2017

Full Marks - 70

Time : As in the Programme

The figure in the right hand margin indicate marks.

Answer ALL questions.

1. Answer all questions. [2×5=10

(a) Find the value of x in the given expression :

$$(122)_x + (16)_9 = (56)_7$$

(b) What do you mean by open source software and give two examples.

(c) Define multiplexing and what are its types ?

(d) What is a protocol and why is it used ?

(e) Define DDOS.

[Cont...

[2]

2. Answer any THREE :   [8×3=24

(a) Define information ? How it differs from data ? Discuss different qualities of information ?

(b) What is a computer ? Discuss different factors that affect computer performances ?

(c) What do you mean by data communication ? Explain different types of data communication techniques ?

(d) What is a LAN ? Explain LAN design characteristics with suitable diagrams ?

(e) Define and discuss different types of threats in internet ? Suggest how to protect from threats ?

3. Answer any THREE :   [12×3=36

(a) Solve the following problems :

(i) $4317.565 = (\underline{\hspace{3cm}})_2$

(ii) $898.325 = (\underline{\hspace{3cm}})_8$

(iii) $(10101100101.10101)_2 = (\underline{\hspace{2cm}})_8 = (\underline{\hspace{2cm}})_{16}$

[Cont...

[3]

(iv) $(ABC.DEF)_{16} = (\underline{\hspace{2cm}})_2 = (\underline{\hspace{2cm}})_{10}$

(b) What is a logic gate ? Explain different types of logic gates with truth tables and circuit diagrams ?

(c) Explain different types of copper transmission media and fiber optic cables in detail ?

(d) What is WAN ? Define and differentiate packet switching from Circuit-Switching and also explain network management systems ?

(e) Define internet. Explain the architectural components of internet in detail ? Write down at least four advantages of internet ?

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(ii) Write a C program to swap two numbers using pointers. [6

(d)(i) Write a C-program to declare, initialize an UNION, example of UNION. [6

(ii) Write a C-program to demonstrate example Structure with pointer. [6

(e)(i) Write a C Program to find the sum of two integer numbers using command line arguments in C. [6

(ii) C program to count upper case, lower case and special characters in a string. [6

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2017

Full Marks - 70

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The figure in the right hand margin indicate marks.
Answer ALL questions.

1. Answer all questions. [2×5

(a) What would be the output of the following programs ?

```
main ( )
{
printf ("nn \n\n nn\n");
printf ("nn /n/n nn/n");
```

(b) What is the Difference between Local and Global variables in C.

(c) What are function prototypes ?

(d) Mention the use of 'break' and 'continue' statements.

(e) Explain about user defined data types.

2. Answer any THREE questions. [8×3

(a) A five-digit number is entered through the keyboard. Write a program to obtain the reversed number and to determine whether the original and reversed numbers are equal or not.

(b) Write a function that checks if a given integer item is in a list Traverse the array and check each element of the list if an element is found return True, if the array is exhausted return False.

(c) Write a C-program to design calculator with basic operations using switch.

(d) Write a C-program to compare contents of two files.

(e)(i) Draw a flow chart to input two numbers and swap them without using extra variable.

(ii) Draw a flow chart to input the character and check them if it is Upper Case Alphabet or Not.

3. Answer any THREE questions. [12×3

(a)(i) Write a C Program to Check whether an Alphabet is Vowel or Consonant. [6

(ii) Write a C Program to find largest element of an Array. [6

(b) Write a Program to find out the average of marks of 3 students and display the student record having largest average where the student record will content name of the student, roll number of student and 3 different subjects marks, using array of structure concept.

(c)(i) Write a Program to demonstrate example of array of pointers. [6

(i) Draw the Hasse diagram of $[S, \preceq]$.

(ii) Find all maximal and minimal elements.

(iii) Find all lower bounds of $\{12, 16\}$.

(iv) Find all upper bounds of $\{12, 16\}$.

(v) Find the GLB and LUB of $\{12, 16\}$.

(vi) Does this poset contain the least and the greatest element ?

(vii) Is this poset a lattice ?

(d) Show that the relation R on the set Z of all integers is an equivalence relation, where R is defined as follows : $(a, b) \in R$ if and only if $a^2 - b^2$ is an integral multiple of 2. Find the equivalence classes determined by R.

