention the different products of recombinant DNA. (20 marks)
5.2 What are the main steps for Sangers sequencing. (10 marks)
5.3 Discuss the principle of manual and automated methods of gel electrophoresis. (40 marks)
5.4 Discuss the principles of the Sanger sequencing method. (30 marks)

QUESTION 06 **(100 marks)**

6.1 Describe the following branches of biotechnology.

6.1.1 Red Biotechnology (10 marks)
6.1.2 Green Biotechnology (10 marks)
6.1.3 Blue Biotechnology (10 marks)

6.2. What are the aims of pharmaceutical biotechnology? (10 marks)
6.3. Discuss the therapeutic uses of pharmaceutical biotechnology products. (20 marks)
6.4 Discuss the steps of production of human insulin using pharmaceutical biotechnology. (40 marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences
Bachelor of Science Honours in Industrial Pharmaceutical Sciences
IPS 4143 – Pharmacognosy I- Batch - 01
4th year 1st semester- End Semester Repeat SEQ Examination

Date : **09th February 2023**
Time : **09.00 a.m. – 12.00 p.m. (Three hours)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

Question 01 **(100 marks)**

1.1 Differentiate tannins and resins. (20 marks)
1.2 Briefly describe the basis of the classification of tannins by giving at least **01** example for each category. (30 marks)

1.3 Briefly describe the classification of resins based on the association of resins with the other groups. Give at least **01** example for each category. (20 marks)
1.4 Describe the structure of starch. (30 marks)

Question 02 **(100 marks)**

2.1 Give the botanical family of each of the following medicinal plants. (20 marks)

2.1.1 *Azadirachta indica*

2.1.2 *Terminalia chebula*

2.1.3 *Plectranthus zeylanicus*

2.1.4 *Catharanthus roseus*

2.2 With the aid of examples, distinguish between organized and unorganized drugs. (40 marks)

2.4 List the major steps of preparing a dry herbarium specimen (descriptions are not required). (40 marks)

Question 03 **(100 marks)**

3.1 List any **05** different factors affects the cultivation of medicinal plants. (30 marks)

3.2 "Standard operating procedures for medicinal plants cultivation should be followed by the cultivators". Justify the statement. (30 marks)

3.3 Write short accounts on "Soil fertility can be maintained by addition of animal manures and/or by application of fertilizers". (40 marks)

Question 04 **(100 marks)**

4.1 Herbal drug adulteration is a malpractice occurs due to many reasons.

4.1.1 Define the term "herbal crude drug adulteration". (20 marks)

4.1.2 Write a short account on the types of herbal crude drug adulteration. (30 marks)

4.1.3 List the types of methods currently employed in evaluating herbs. (10 marks)

4.2 "Pests are undesired plant or animal species that causes a great damage to the plants". Explain this statement. (40 marks)

Question 05 **(100 marks)**

5.1 List **04** most important facts to be included when labeling an herbarium specimen. (20 marks)

5.2 Comment on advantages and disadvantages of crude drug evaluation using organoleptic properties. (30 marks)

5.3 Describe the factors to be considered in herbarium sampling. (50 marks)

Question 06 **(100 marks)**

6.1 How do you differentiate almond oil from lemongrass oil? (20 marks)

6.2 Write the pharmaceutical uses of **04** fixed oils you know. (20 marks)

6.3 Briefly describe the formation of triglycerides. (30 marks)

6.4 Using at least **02** examples, describe the **02** major biological functions of polysaccharides and name the monomer units of each example you mention. (30 marks)

CINEC CAMPUS
Beyond A Graduate

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Faculty of Health Sciences

Bachelor of Science Honours in Industrial Pharmaceutical Sciences

IPS 4113 – Biopharmaceutics - Batch - 01

4th Year 1st Semester- Resit End Semester SEQ Examination

Date : **06th of February 2023**
Time : **09.00 a.m. – 12.00 p.m. (Three hours)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

Question 01 **(100 marks)**

1.1

1.1.1 Define the term "biopharmaceutics". (10 marks)

1.1.2 State **05** factors affecting the bioavailability of a medicine. (20 marks)

1.2 Briefly describe how you would determine the half-life of a medicine. (20 marks)

1.3 "Medicines with significant metabolism often have variable bioavailability". Comment on this statement. (20 marks)

1.4 Describe the term "sink condition". (30 marks)

Question 02 **(100 marks)**

2.1 Briefly describe the significance of reactive metabolites formed during biotransformation process. (20 marks)

2.2 Briefly describe the term apparent volume of distribution a medicine. (20 marks)

2.3 A patient weighing 52 kg was given 150 mg single dose of the medicine intravenously. The plasma concentration of the drug after 12 hours was 1.5 μg/mL. If the apparent volume of distribution a medicine is 8% of the body weight, calculate the following,

