CINEC CAMPUS
Beyond A Graduate

MID SEMESTER EXAMINATION QUESTION PAPER

CODE - QP

Approved for Quality Management System

EDUCATION & TRAINING COURSE: B.ED (HONOURS) IN INFORMATION TECHNOLOGY

COURSE CODE: LC – 0851

YEAR 3– SEMESTER I

OPERATING SYSTEMS- BDI5124

Faculty	Department / Section/Division
Humanities and Education	Education Department

INSTRUCTIONS TO CANDIDATES	Date of the examination: 2023.02.21
Candidates could be disqualified if you violate examination rules.	Duration of the examination = 1 1/2hours
Candidates are not allowed to communicate with and disturb fellow candidates during the examination.	Total Marks = 20 Marks (Marks will be given in 100 and then converted to 20%)

Answer all the questions.

Question 01 (25 Marks)

a) Define what is an operating system and state five (05) functionalities or purposes of an OS.

(10 Marks)

b) Define the below architectures of the OS and draw relevant diagrams for each.

(15 Marks)

i. Monolithic architecture
ii. Microkernel architecture
iii. Layered architecture

Question 02 (25 Marks)

a) Draw a complete process state transmission diagram with the five states.

(10 Marks)

b) Explain what is bounded buffer problem with an appropriate diagram and relate it to an example in a computer system.

(15 Marks)

Question 03 (50 Marks)

a) State all CPU scheduling criteria and state the optimized condition for each.

(10 Marks)

b) Draw the Gantt chart for SJF scheduling (preemptive) and calculate the average waiting time. (Marks will be given for the steps, hence show value calculations for each process)

(20 Marks)

Process	Arrival time	Burst time
P0	0	6
P1	1	4
P2	2	2
P3	3	3

c) Draw the Gantt chart for FCFS scheduling and for Round Robin (2 ms Quantum).

(20 Marks)

For the Round Robin consider that all processes arrive at the same time when clock says 0.

Then calculate the average waiting time for both scheduling methods. (Marks will be given for the steps, hence show value calculations for each process)

Process	Arrival time	Burst time
P1	0	4
P2	1	6
P3	2	5
P4	3	2

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

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Approved for Quality Management System

EDUCATION & TRAINING COURSE: B.ED (HONOURS) IN INFORMATION TECHNOLOGY

COURSE CODE: LC – 0851

YEAR 3– SEMESTER I

DATABASE MANAGEMENT SYSTEMS– BDI5114

Faculty	*Department / Section/Division*
Humanities and Education	*Education Department*

INSTRUCTIONS TO CANDIDATES	*Date of the examination: 2023.02.20*
Candidates could be disqualified if you violate examination rules.	*Duration of the examination = 1 1/2hours*
Candidates are not allowed to communicate with and disturb fellow candidates during the examination.	*Total Marks = 20 Marks* *(Marks will be given in 100 and then converted to 20%)*

INDEX NUMBER:

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For Office use Only

Question No:	1	2	3	4	5	6	7	8	9	10	Total Marks	%	Signature
For Scrutinizer's Use Only (marks)													
For Moderator's Use Only (marks)													

- This is a MCQ paper.
- This paper contains twenty-five (25) questions and six (06) pages.
- Students should provide answers to all the questions.

1. Using the select operation, you can select _____ that satisfy certain criteria.

   a) Tuples
   b) Attributes
   c) Operators
   d) None

2. The -------- states that a foreign key must either match a primary key value in another relation or it must be null.

   a) Entity integrity rule
   b) Referential integrity constraint
   c) Action assertion
   d) Composite attribute

3. In Relational Algebra, queries are performed using _____ .

a) Entities
b) Relationships
c) Operators
d) Objects

4. Different categories of data models are

a) Conceptual, logical, physical
b) Conceptual, hierarchical, physical
c) Contextual, organizational, implementation
d) Conceptual, physical, external

5. Why would you use an identifying relationship?
To model a:

a) Recursive relationship
b) M:N Relationship
c) Exclusive relationship
d) Inclusive relationship

6. The _____ operation, denoted by -, allows us to find tuples that are in one relation but are not in another.

a) Union
b) Set- difference
c) Difference
d) Intersection

7. A degree of a relation is

a) The number of participating entity types
b) The number of attributes
c) The number of primary keys used
d) None of the above

8. Which of the following is NOT true about ER to relational mapping?

a) Strong entities are mapped as separate relations
b) Multi-valued attributes are mapped to separate relations
c) Composite attributes are mapped to separate relations
d) Primary key of an entity is mapped as a primary key in a relational schema

