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R-17**Code: 7P2A14**

M.C.A. I Semester Regular & Supplementary Examinations January 2019

Accounting and Financial Management

Max. Marks: 60

Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60 Marks)

UNIT-I

1. a) Who are the users of accounting? How it is useful to them?
- b) Discuss various type accounts. Bring out debit and credit rules of those accounts.

OR

2. a) Explain the accounting cycle process.
- b) Prepare the Trial Balance from the following ledger balances

Particulars	Rs.	Particulars	Rs.
Purchases	82,800	Income Tax	3,700
Buildings	30,000	Insurance	1,300
Wages	68,000	Opening stock	18,000
Fuel	2,000	Commission paid	300
Creditors	18,000	Debtors	19,000
Bills payable	700	Bad debts	800
Discount received	100	Salaries	25,000
Sales	1,93,000	Printing expenses	8,000
Bills receivable	6,900	Postage and Telegram	3,600
Cash at bank	13,000	Bank overdraft	4,600
Capital	70,000	Drawings	4,000

UNIT-II

3. Write a note on (i) P/V Ratio (ii) Contribution (iii) Breakeven point (iv) Margin of safety

OR

4. a) Explain the significance of break even analysis
- b) The following data is extract from the books of Giridhar Manufacturing Co. Ltd. Sales Rs. 180,000, Variables cost 1,44,000 and fixed cost Rs.24,000. Calculate (a) P/V Ratio (b) Break Even point (c) What should be sales if profits is 24,000. (d) what should be profit if sales are Rs.2,70,000

UNIT-III

5. a) Explain the significance of ration analysis.
- b) Discuss the relevance of liquidity ratios.

OR

6. Following are the details of CB Traders Ltd find out (i) Sales, (ii) Debtors, (iii) Closing stock, (iv) Creditors (v) current assets (vi) current liabilities

Particulars	Ratio
Current Ratio	2.5
Liquidity Ratio	1.5
Working Capital	Rs.6,00,000
Stock Velocity	8 months
Debtors velocity	3 months
Creditors velocity	2 months
Gross profit ratio	25%

Additional information: Gross profit for the year is Rs.4,00,000. Closing stock for the year is Rs.10,000 more than the opening stock.

UNIT-IV

7. a) What is financial management?
b) Illustrate the role of financial management in an organization.

OR

8. a) Explain the superiority of Wealth Maximization objective.
b) Distinguish between Equity share and Preference shares.

UNIT-V

9. What are discounted flow techniques of capital budgeting?

OR

10. From the following information, calculate Net Present Value (NPV) of the two projects and suggest which of the project should be accepted?

Particular of the project	Project -M	Project -N
Initial Investment	Rs. 1,60,000	Rs. 1,80,000
Year 1	50,000	60,000
Year 2	60,000	60,000
Year 3	44,000	50,000
Year 4	66,000	40,000
Year 5	80,000	66,000

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R-17

Code: 7P2B11

M.C.A. I Semester Regular & Supplementary Examinations January 2019

Mathematical Foundations of Computer Science

Max. Marks: 60

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 12 = 60 Marks)

UNIT-I

1. a) State and explain the rules that that can generate a well formed formula with suitable example 6M
b) Show that $S \vee R$ is tautologically implied by $(P \vee Q) \wedge (P \rightarrow R) \wedge (Q \rightarrow S)$. 6M

OR

2. a) Explain any five rules of inference with examples 6M
b) Define PDNF and find PDNF for $(\sim P \leftrightarrow R) \wedge (Q \leftrightarrow P)$. 6M

UNIT-II

3. a) Let $A = \{1, 2, 3, 5, 6, 10, 15, 30\}$, show that the relation 'divides' is a partial ordering on A and draw Hasse diagram. 6M
b) What is relation and write different properties of relation with example. 6M

OR

4. a) Differentiate partial ordering relation and equivalence relation with suitable example? 6M
b) Define lattice and explain its properties with illustrations. 6M

UNIT-III

5. a) Discuss Pigeon-hole principles and its application. 6M
b) Use multinomial theorem to expand $(X_1+X_2+X_3+X_4)^4$. 6M

OR

6. a) Find the number of integers between 1 and 250 which are divisible by any of the integers 2, 3, 5 or 7 and hence find the number of integers between 1, 250 which are not divisible by 2, 3, 5 or 7. 6M
b) From a group of 10 Professors how many ways can a committee of 5 members be formed so that at least one of Professor B will be included? 6M

