M.C.A. I Semester Regular Examinations January 2018
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)
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UNIT–I

1. How do you classify the accounts? Explain the rules of debit and credit with respect of different types of accounts.

OR

2. The following Trail Balance is extracted from the books of a merchant on 31st Dec 2016. Prepare final accounts for the year ended 31st Dec 2016.

Particulars	Debit (Rs.)	Credit (Rs.)
Furniture and fittings	640	
Motor Vehicles	6250	
Buildings	7500	
Capital		12500
Rent	125	
Sundry Debtors and Creditors	3800	2500
Opening stock	3460	
Purchases and sales	5475	15450
Bank OD		2850
Sales and purchases returns	200	125
Wages	450	
Interest	118	
Commission		575
Cash in hand	650	
Taxes and insurance	1250	
General Expenses	782	
Salaries	3300	
Total	34000	34000

Adjustments:

1. Closing stock was Rs. 3,250.

2. Wages outstanding Rs. 100, Salaries outstanding Rs. 150.

3. Taxes and Insurance are prepaid to the extent of Rs. 250.

UNIT–II

3. Determine the Break-even-analysis with example chart?

OR

4. A company estimates that next year it will earn a profit of Rs. 50000. The budgeted fixed costs and sales are Rs. 250000 and Rs. 993000 respectively. Find out the break-even-point of the company.

<div align="center">UNIT–III</div>

5.   What are the classifications of rations?

<div align="center">**OR**</div>

6.   The following data has been taken from the balance sheets of three companies:

Particulars	Company A (Rs.)	Company B (Rs.)	Company C (Rs.)
Cash	20000	40000	100000
Sundry Debtors	160000	160000	400000
Opening stock	120000	200000	600000
Sundry creditors	50000	75000	400000
Bills payable	50000	75000	400000

Comment on their comparative liquidity or short term financial health.

<div align="center">UNIT–IV</div>

7.   Explain about scope and objectives of Financial Management?

<div align="center">**OR**</div>

8. a) Discuss about time value of money?

   b) Explain the long term sources of finance?

<div align="center">UNIT–V</div>

9.   What are the techniques of capital Budgeting and explain briefly?

<div align="center">**OR**</div>

10.   Elaborate the capital budgeting process?

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M.C.A. I Semester Regular Examinations January 2018
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)
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UNIT–I

1. a) Construct the truth table for the following formula and verify whether it is a tautology or not $(P \wedge Q) \vee (\neg P \wedge Q) \vee (P \wedge \neg Q) \vee (\neg P \wedge \neg Q)$.   6M

   b) Obtain disjunctive normal form for $P \wedge (P \rightarrow Q)$.   6M

OR

2. a) Show that $\neg(P \wedge Q) \rightarrow (\neg P \vee (\neg P \vee Q)) \leftrightarrow (\neg P \vee Q)$.   6M

   b) Obtain the Principal disjunctive normal form of
   (i) $(\neg P \vee Q)$ (ii) $(P \wedge Q) \vee (\neg P \wedge R) \vee (Q \wedge R)$.   6M

UNIT–II

3. a) Explain the following properties of binary relations with suitable examples. :
   i. Transitivity.   ii. Reflexivity.   iii. Irreflexivity.
   iv. Symmetry.   v. Antisymmetry   vi. Asymmetry.   6M

   b) Let X={2,3,6,12,24,36} and the relation ≤ be such that X≤Y is X divides Y. Draw the Hasse diagram of (X, ≤).   6M

OR

4. a) What is Hasse diagram? Draw the Hasse diagram for the following set:{3,9,27,54}, under the partial ordering relations "divides" and indicate whether totally ordered or not.   6M

   b) Define a relation? Explain the representation of a relation.   6M

UNIT–III

5. a) In how many ways can we distribute 10 identical marbles among 6 distinct containers?   6M

   b) Explain the concept of pigeon hole principle with examples.   6M

OR

6. a) A state license plate requires three English letters followed by a 4 digits.
   i. How many different plates can be manufactured on repetition of letters and digits are allowed.
   ii. How many plates are possible if only the letters can be repeated?
   iii. How many are possible if number repetitions are allowed at all.   6M

   b) Find binomial coefficient of $x^9 y^3$ in $(3x + 4y)^{12}$ 6M
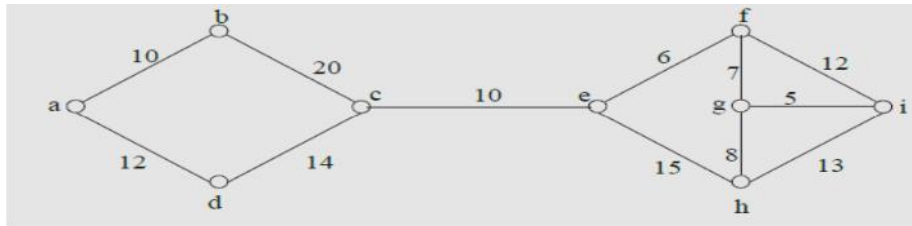
UNIT–IV

