

Name:
Roll No.:

Rajagiri College of Social Sciences (Autonomous)
First Semester MCA Degree Examination – October 2018
(Regular/Supplementary - 2016 admission onwards)

Code: 2212

Sub: MCA 102- Computer Organization and Architecture

Max. Marks: 75

Duration: 3Hrs

SECTION A

*Answer any **TEN** questions.
(Each question carries 3 marks)*

10 X 3 = 30

- 1 Write the hexadecimal sequence for decimal 0 through 20.
- 2 Convert $(435)_8$ to decimal and hexadecimal.
- 3 Write the logic diagram and truth table for Full adder.
- 4 What is the advantage of JK flip flop over SR flip flop?
- 5 Define the terms Microinstruction, Microroutine.
- 6 What is cache miss? How is read miss and write miss handled?
- 7 Write control signals for storing a word in memory.
- 8 List the techniques used for grouping of the control signals.
- 9 Discuss the I/O interface for an input device.
- 10 What is the purpose of MFC?
- 11 What is locality of reference?
- 12 Realize $AB' + BC + A'B'$ using logic gates.

SECTION B

*Answer **ALL** questions.
(Each question carries 9 marks)*

5 X 9 = 45

- 13 a) Perform the following operations on the given binary numbers:
i. $110111.1 / 101$ ii. 10110×10.1 iii. $1001.11 - 101011.01$

[OR]

- b) Perform BCD addition on the following decimal numbers:

i) $(113)_{10} + (101)_{10}$

ii) $(17)_{10} + (12)_{10}$

- 14 a) What is an encoder? Design a decimal to binary encoder and explain its working.

[OR]

- b) List out and illustrate the basic rules of boolean algebra.

P.T.O

15 a) Explain with necessary diagrams, the direct mapping in cache.

[OR]

b) What is indexed mode? What are its variations?

16 a) With a neat block diagram, explain in detail about micro programmed control unit and explain its operations.

[OR]

b) Describe the concept of pipelining with example.

17 a) Explain different mechanisms used for bus arbitration.

[OR]

b) Explain about DMA in detail.

Name:
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Rajagiri College of Social Sciences (Autonomous)
First Semester MCA Degree Examination- October 2018
(Regular/Supplementary – 2106 admission onwards)

Code: 2214
Sub: MCA 104- Database Management System

Max. Marks: 75
Duration: 3Hrs

SECTION A

*Answer any **TEN** questions.
(Each question carries 3 marks)*

10 X 3 = 30

- 1 Define null values.
- 2 What is a data model? List the types of data model used.
- 3 Describe the selection and projection operator in Relational Algebra.
- 4 Database systems use some variant of relational algebra to represent query evaluation plans. Explain why algebra is suitable for this purpose?
- 5 Define the Union and Decomposition rules used to infer the closure of FDs with example.
- 6 Discuss 3NF with an example.
- 7 Mention the different set operators in SQL with examples.
- 8 What do you mean by self-join? Give example.
- 9 What is the role of precedence graph in database transactions?
- 10 What are the methods for dealing deadlock problem?
- 11 List any four applications of DBMS.
- 12 Compare left outer join and right outer join.

SECTION B

*Answer **ALL** questions.
(Each question carries 9 marks)*

5 X 9 = 45

- 13 a) Compare database management systems and traditional file systems. Illustrate the concept of physical and logical data independence with examples

[OR]

- b) What are the categories of users in a database management system?
Explain their roles.

P.T.O

- 14 a) Describe how to translate the following into relational tables with example.
(i) Entity Sets (ii) Relationship sets (iii) Relationship sets with key constraints and participation constraint.

[OR]

- b) A. Define the following operations of the relational algebra in terms of the basic operations: (i) Intersection (ii) Join (iii) Division
B. Consider the relations City (city_name, state) Hotel (name, address)
City_hotel (hotel_name, city_name, owner) Answer the following queries in relational algebra
(i) Find the names and address of hotels in Agra.
(ii) List the names of cities which have no hotel.
(iii) List the names of the hotels owned by 'Taj Group'.