UNIT-IV

7. a) Solve recurrence relation $a_n - 4a_{n-1} + 4a_{n-2} = 0, a_0 = 0, a_1 = 1$. 6M
b) Explain Fibonacci relation with suitable examples and also solve it. 6M

OR

8. a) Solve $a_n - 5a_{n-1} + 6a_{n-2} = (n+1)^2, a_0 = 0, a_1 = 1$. 6M
b) Solve $a_n - 7a_{n-1} + 12a_{n-2} = 0; n \geq 2$ by generating function. 6M

UNIT-V

9. a) Write an algorithm for Kruskal's algorithm for constructing minimal spanning tree and explain with suitable example? 6M
b) Differentiate between BFS and DFS with an example? 6M

OR

10. a) In any planar graph, show that $|V| - |E| + |R| = 2$ 6M
b) Define chromatic number and explain it with four examples. 6M

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R-17

Code: 7P2B15

M.C.A. I Semester Regular & Supplementary Examinations January 2019

Object Oriented Programming with C++

Max. Marks: 60

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 12 = 60 Marks)

UNIT-I

1. Draw and explain the basic structure of C++ program with an example 12M

OR

2. a) How data and functions are organized in Object Oriented Program? Explain with an example. 6M
b) What are the various access control specifiers in C++? Give their syntaxes 6M

UNIT-II

3. a) Write C++ code that defines a class and declares an array of objects to that class. 6M
b) Write C++ Program that demonstrates the usage of static data member and static member function. 6M

OR

4. a) How members function is defined inside a class and outside the class? Explain with an example each. 6M
b) Define parameterized constructors. How to write them? Give an example. 6M

UNIT-III

5. a) What is function overloading? What are the principles of function overloading? 6M
b) Define template. What is the need for templates in programming? Write C++ code that declares a Template class. 6M

OR

6. a) Define operator overloading. Write the rules to overload operator. 6M
b) Write C++ Program to overload + operator to add two matrices. 6M

UNIT-IV

7. a) What is polymorphism? How it is achieved at compile time and runtime? Explain both with the help of example. 6M
b) List and explain the rules associated with virtual functions. 6M

OR

8. Write a C++ program to illustrate multiple and multilevel inheritance. 12M

UNIT-V

9. a) Explain the use of try, catch and throw for exception handling in C++. 6M
b) What is file? What are the different operations that can be performed on the files in c++. 6M

OR

10. a) Write a C++ Program for reading the Content in the File and perform any manipulation to the content. 6M
b) Discuss about STL programming model. 6M

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R-17

Code: 7P2C13

M.C.A. I Semester Regular & Supplementary Examinations January 2019

Probability and Statistics

Max. Marks: 60

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 12 = 60 Marks)

UNIT-I

1. a) A random variable X has the following probability distribution

x	-2	-1	0	1	2	3
P(x)	0.1	k	0.2	2k	0.3	3k

- (i) Find k (ii) $P(-2 < x < 2)$ (iii) Cumulative distribution function
(iv) Mean of X.

6M

- b) Define conditional probability. State and Prove Bay's theorem.

6M

OR

2. a) Write a short note on conditional probability

6M

- b) Continuous random variable X has the probability density function

$$f(x) = k(1 - x^2) \text{ when } 0 < x < 1,$$

$$f(x) = 0 \text{ otherwise}$$

- Find (i) k (ii) Mean (iii) Variance

6M

UNIT-II

3. a) Ten coins are thrown simultaneously. Find the probability of getting at least seven heads.

6M

- b). Average number of accidents on any day on a national highway is 1.8. Determine the probability that the number of accidents are (i) at least one (ii) at most one

6M

OR

4. a) If the masses of 300 students are normally distributed with mean 68 Kgs and Standard deviation 3 Kgs, how many students have masses (i) Greater than 72 Kg (ii) Between 65 and 71 Kg inclusive

6M

- b) Calculate the mean and standard deviation of a normal distribution in which 31% are under 45 and 8% are over 64.