7. Solve the recurrence relation using generating function.
$a_n - 7a_{n-1} + 10a_{n-2} = 0$, for n ≥ 2, $a_o = 1$ and $a_1 = 2$. 12M

OR

8. Find a generating function for the recurrence relation :
$a_{n+2} - 3a_{n+1} + 2a_n = 0$, n ≥ 0 and $a_o = 1$, $a_1 = 6$. Hence solve it. 12M

UNIT–V

9. a) Explain kruskal's algorithm and using the same obtain the minimal spanning tree for the following weighted graph.
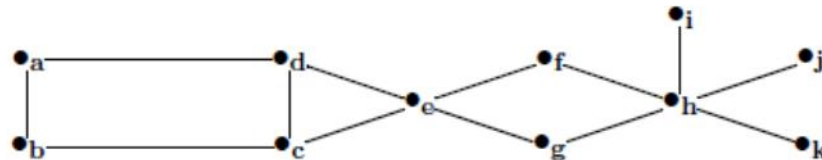

8M

b) Explain the following
(i) Complete graph
(ii) Euler Circuit with suitable example 4M

OR

10. Define spanning tree of a graph. Draw the DFS and BFS for the following graph

12M

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Code: 7P2B15

R-17

M.C.A. I Semester Regular Examinations January 2018
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)
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UNIT–I

1. a) Distinguish between Structures and Unions with the example programs   6M

   b) What is dynamic memory allocation and explain about dynamic memory allocation operators in c++ language   6M

OR

2. Write a c++ program to convert from lower case word into upper case word using with string functions as per the following sample input-output format:

   Enter any lower case word: hello

   The Upper case word is   :   HELLO   12M

UNIT–II

3. a) What is a Virtual function and write any example program to call virtual function through a base class   6M

   b) Compare between constructor and destructor with a simple c++ program   6M

OR

4. Write a c++ program to find the area of circle and area of rectangle using the function overloading process:

   Note:
   - Area of circle = $3.141 * radius^2$
   - Area of rectangle = width * length   12M

UNIT–III

5. a) Explain about Friend functions and Inline functions with the declarations   6M

   b) What is an exception and explain about exception handling blocks   6M

OR

6. a) Distinguish between break and continue statements with the simple c++ programs   6M

   b) Explain about if-else-if ladder statement and switch statement with the general forms   6M

UNIT–IV

7. a) What is an Inheritance and explain about base class and derived class   6M

   b) Compare between generic functions and generic classes   6M

OR

8. What about input and output streams in files and explain different file operations   12M

UNIT–V

9. Write a c++ program to find the biggest number among a group of numbers using 1-D array   12M

OR

10. What is an Operator overloading with an example program   12M

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M.C.A. I Semester Regular Examinations January 2018
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)
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UNIT–I

1. a) State and prove the addition theorem of Probability   5M

   b) The probabilities of A, B, C to become managers of a factory are $\frac{1}{2}, \frac{3}{10}, \frac{1}{5}$ respectively. The probabilities that the bonus scheme will be introduced if they become managers are 0.02, 0.03, and 0.04. Determine the probability that A, B, C to become managers if the Bonus Scheme is introduced.   7M

OR

2. a) From a lot of 10 items containing 3 defectives, a sample of 4 items is drawn at random without replacement. Let the random variable X denotes the number of defectives in the sample, find

   i. Probability distribution of X.

   ii. $P(X \leq 2)$ and $P(X \geq 2)$.   6M

   b) A random variable X has the probability density function

   $$f(x) = \begin{cases} mx(1-x), & if \ 0 < x < 1 \\ 0, & otherwise \end{cases}$$

   i. Evaluate the constant m

   ii. Find the mean and variance of X.   6M

UNIT–II

3. a) Find the mean and variance of the Uniform distribution.   6M

   b) The marks obtained in an examination are found to be normally distributed. If 15% of the students get more than 60 marks and 40% of the students get less than 30 marks, find the mean and standard deviation of the marks.   6M