- 15 a) Discuss how schema refinement through dependency analysis and normalization can improve schemas obtained through ER design.

[OR]

- b) Given $R = (CID, CNAME, CCITY, STATE, PID, PNAME, PCOST, PPROFIT, SALE, SALEDT)$
 $F = \{CID \rightarrow CNAME, CCITY \rightarrow PID \rightarrow PNAME, PCOST, PPROFIT, CCITY \rightarrow STATE, CID, PID, SALEDT \rightarrow SALE\}$
Normalize the relation.

- 16 a) What aggregate operators does SQL Support? Explain the Group By Having clause. Mention any restrictions that must be satisfied by the fields that appear in the Group By clause.

[OR]

- b) What is trigger? Explain the different types of triggers with examples.

- 17 a) Explain Deadlock in transactions with example.

[OR]

- b) How are users added to a database? Discuss the guidelines for managing tablespaces and objects.

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Rajagiri College of Social Sciences (Autonomous)
First Semester MCA Degree Examination - October 2018
(Regular/Supplementary – 2016 admission onwards)

Code: 2211

Sub: MCA 101- Probability And Statistics

Max. Marks: 75

Duration: 3Hrs

SECTION A

*Answer any **TEN** questions.*
(Each question carries 3 marks)

10 X 3 = 30

- 1 What is standard deviation? Explain its superiority over other measures of dispersion.
- 2 Define correlation. Explain the various types of correlation with suitable examples.
- 3 If the probability of a horse A winning a race is $1/5$ and the probability of a horse B winning the same is $1/6$. What is the probability that one of the horses will win?
- 4 The probability that a student Mr.X 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 Mr. X will pass both the subjects?
- 5 Prove that $\text{Var}(aX) = a^2 \text{Var}(X)$, where a is a constant.
- 6 What is the probability of guessing correctly at least 6 of the ten answers in a True- False objective test?
- 7 Explain stratified sampling.
- 8 State central limit theorem.
- 9 Write a note on the power of a test.
- 10 Explain the term- Level of Significance.
- 11 Define a random variable. Distinguish discrete and continuous random variable.
- 12 What are the applications of t distribution?

SECTION B

*Answer **ALL** questions.*
(Each question carries 9 marks)

5 X 9 = 45

- 13 a) Calculate the mean and standard deviation from the following data.

Value	90-99	80-89	70-79	60-69	50-59	40-49	30-39
Frequency	2	12	22	20	14	4	1

[OR]

- b) Find the rank Correlation Coefficient between poverty and overcrowding from the table below:

Town	A	B	C	D	E	F	G	H	I	J
Poverty	17	13	15	16	6	11	14	9	7	12
Over crowding	36	46	35	24	12	18	27	22	2	8

- 14 a) (i) 20% of all students in a university are graduates and 80% are undergraduates. The probability that graduate students are married is 0.50 and the probability that an undergraduate student is married is 0.10. If a student is selected at random, what is the probability that the student is married?
- (ii) If A and B are independent events, prove that A and B' are independent.

[OR]

- b) There are 4 men and 3 women. Find the probability of selecting 3 of which
- i) Exactly two are women.
 - ii) No woman.
 - iii) At least one woman.
 - iv At the most 2 women.
- 15 a) If a random variable X follows Poisson distribution such that $P(X=1)=P(X=2)$, find a) the mean and variance of the distribution b) $P(X=0)$.

[OR]

- b) A manufacturer of blades knows that 5% of his product is defective. If he sells blades in boxes of 100, and guarantees that no more than 10 blades will be defective, what is the probability that a box will fail to meet the guarantee quality? ($e^{-5} = 0.0067$).
- 16 a) What are the main steps involved in a sample survey?
- [OR]**
- b) Describe the important properties of a good estimator.
- 17 a) In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers?
[State the hypothesis clearly]

[OR]

- b) Godrej Soap Manufacturing Company was distributing a particular brand of soap through a large number of retail shops. Before a heavy advertisement campaign, the mean sales per week per shop was 140 dozens. After the campaign, a sample of 26 shops was taken and the mean sales was found to be 147 dozens with standard deviation 16. Can you consider the advertisement effective? Use 5% level of significance.