9. The following conditions must be met by a union operation.

a) There must be a common attribute between A and B.
b) A duplicate tuple is automatically discarded.
c) Both A and B
d) None of the above

10. An ER (Entity Relationship) diagram is a type of:

a) Conceptual model
b) Logical model
c) Physical model
d) Computer implementation

11. Which SQL command returns only the number of different salaries (SAL) in the employee (EMP) table?

a) SELECT e.sal FROM emp e
b) SELECT DISTINCT COUNT (e.sal) FROM emp e
c) SELECT COUNT (e.sal) FROM emp e
d) SELECT COUNT (DISTINCT e.sal) FROM emp e

12. Given the following relational heading:
COURSE (course_code , course_title, location, number_of_credits)

Which of the following queries would list the code and course total of all courses with more than 250 students :

a	SELECT course_code, COUNT(*) AS count_of_students FROM COURSE WHERE count_of_students > 250;
b	SELECT course_code, COUNT(*) AS count_of_students FROM COURSE GROUP BY course_code WHERE count_of_students > 250;
c	SELECT course_code, COUNT(*) AS count_of_students FROM COURSE GROUP BY course_code HAVING count_of_students > 250;
d	SELECT course_code, COUNT(*) AS count_of_students FROM COURSE GROUP BY course_code WHERE COUNT(*) > 250;

a) Query a
b) Query b

c) Query c
d) Query d

13. Which of the following is a DBA's function?

a) Database design
b) Backing up the database
c) Defining who can access what in the database
d) All of the above

14. You need to display Name, ContactNo and Amount of the customers whose Name are ends with the letter "M" and could have several other characters.

Which SQL statement displays the required results?

a) SELECT Name, ContactNo, Amount FROM CUSTOMER WHERE Name LIKE _'M';
b) SELECT * FROM CUSTOMER WHERE Name ENDS 'M';
c) SELECT Name, ContactNo, Amount FROM CUSTOMER WHERE Name = '%M';
d) SELECT Name, ContactNo, Amount FROM CUSTOMER WHERE Name LIKE '%M';

15. Which of the following is a function of a database management system (DBMS)

a) Controls access to the data
b) Provides data independence
c) Provides concurrency control
d) All of the above

16. The E-R model is most often used as a tool during the ____ phase of database development

a) Analysis
b) Programming
c) Design
d) Implementation

17. Which is NOT an example of a strong entity type?

a) STUDENT
b) COURSE
c) DEPARTMENT
d) STUDENT_ID

18. In a data model, a weak entity is connected to its relationship by

    a) A dashed line
    b) Two lines
    c) A dotted line
    d) A single line

19. _____ is not a data model.

    a) Object relational
    b) Relational
    c) Hierarchical
    d) Netmode

20. Program data independence means

    a) Insulation between programs and data
    b) Encapsulation between programs and data
    c) Integrity between programs and data
    d) None of the above

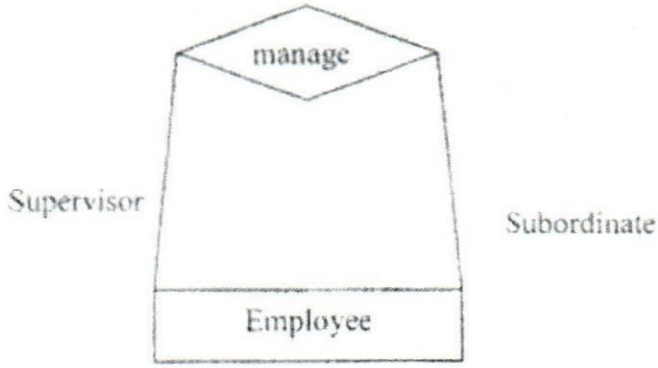
21. In a relational model the main construct is a relation. A relation has

    a) Field, attributes
    b) Rows, records
    c) Attributes, Tuples
    d) Tuples, records

22. "Lecturers must teach courses" In this relationship the participation of lectures entity with courses entity is _____

    a) Partial
    b) Total
    c) Impartial
    d) None of the above

Please refer to the ER diagram given below to answer question 23.



23. The above ER diagram shown an example of a

a) Total relationship
b) Recursive relationship
c) Identifying relationship
d) Descriptive relationship

24. Which of the following constraints states that the primary key cannot have NULL values?

a) Domain constraint
b) Participation constraint
c) Partial key constraint
d) Entity integrity constraint

25. Delete operation performed on a particular relation might violate following constraint.

a) Key constraint
b) Entity integrity constraint
c) Domain constraint
d) Referential integrity constraint

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