OR

4. a) Find the mean and variance of the Poison distribution.   6M

   b) Let a committee has 77 members, find the probability of having more female members than male members given that the probability of having a male or female member is equal.   6M

UNIT–III

5. A population consists of 5 numbers 3, 6, 9, 15, 27. Consider all possible samples of size 3 which can be drawn from this population. Find

   i. Population mean.

   ii. Population standard deviation.

   iii. Mean of the sampling distribution of means.

   iv. Standard deviation of the sampling distribution of means.   12M

OR

6. a) Explain point estimation and interval estimation in detail.   6M

   b) In a random sample of 160 workers exposed to a certain amount of radiation, 30 workers severely affected. Construct a 99% confidence interval for the corresponding true percentage.   6M

UNIT–IV

7. a) A die is thrown 256 times. An even digit turns up 156 times. Can we say that die is unbiased? 8M

   b) Explain Type-I and Type-II errors. 4M

OR

8. A manufacturer claimed that at least 95% of the equipment which she supplied to a factory conformed to specifications. An examination of a sample of 200 pieces of equipment revealed that 185 were faulty. Test her claim at a significance level of 0.05. 12M

UNIT–V

9. a) Explain the characteristics of an M/M/1 model briefly. 6M

   b) A person repairing watches finds that the time spent on a watch has an exponential distribution with mean 20 minutes. If the watches are repaired in the order in which they arrive and their arrival is approximately poison distributed with an average of 15 per 8-hour day. What is the repairman's expected idle time each day? 6M

OR

10. Customers arrive at the ration shop in poison fashion with an average of a customer every 10 minutes. If the service time is 5 minutes, then find
    i. Average number of customers in the system
    ii. Average waiting time.
    iii. Average length of waiting line. 12M

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M.C.A. I Semester Regular Examinations January 2018
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)
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UNIT–I

1. a) Describe standard conventions used to draw Flowcharts.   6M

   b) Write an algorithm and flowchart to swap values of two variables.   6M

OR

2. a) What is datatype? Explain any four datatypes used in C language.   5M

   b) Define Operator Precedence and Associativity? Evaluate the following expression stepwise.

   i= (15 / 3) * 2 + 5 % 3 + 8 – 2   7M

UNIT–II

3. a) Explain formatted input / output functions used in C programming with suitable examples.   6M

   b) Write about different loop control structures available in C.   6M

OR

4. a) Distinguish between Switch-Case and nested If-Else statements.   7M

   b) Write a program to print any form of Floyd's triangle?   5M

UNIT–III

5. a) Define arrays? Explain how to initialize and access one dimensional and two dimensional arrays with suitable example.   8M

   b) Write a short note on multidimensional arrays?   4M

OR

6. a) What is a string? Explain string input/output functions.   6M

   b) Write a program to compare two strings without using string handling functions.   6M

UNIT–IV

7. a) Distinguish between Global and Local variables?   5M

   b) What is recursion? Write a program to print first 10 numbers of Fibonacci Series.   7M

OR

8. a) What are Structures? How they are different from Unions, explain with an example.   8M

   b) What are bit fields? Explain their significance.   4M

UNIT–V

9. a) Differentiate between an array of pointers and a pointer to an array.   4M

   b) What is dynamic memory allocation? Explain memory allocation functions briefly.   8M

OR

10. a) Explain input/output operations on files in detail.   6M

    b) Describe different forms of Macro Substitutions.   6M

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Code: 7P2C16

R-17

M.C.A. I Semester Regular Examinations January 2018
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)
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UNIT–I

1.   Attempt an essay on language as a tool of effective communication.

OR

2.   What is Technical communication? How is it important for an IT Professional?

UNIT–II

3.   Attempt an essay on the role played by non-verbal communication. Illustrate with examples.

OR

4.   How does technology help one to make an effective presentation? Illustrate.

UNIT–III

5.   How does group discussion help in the process of selection? Discuss the features of an effective group discussion.

OR

6.   What are the salient features of an effective interview?

UNIT–IV

7.   What are ethics? Explain its relevance in a technocratic world.

OR

8.   Explain in detail - various moral issues that an employee is supposed to observe.

UNIT–V

9.   Attempt an essay on Professional Rights.

OR

10.   Write brief notes on the following.
       (i) Collegiality and Loyalty,
       (ii) Intellectual property rights
       (iii) Collective bargaining
       (iv) Conflicts of interest.

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