QP CODE: 23709215

23709215

Reg No : .....

Name : .....

M.C.A. DEGREE EXAMINATION, MAY 2023

First Semester

Master of Computer Application

Core - MCACT105 - DATABASE TECHNOLOGY AND NOSQL

2020 Admission Onwards

98CE9EF0

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. Discuss the disadvantages of DBMS.
2. What is a data model?
3. Explain the different types of attributes.
4. Compare Primary key and foreign key with suitable examples?
5. Discuss the rules used to convert ER diagram to tables.
6. Represent weak entity sets through a suitable example and explain its operations.
7. What is index ? Explain with Example
8. What are basic set operations in SQL?
9. Compare Serial Schedule with Concurrent Schedule.
10. Compare Commit and Roll Back Commands.
11. Describe Aggregation with suitable examples.
12. Explain the difference between sharding and replication.

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Demonstrate the advantages and disadvantages of using a database management system.

OR

b) Explain how a database can be designed for a Student Information System.

14. a) Briely write a note on Integrity Constraints.

OR

b) Define the procedures for transforming ER model to relational model with suitable diagrams.

15. a) Explain Embedded SQL, Dynamic SQL and Cursors with example.

OR

b) Give a set of FDs for the relation schema R(A, B, C, D) with primary key AB under which R is in 2NF but not in 3NF. Justify your answer.

16. a) Explain 2 Phase Locking with its variants.

OR

b) Explain how we can Design Distributed DBMS.

17. a) Illustrate types of NoSql databases with suitable example.

OR

b) Discuss Distribution models in NoSQL.

(5×9=45 marks)

QP CODE: 23709212

23709212

Reg No : .....

Name : .....

M.C.A. DEGREE EXAMINATION, MAY 2023

First Semester

Master of Computer Application

Core - MCACT102 - "DIGITAL LOGIC & COMPUTER ORGANIZATION"

2020 Admission Onwards

2F6CD684

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. What are the steps for converting Gray code to binary and vice versa? Give examples.
2. What is meant by parity bit?
3. Write a note on alphanumeric codes.
4. State the basic laws of Boolean Algebra.
5. What are SOP and POS forms of Boolean expression? Give example.
6. Define Sequential circuit.
7. What are the basic functional units of a computer?
8. What is RISC?
9. Distinguish betweem RAM and ROM.
10. Explain Program controlled I/O.
11. Explain the need for interconnection networks in multiprocessor systems.
12. What are the hazards in pipelining?

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Perform subtraction using 2's complement method on the binary and explain the steps.
    i) 1011011011 - 101101
    ii) 10101011 - 101010
    iii) 11.10 - 110.1

OR

    b) Explain how to detect and correct errors in the following odd parity Hamming code 0101101

14. a) Solve the following using K-Map. F(A,B,C, D) = ∑(1,3,9,11,4, 5, 12, 13, 10,14) .

OR

    b) Explain the types of flipflops.

15. a) Describe the various addressing modes.

OR

    b) Explain the micro-programmed control unit with a diagram.

16. a) Explain Random Access Memory in detail.

OR

    b) Explain Direct Memory Access with suitable diagrams.

17. a) Explain the Flynn's classification architecture of parallel processing.

OR

    b) Explain pipelining, types of pipelining and hazards of pipelining.

(5×9=45 marks)

QP CODE: 23709211

23709211

Reg No : .....

Name : .....

M.C.A. DEGREE EXAMINATION, MAY 2023

First Semester

Master of Computer Application

Core - MCACT101 - MATHEMATICAL & STATISTICAL FOUNDATION FOR COMPUTER APPLICATIONS

2020 Admission Onwards

98B2973A

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. If A and B are any two sets, prove that AU(B-A) = AUB
2. Define equivalence class
3. Discuss one -one and onto functions with examples
4. What is Conjucnction? Costruct the truth table for $\sim p \wedge (p \rightarrow q)$
5. Explain the rules of inference in propositial calculus
6. Express the following sentence in symbolic form using quantifiers – " All the world loves a lover".
7. Distinguish between correlation and regression.
8. The probability that a student passes mathematics is 2/3,the probability that he passes statistics is 4/9.If the probability of passing at least one subject is 4/5,what is the probability that he will pass both the subjects?
9. Obtain the binomial distribution for which mean is 10 and the variance is 5.
10. What is statistical Inference? What are the branches of statistical Inference?
11. What is one tailed and two tailed test
12. Define test statistic. Write the test statistic in large sample test for single mean

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Define equivalence relation. Find the equivalence relation that generates the partition {0,1,3,}, {2} and {4} of the set A={0,1,2,3,4}. Also write relation matrix and draw the graph of the relation

OR

b) Let *f* and *g* are function from R to R defined by f(x)= 2x+1 and g(x) = x^2 - 2 ; ∀ x respectively. Then find f^{-1} , *f o g* , *g o f,* and *f o f.*

14. a) Show that R Λ(P V Q) is a valid conclusion from the premises (P VQ), Q → R, P→ M and ~M

OR

b) Prove the implication ∀ x (P(x) →Q(x)), ∀x (R(x) → ~Q(x)) ⇒ ∀ x (R(x)→ ~ P(x))

15. a) Obtain the Rank Correlation Coefficient for the following data.