2.3.1 The apparent volume of distribution of the medicine. (10 marks)

2.3.2 The initial plasma drug concentration. (10 marks)

2.3.3 The elimination rate constant. (20 marks)

2.3.4 The biological half-life of the medicine. (10 marks)

2.3.5 The total clearance of the medicine. (10 marks)

Question 03 **(100 marks)**

3.1 Briefly describe the applications of pharmacokinetic models. (20 marks)

3.2

3.2.1 Derive an equation to demonstrate the extraction ratio for a medicine. (30 marks)

3.2.2 Classify medicines based on extraction ratio. (20 marks)

3.3. Describe how you would determine the absorption rate constant by method of residual. (30 marks)

Question 04 **(100 marks)**

4.1. Brifely describe the steps of drug distribution in the body. (20 marks)

4.2. Describe how is the following factors affecting the distribution of drugs through the body

4.2.1 Physicochemical properties of drug. (15 marks)

4.2.2 Organ/tissue size and perfusion rate. (15 marks)

4.3. State **05** important physiological barriers restrict the distribution of drugs. (10 marks)

4.4. What are the **02** categories of parameters can be evaluated from a plasma concentration time profile? (10 marks)

4.5. Write short notes on following.

4.5.1. Minimum Effective Concentration (MEC). (10 marks)

4.5.2. Maximum Safe Concentration (MSC). (10 marks)

4.5.3. Onset of Action. (10 marks)

Question 05 **(100 marks)**

5.1. List the differences between non linear pharmacokinetics and linear Pharmacokinetics. (25 marks)

5.2. Non linear Pharmacokinetics are described by Michaelis Menten Equation.

$$-\frac{dC}{dt} = \frac{V_{max}\, C}{K_m + C}$$

Elimination of the drug depends on the drug concentration (C), Km and the maximum rate of processing.

For an example, a drug shows very high Km than C, drug follows first order kinetics. Justify your answer. (35 marks)

5.3. What are the reasons for non linearity at,

5.3.1. Absorption level. (10 marks)

5.3.2. Distribution level. (10 marks)

5.3.3. Metabolism level. (10 marks)

5.3.4. Excretion level. (10 marks)

Question 06 **(100 marks)**

6.1. Describe the process of therapeutic drug monitoring. (40 marks)

6.2. Discuss clinical pharmacokinetics in,

6.2.1. Obesity. (15 marks)

6.2.2. Renal failure. (15 marks)

6.2.3. Liver failure. (15 marks)

6.2.4. Infants. (15 marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences

Bachelor of Science Honours in Industrial Pharmaceutical Sciences

IPS 4143 – Pharmacognosy I

Batch - 01

4th year 1st semester

End Semester SEQ Examination

INDEX NUMBER: .....

Date : **15th August 2022**
Time : **09.00 a.m. – 12.00 p.m. (Three hours)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

Question 01 **(100 marks)**

1.1 Differentiate tannins and resins. (10 marks)

1.2 Briefly describe the basis of the classification of tannins by giving at least **01** example for each category. (20 marks)

1.3 Briefly describe the classification of resins based on the association of resins with the other groups. Give at least **01** example for each category. (20 marks)

1.4 Briefly describe the classifications of simple sugars with suitable examples. (20 marks)

1.5 Describe the structure of starch. (30 marks)

Question 02 **(100 marks)**

2.1 Give the botanical family of each of the following medicinal plants. (20 Marks)

2.1.1 *Azadirachta indica*

2.1.2 *Terminalia chebula*

2.1.3 *Piper longum*

2.1.4 *Plectranthus zeylanicus*

2.1.5 *Catharanthus roseus*

2.2 With the aid of examples, distinguish between organized and unorganized drugs. (25 Marks)

2.3 What is a "pharmacopoeia"? Briefly describe the information a beginner in pharmacognosy could learn from a pharmacopoeia. (25 Marks)

2.4 List the major steps of preparing a dry herbarium specimen (descriptions are not required). (30 Marks)

Question 03 **(100 marks)**

3.1 List any **05** different factors affects the cultivation of medicinal plants. (15 marks)

3.2 "Standard operating procedures for medicinal plants cultivation should be followed by the cultivators". Justify the statement. (25 marks)

3.3 Write short accounts on the followings.

3.3.1 "Soil fertility can be maintained by addition of animal manures and/or by application of fertilizers". (30 marks)

3.3.2 "Pests are undesired plant or animal species that causes a great damage to the plants". (30 marks)

Question 04 **(100 marks)**

4.1 Herbal drug adulteration is a malpractice occurs due to many reasons.

4.1.1 Define the term "herbal crude drug adulteration". (10 marks)

4.1.2 Write a short account on the types of herbal crude drug adulteration. (30 marks)

4.1.3 List the types of methods currently employed in evaluating herbs. (10 marks)

4.2 Write the floral formula and draw floral diagram for the following description. (50 marks)

Flower is Actinomorphic (regular). Bisexual. Five sepals aestivation imbricate, free. Five petals Twisted, connected. Androecium consists of 10 stamens, 9 stamens large and one is small. Inferior ovary consists of five carpals and they are syncarpous. Parietal placentation.