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First Semester MCA Degree Examination - October 2018
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Code: 2213

Sub: MCA 103 - Problem Solving with Structured Programming in C

Max. Marks: 75

Duration: 3Hrs

SECTION A

*Answer any **TEN** questions.
(Each question carries 3 marks)*

10 X 3 = 30

- 1 How floats are stored in memory?
- 2 What is an object module?
- 3 What do you mean by nesting of loops?
- 4 State the difference between `getc()` and `getchar()` functions.
- 5 What are the benefits of declaring a static variable as local?
- 6 What is a function declaration and definition?
- 7 Write a program to copy one string into another without using string functions.
- 8 What is a union? How does it differ from structure?
- 9 What do the statement `"int k = 0x32;"` mean?
- 10 What do the statement mean `fp=fopen("test.txt", "r+");`
- 11 Find the output of
 - a) `a=5; printf("%d,%d", ++a, ++a);`
 - b) `a=10; printf("%d,%d", a++, a+1);`
- 12 Discuss the statement `int *ptr = &a;`

SECTION B

*Answer **ALL** questions.
(Each question carries 9 marks)*

5 X 9 = 45

- 13 a) State the rules for naming variables. Differentiate identifier & variable.

[OR]

- b) List out the main features of C Language.

- 14 a) Draw the flowchart and write the algorithm to find the reverse of a given number.

[OR]

- b) Write the syntax of `printf()` function with format control string and conversion specification.

P.T.O

- 15 a) Write a C program to check whether a string is a palindrome or not?

[OR]

- b) Write a C program to calculate the largest of 3 numbers using functions.
Provide functions for input, process and output.

- 16 a) Provide user-defined functions for adding, deleting and searching for books.
Explain with an example to create a structure book.

[OR]

- c) What is a pointer? What is the difference between a pointer to an array & array of pointers?

- 17 a) What are the different storage classes? Explain each with example.

[OR]

- b) What is a file? Discuss its types and uses. Discuss any two file handling operation in C.

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Rajagiri College of Social Sciences (Autonomous)
First Semester MCA Degree Examination – October 2018
(Regular/Supplementary – 2016 admission onwards)

Code: 2215

Sub: MCA 105- Essentials of Management & Organization Behaviour

Max. Marks: 75

Duration: 3Hrs

SECTION A

Answer any **TEN** questions.
(Each question carries 3 marks)

10 X 3 = 30

- 1 Explain four of Henry Fayol's Principles.
- 2 Explain Levels of Management.
- 3 Explain any two types of employment tests done during the selection process.
- 4 Mention the external sources of recruitment.
- 5 What is coordination? Explain its importance.
- 6 Define leadership. What are the characteristics of leadership?
- 7 Explain the Product Life Cycle.
- 8 Explain the following terms: 1. Target Market. 2. Satisfied Customers.
- 9 Explain Self-Esteem and Self-Monitoring.
- 10 Explain the sixteen primary traits of Personality.
- 11 Explain the following Terms: 1. Power. 2. Accountability.
- 12 "Physiological needs in Maslow's need hierarchy theory is more important than other needs". Comment.

SECTION B

Answer **ALL** questions.
(Each question carries 9 marks)

5 X 9 = 45

- 13 a) Illustrate the functions of management in detail.

[OR]

- b) Management is an Art or Science. Justify your answer.

- 14 a) Narrate in brief the different types of organisation.

[OR]

- b) State and explain the stages of selection process.

P.T.O

- 15 a) Define leadership. Explain the importance of good leadership in an organisation.
Explain the qualities of a good leader.

[OR]

- b) What are the essentials of a good control system?

- 16 a) What do you mean by Advertising Media? Are all advertising media suitable for all type of businesses? Justify your Answer.

[OR]

- b) What is Market Research? Explain its importance in modern business.

- 17 a) Define stress. Bring out the impact of stress on performance and satisfaction of employees.

[OR]

- b) What is perception? Explain the factors affecting perception. How can you improve perception?