6M

UNIT-III

5. A population consist of five numbers 5, 10, 14, 18, 13, 24 consider all possible distinct samples of Size 2 without replacement.
Find
- (i) Population Mean
 - (ii) Population standard deviation
 - (iii) Sampling distribution of mean
 - (iv) Mean of the sampling distribution of means
 - (v) Standard deviation of the sampling distribution of means
 - (vi) Verify sampling distribution of mean and variance by suitable formula 12M

OR

6. a) If a random sample of size 81 was taken whose variance is 20.25 and mean is 32 from a population, construct 98% confidence interval for population mean. 6M
- b) Explain Point estimation and Interval estimation 6M

UNIT-IV

7. a) Write about (i) Null hypothesis (ii) Type I Type II errors (iii) Alternative hypothesis 6M
- b) A sample of 400 items is taken from a population whose standard deviation is 10. The mean of the sample is 40. Test whether the sample has come from a population with mean 38. 6M

OR

8. a) A random sample of 100 recorded deaths in the united states during the past year showed an average life span of 71.8 years. Assuming a population standard deviation of 8.9 years, does this seem to indicate that the mean life span today is greater than 70 years? Use a 0.05 level of significance. 6M
- b) Five measurements of the tar content of a certain kind of cigarette yielded 14.5, 14.2, 14.4, 14.3, and 14.6 mg per cigarette. Test the manufacture's claim that the average tar content is $\mu = 14.0$ at the level of significant $\alpha = 0.05$ 6M

UNIT-V

9. Explain (i)Arrival pattern (ii)Service pattern
(iii)Queue disipline (iv) Queue behaviour 12M

OR

10. A self service canteen employs one cashier at its counter 8 customers arrive per every 10 minutes on an average. The cashier can serve on average one per minute. Assuming that the arrivals are Poisson and the service time distribution is exponential, determine:
- (i) The average number of customers in the system
 - (ii) The average queue length
 - (iii) Average time a customer spends in the system
 - (iv) Average waiting time of each customer. 12M

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Code: 7P2B12

M.C.A. I Semester Regular & Supplementary Examinations January 2019

Problem Solving with 'C'

Max. Marks: 60

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 12 = 60 Marks)

UNIT-I

1. a) Explain briefly the features of an algorithm, flowchart and discuss about Program development steps? 8M
- b) Draw a flow chart for the prime number program. 4M

OR

2. a) What are the steps involved in program development process? Explain. 6M
- b) What are Operators in 'C'? Explain with example. 6M

UNIT-II

3. a) Differentiate between else-if and switch? Explain with an example. 6M
- b) Discuss about the **enum** data type with example. 6M

OR

4. a) What is the purpose of the **do - while** and **while** loops? Discuss about their usage. Distinguish between them. 7M
- b) Discuss about formatted I/O with suitable examples. 5M

UNIT-III

5. a) Explain the concept of passing strings to functions as dynamic arrays with a program. 6M
- b) Write a C program to delete the duplicate elements in an array. 6M

OR

6. a) What is a multidimensional array? How is it initialized? How are the elements of multidimensional arrays stored? Comment on the accessing of the elements. 6M
- b) Write a C program to convert the given string into reverse case without using string functions. 6M

UNIT-IV

7. a) Explain about different parameter passing mechanisms with examples. 6M
- b) Write C program's for swapping of 2 numbers using different parameter passing mechanisms 6M

OR

8. a) Is there any difference between structure and Union? If Yes, Explain. 4M
- b) Write a C program that defines a structure-student with members-name, average, address where address is inner structure that contains dno, street, city as members, read the student details and display the output -student name and his city as follows:

Student name	city
X	zzz
Y	www

8M

UNIT-V

9. a) What is pointer? Discuss about pointers to pointers with examples. 6M
- b) Write a program to display student details using pointers to structure. 6M

OR

10. a) Discuss about file I/O operations. 6M
- b) Write a C program that reads n numbers and writes even numbers into one file EVEN.txt and odd number into another file ODD.txt? 6M

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R-17

Code: 7P2C16

M.C.A. I Semester Regular & Supplementary Examinations January 2019

Technical Communication and Professional Ethics

Max. Marks: 60

Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60 Marks)

UNIT-I

1. What is Technical Communication? Illustrate the importance of Technical Communication.

OR

2. What are the implications of effective listening?

UNIT-II

3. Examine the impact of technology in communication.

OR

4. Explain the role of software/technology in creating and presenting the documents.

UNIT-III

5. i. What is group communication?
ii. What are the advantages of group communication?
iii. Explain various group communication activities.

OR

6. a) What is an 'interview'?
b) Explain the objectives and types of 'interview'

UNIT-IV

7. Illustrate the significance of Ethical Theories.

OR

8. a) Distinguish the concepts of 'Consensus' and 'Controversy'.
b) Explain the professional roles to be played by an engineer.

UNIT-V

9. Define 'Intellectual Property Rights (IPR)'. Explain the significance of IPR in professional life.

OR

10. Write brief notes on the following.
i. Employee Rights
ii. Collective bargaining
iii. Respect for authority
iv. Conflict of Interest