X	17	13	15	16	6	11	14	9	7	12
Y	36	46	35	24	12	18	27	22	2	8

OR

b) Three identical boxes contain two balls each .One has both red ,one has one red and one black and the third has two black balls.A person chooses a box at random and takes out a ball. i) Find the probability that the selected ball is red ii) If the ball is red find the probability that the other ball in the box is also red

16. a) The number of accidents in an year attributed to taxi drivers in a city follows Poisson distribution with mean 3.Out of 1000 taxi drivers find approximately the number of drivers with (i) No accident in a year (ii) more than 3 accidents in a year

OR

b) In a Binomial distribution consisting of 5 independent trials, the first and second terms are 0.4096 and 0.2048 respectively.Find the parameter ‘p’.

17. a) A stenographer claims that she can take dictation at the rate of 120 words per minute.Can we reject her claim on the basis of 100 trials in which she demonstrates a mean of 116 words with standard deviation of 15 words ? Use 5% level of significance

OR

b) The theory predicts the proportion of beans , in the four groups A, B,C, and D should be 9:3:3:1. In an experiment among 1,600 beans the numbers in the four groups were 882, 313, 287 and 118. Does the experimental result support the theory? (The table value of for 3 d.f. at 5% level of significance is 7.81).

(5×9=45 marks)

QP CODE: 23709214

23709214

Reg No : .....

Name : .....

M.C.A. DEGREE EXAMINATION, MAY 2023

First Semester

Master of Computer Application

Core - MCACT104 - SOFTWARE ENGINEERING AND OBJECT ORIENTED MODELING

2020 Admission Onwards

3B12D674

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. Describe the new technologies and the challenges posed by them for software engineers.
2. Identify the umbrella activities of a software process.
3. What is an Agile Process?
4. What are steps required to initiate requirements engineering ?
5. Explain the basic elements used to construct data flow diagram.
6. Describe the types of relationships in an ER diagram.
7. What is function oriented design
8. What is an activity diagram used for?
9. Elaborate the importance of Software testing.
10. What is regression testing ?
11. Define Use Case modeling.
12. Explain the importance of class diagram.

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) What is software myth? Explain the different types of software myths and the reality in detail.

OR

b) Explain the various stages involved in water fall model along with the objectives of each phase. Mention its limitations.

14. a) Describe analysis of requirements with various techniques used for requirement analysis process?

OR

b) Describe the role of good SRS in requirement documentation process?

15. a) Describe in deatil the steps for analysis & desgn of object oriented system.

OR

b) Explain various properties of objects in object oriented design.

16. a) Discuss integration testing in detail.

OR

b) Discuss in detail about unit testing with diagrams.

17. a) Explain UML notation for activity diagram with an example.

OR

b) Compare Class diagram and Interaction diagram.

(5×9=45 marks)

QP CODE: 23709213

23709213

Reg No : .....

Name : .....

M.C.A. DEGREE EXAMINATION, MAY 2023

First Semester

Master of Computer Application

Core - MCACT103 - STRUCTURED PROGRAMMING IN C

2020 Admission Onwards

FD9F1CF5

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. List the special characters in C.
2. Describe the characteristics of escape sequence characters.
3. Write notes on putchar() function.
4. Explain the working of for statement.
5. How can you pass arguments to a function?
6. Distinguish automatic variables and global variable.
7. Define array with appropriate examples.
8. Explain how to pass 1-D array to a function with example.
9. Differentiate between a null pointer and a void pointer.
10. Explain the concept of nested structures with an example.
11. Define stream pointer?
12. When parameters are passed to a program from the command line, how is the program execution initiated?

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Describe type conversions in detail.

OR

b) Write a C program to find the roots of a Quadratic Equation.

14. a) Discuss switch statement with sample program.

OR

b) How to pass arguments to functions? Explain.

15. a) Discuss various string handling function with example.

OR

b) Discuss on passing an array to a function with example.

16. a) Explain the concept of pointers. Demonstrate the various permissible operations on pointers.

OR

b) Explain the following (1) Nested structures (2) Pointer to structure in detail with examples.

17. a) Explain with the help of examples the different file types that can be specified by the fopen().

OR

b) Write a C program to covert the content of the file from lower case to upper case.

(5×9=45 marks)