QP CODE: 4220100914

4220100914

Reg No : .....

Name : .....

M.C.A. DEGREE EXAMINATION, JANUARY 2022

First Semester

Core - MCACT104 - SOFTWARE ENGINEERING AND OBJECT ORIENTED MODELING

2020 Admission Onwards

684D2D68

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. Software does not “wear out” as compared to hardware. Justify.
2. What are the generic framework activities of a software process?
3. Define a Process model. Explain the purposes of Process Models.
4. Differentiate between Technical feasibility and Economical feasibility.
5. Write a short note on use case diagram.
6. Explain software prototyping along with prototyping taxonomy
7. Differentiate Conceptual and technical design
8. Briefly explain component and deployment diagrams
9. What is a test plan ?
10. Explain the integration approches in integration testing.
11. Formulate the purpose of Interaction diagram.
12. Explain about activity diagram with example.

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Explain the characteristics of software that are contrast to those of hardware.

OR

b) Discuss the spiral model for software development and discuss how it is suited for building more complete versions of the software.

14. a) Explain the nature and characteristics of good SRS?

OR

b) Describe requirement engineering process?

15. a) Explain Structure chart with example

OR

b) Describe Data flow diagram

16. a) Discuss software testing strategy and discuss the spiral approach.

OR

b) Write a short note on integration testing with regression testing and smoke testing ?

17. a) Compare sequence diagram and communication diagram.

OR

b) Compare Activity diagram and Class diagram,

(5×9=45 marks)

QP CODE: 4220100913

4220100913

Reg No : .....

Name : .....

M.C.A. DEGREE EXAMINATION, JANUARY 2022

First Semester

Core - MCACT103 - STRUCTURED PROGRAMMING IN C

2020 Admission Onwards

3522DB27

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. Explain keywords in C.
2. How do variables and symbolic names differ?
3. What is the purpose of using getchar() function?
4. Explain else if ladder with proper example.
5. What is the need of return statement?
6. What are storage classes? Why do we need various storage classes?
7. Explain with suitable example how to declare and initialize 1Darray.
8. Discuss on various string handling functions available in C?
9. How are pointers passed to functions? Explain.
10. Compare and contrast a Structure and a Union.
11. How is a buffer area defined in stream-oriented data file?
12. List three logical bitwise operators?

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Describe operators in C with suitable examples.

OR

b) With examples discuss the following arithmetic operators in C language.

14. a) Compare while and do-while statements with examples.

OR

b) Explain how can you access different types of user defined functions and return values to the calling function.

15. a) Discuss on Array of Strings.

OR

b) Write a program to insert and delete an element to a given position using array.

16. a) List out the advantages and disadvantages of union over structure. How can union be defined, declared and accessed? Give example.

OR

b) How can you access the elements of a 1D array using pointer notation? Write a program to sort a 1D array of integers using pointer notation.

17. a) What are Macros and explain various conditional macro statement? How macro is different from functions?

OR

b) Write a C program to create a file with n numbers, read the file and separate the even and odd numbers into two different files.

(5×9=45 marks)

QP CODE: 4220100915

4220100915

Reg No : .....

Name : .....

M.C.A. DEGREE EXAMINATION, JANUARY 2022

First Semester

Core - MCACT105 - DATABASE TECHNOLOGY AND NOSQL

2020 Admission Onwards

2C3C51B1

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. Discuss the advantages of DBMS.
2. Illustrate schema and instance with examples.
3. Illustrate conceptual schema with example.
4. Explain the concept of relational model with a suitable example.
5. Represent the way in which Primary key, Candidate key and Super key differs in its working?
6. List out the features of Weak entities?
7. What are integrity Constraints used in SQL
8. Explain Functional dependancy with example
9. What is the significance of Transaction Log File ?
10. What are Dead Locks?
11. Write short notes on Schemaless Database.
12. Illustrate Database sharding.

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Describe the main characteristics of the database approach in contrast with the file sytem oriented approach

OR

b) Design an ER diagram for the NHL(National Hockey League) database with these details:- the NHL has many teams, each team has a name, a city, a coach, a captain, and a set of players, each player belongs to only one team, each player has a name, a position (such as left wing or goalie), a team captain is also a player, a game is played between two teams (referred to as host_team and guest_team) and has a date and a score.