Question 05 **(100 marks)**

5.1 List **04** most important facts to be included when labeling an herbarium specimen. (20 marks)

5.2 Comment on advantages and disadvantages of crude drug evaluation using organoleptic properties. (30 marks)

5.3 Describe the factors to be considered in herbarium sampling. (50 marks)

Question 06 **(100 marks)**

6.1 How do you differentiate almond oil from lemongrass oil? (10 marks)

6.2 Write the pharmaceutical uses of **04** fixed oils you know. (20 marks)

6.3 Briefly describe the formation of triglycerides. (20 marks)

6.4 Name **03** types of gums you learned and briefly describe their uses/applications. (20 marks)

6.5 Using at least **02** examples, describe the **02** major biological functions of polysaccharides and name the monomer units of each example you mention. (30 marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences

Bachelor of Science Honours in Industrial Pharmaceutical Sciences

IPS 4123 – Pharmaceutical Quality Control

Batch - 01

4th year 1st semester

End Semester SEQ Examination

INDEX NUMBER: .....

Date : **10th August 2022**
Time : **09.00 a.m. – 12.00 p.m. (Three hours)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

Question 01 **(100 marks)**

1.1 What is a quality management system? (15 marks)

1.2 State **05** dimensions of quality by giving example for each. (20 marks)

1.3 Briefly describe the importance of quality in pharmaceutical manufacturing. (20 marks)

1.4 What is the purpose of following Good Laboratory Practices (GLP) in a pharmaceutical manufacturing facility? (15 marks)

1.5 Describe the key duties of the quality control laboratory. (30 marks)

Question 02 **(100 marks)**

2.1 What is the job role of the following technical person at the pharmaceutical quality control laboratory?

2.1.1 Head of laboratory (10 marks)

2.1.2 Technical management (10 marks)

2.1.3 Analyst (10 marks)

2.1.4 Technical staff (10 marks)

2.2 Draw a flow diagram of the working procedure for incoming samples at the quality control laboratory. (20 marks)

2.3 What are the determinants of the medicine quality of sustained release dosage forms? (20 marks)

2.4 Briefly describe how the quality of a pharmaceutical product is assessed. (20 marks)

Question 03 **(100 marks)**

3.1 What are pharmacopeial appendices? (10 marks)

3.2 State **03** responsibilities of British pharmacopeia commission (BPC). (15 marks)

3.3 Pharmaceutical products distribution is an essential activity in the integrated supply-chain management of pharmaceutical products. It is the movement of pharmaceutical products, from the premises of the manufacturer to the end user or to an intermediate point by means of varies transport methods. Based on this statement answer to the following questions.

3.3.1 Define "good distribution practices (GDP). (10 marks)

3.3.2 Outline the elements of pharmaceutical products distribution system. (25 marks)

3.3.3. Write a descriptive account on distribution records. (40 marks)

Question 04 **(100 marks)**

4.1. State **03** devices currently used to check the hardness of solid dosage forms. (10 marks)

4.2. Briefly describe the importance of conducting friability test for tablets. (20 marks)

4.3. State the quality test parameters considered in following quality control tests. (40 marks)

4.3.1. Disintegration test for coated tablets.

4.3.2. Dissolution test for conventional tablets.

4.3.3. Dissolution test for sustained release tablets.

4.3.4. Dissolution test for hard gelatin capsules.

4.4. State **03** quality control tests done specifically for pharmaceutical suspensions and describe the importance of those tests. (30 marks)

Question 05 **(100 marks)**

5.1 State the ideal properties of semisolid dosage forms. (10 marks)

5.2 Write a short note on the following quality control test for semisolids.

5.2.1 pH (10 marks)

5.2.2 Viscosity study (10 marks)

5.2.3 Spreadability (10 marks)

5.3 Describe the leaker test used in parenteral formulations. (30 marks)

5.4 List the steps of *in vivo* pyrogen test (Rabbit test) for parenteral products. (20 marks)

5.5 What are the advantages of the LAL test over the rabbit test? (10 marks)

Question 06 **(100 marks)**

6.1. State the importance of quality assurance relates to pharmaceutical packaging. (10 marks)

6.2. Write **05** quality control tests available to check the quality of packaging materials. (20 marks)

6.3. Briefly describe **02** key concepts available in modern quality system of CGMP. (20 marks)

6.4. State **05** manufacturing systems include in six system inspection modules in CGMP. (20 marks)

6.5. Write short notes on following.

6.5.1 Drug recalling. (15 marks)

6.5.2 Contamination and cross-contamination. (15 marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences

Bachelor of Science Honours in Industrial Pharmaceutical Sciences

IPS 4113 – Biopharmaceutics

Batch - 01

4th year 1st semester

End Semester SEQ Examination

INDEX NUMBER: .....

Date : **08th of August 2022**
Time : **09.00 a.m. – 12.00 p.m. (Three hours)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
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Question 01 **(100 marks)**

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1.1.2 State **05** factors affecting the bioavailability of a medicine. (20 marks)

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