14. a) Write about Primary key, Foreign key and other Integrity constraints in a relation with suitable examples.

OR

b) Explain how to translate the relationship sets with key constraints into relational table?

15. a) Consider the employee database

Employee (Employee_name, street, city)

Works (Employee_name, Company_name, salary)

Company (company_name, city)

Manager (employee_name, manager_name)

Give SQL expression for the following

i. *Find the name and cities of residence of all employees who work for first Bank Corporation.*
ii. *Find the name, street and cities of residence of all employees who work for First Bank Corporation and earn more than $ 10,000.*
iii. *Find all employees in the database who live in the same cities and on the same streets.*
iv. *Find the employees whose salary is greater than ten thousand.*

OR

b) Compare BCNF and 3NF with example.

16. a) Explain the need for concurrency control. How the issues of concurrent execution is solved.

OR

b) Explain how crash recovery is performed using ARIES.

17. a) Illustrate Document store for Customer details and their orders.

OR

b) Discuss Master slave Replication in NoSQL.

(5×9=45 marks)

QP CODE: 4220100911

4220100911

Reg No : .....

Name : .....

M.C.A. DEGREE EXAMINATION, JANUARY 2022

First Semester

Core - MCACT101 - MATHEMATICAL & STATISTICAL FOUNDATION FOR COMPUTER APPLICATIONS

2020 Admission Onwards

3EE7CF21

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. Define power set. Find the power set of (i) ∅ (ii) {∅}
2. Explain symmetric and antisymmetric relations with examples.
3. Define a partial ordering with an example
4. Define Biconditional Statement
5. State De Morgan's law in propositional logic
6. Explain universal quantifiers with examples
7. The two regression coefficients are -0.7 and -0.2. Find Correlation coefficient
8. Define equally likely events
9. Can the following be a probability density function.If not justify.

f(x) = 1/2 When x = 0

= 2/3 When x = 1

=1/4 When x = 2

=0 Otherwise

10. What are the desirable properties of a point estimate?
11. Briefly explain two important applications of t distribution in small sample tests.
12. Explain the procedure of testing of independence of two attributes.

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Prove that the congruence modulo m is an equivalence relation on the set of integers.

OR

b) Determine whether the functions *f* and *g* are bijections from R to R where *f* (x) = 2x -3 and *g* (x) = x^2 + 1. Find *fog* and *gof* ?

14. a) Determine the validity of the following argument H1: If Canada ia country then Newyork is a city , H2 : Newyork is a City , C: Canada is a country

OR

b) Show that ∃ x, M(x) follows logically from ∀ x (H(x) → M(x)), and ∃ x, H(x)

15. a) The two regression equations are given by 8x-10y + 66 = 0 and 40x - 18y-214 = 0
i) Identify the regression lines of y on x and x on y
ii) obtain regression coefficients and the correlation coefficient
iii) Find the standard deviation of y if the standard deviation of x is 4

OR

b) The chance that doctor A will diagnose the disease B correctly is 60%.The chance that the patient will die by his treatment after correct diagnosis is 40% and the chance of death by wrong diagnosis is 70% . A patient of Doctor A who had disease B died ,What is the probability that his disease was correctly diagnosed

16. a) A car hire firm has two cars which it hires out day by day. The number of demands for a car on each day is distributed as a Poisson variate with mean 1.5 .Calculate the proportion of days on which
(i) neither car is used
(ii) some demand is refused

OR

b) In a distribution exactly normal 7% of the items are under 35 and 89% are under 63.What are the mean and standard deviation of the distribution?

17. a) 12 rats were given a high protein diet and another set of 7 rats given a low protein diet. The gain in weight in gms observed in the two sets are given below:
High protein diet : 13 14 10 11 12 16 10 8 11 12 9 12
Low protein diet : 7 11 10 8 10 13 9
Examine whether the high protein diet is superior to the low protein diet at 5% level of significance.

OR

b) An examination was given to 50 students at college A and to 60 students at college B .At A the mean grade was 75 with S.D of 9 and at B the mean grade was 79 with S.D of 7 . Is there significant difference between the performance of the students at A and those at B given that ($\propto = 0.05$)

(5×9=45 marks)