(e)(i) Show that the set of all positive rational numbers forms an abelian group under the composition defined by $a * b = (ab)/2$.

(ii) Define a group giving at least two examples. If G is a group, then show that the identity element of G is unique.

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DDCE - I - S - MCA - CBCS -
CS - 1.3 - (DM) - R & B

2017

Full Marks - 70

Time : As in the Programme

The figure in the right hand margin indicate marks.

Answer ALL questions.

1.   Answer all questions.   [2×5

(a) State the converse, inverse and contra positive of the following :

   If a triangle is not isosceles, then it is not equilateral.

(b) Symbolize the following expression :

   Everybody loves a lover.

(c) Find symmetric closure of the relation

   $R = \{(1,1), (2,2), (3,3), (1,3), (2,1)\}$ on $A = \{1,2,3,4\}$.

(d) For the following partitions $P = \{\{a\}, \{b,c\}, \{d,e\}\}$, write the corresponding equivalence relation on the set $A = \{a,b,c,d,e\}$.

(e) Define DNF and CNF.

2. Answer any THREE questions. [8×3

(a) Show that $2^n > n^3$ for all $n \geq 10$ by using mathematical induction.

(b) Prove or disprove the validity of the following argument:

Babies are illogical.

Nobody is despised who can manage a crocodile.

Illogical people are despised..

Hence, babies cannot manage crocodiles.

(c) Prove by pigeonhole principle that if any five numbers from 1 to 8 are chosen, then two of them will add to 9.

(d) Solve the recurrence relation $a_n = 4a_{n-1} - 4a_{n-2}$ with initial conditions $a_1 = 1$ and $a_2 = 7$.

(e) Without using truth table prove the following equivalence:

$$\left(\sim p \wedge \left(\sim q \wedge r\right)\right) \vee \left(q \wedge r\right) \vee \left(p \wedge r\right) \equiv r$$

3. Answer any THREE questions. [12×3

(a) Show that in a Boolean algebra, for any a and b.

(i) $\left(x + y\right)' = x'y'$

(ii) $\left(xy\right)' = x' + y'$

(b) Let R be a relation on the set $A = \{a_1, a_2, a_3, a_4, a_5\}$ such that the matrix of R is

$$M_R = \begin{bmatrix} 1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}.$$

Determine the transitive closure of R by using Warshall's algorithm.

(c) Consider the poset $[S, \preceq]$, where $S = \{m \mid m$ is a positive divisor of 48 and $1 < m < 48\}$ and the relation $\preceq$ is the divisibility relation.

(i) Find the least-squares prediction line for the calculus grade data in Table.

(ii) Determine whether there is a significant linear relationship between the calculus grades and test scores listed in Table. Test at the 5% level of significance. Given that $t_{.05} = 2.306$ with degree of freedom 8.

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DDCE - I - S - MCA - CBCS -
CS - 1.4 - (P & S) - R & B

DDCE - I - S - MCA - CBCS -
CS - 1.4 - (P & S) - R & B

2017

Full Marks - 70

Time : As in the Programme

The figure in the right hand margin indicate marks.
Answer ALL questions.

1. Answer all questions.   [2×5=10

(a) Differentiate between mutually exclusive and independent events with examples.

(b) Define random variable. Give an example of discrete probability distribution.

(c) State Central Limiting Theorem.

(d) What do you mean by sampling ? Define simple random sampling.

(e) What is ANOVA ? How it is useful for statistics ?

[2]

2. Answer any THREE questions. [8×3=24

(a) If x is a discrete random variable equal the number observed on the throw of a single balanced die.

(i) Find and graph the probability distribution for x.

(ii) What is the expected value of x ?

(iii) What is standard deviation of x ?

(b) The wearing qualities of two types of automobile tires were compared by road-testing samples of $n_1 = n_2 = 100$ tires for each type and recording the number of miles until wearout, defined as a specific amount of tire wear. The test results are given in table below. Estimate $(\mu_1 - \mu_2)$, the difference in mean miles to wear out, using a 99% confidence interval. Is there a difference in the average wearing quality for the two types of tires ? Given that $Z_{0.005} = 2.58$.

[Cont....

[3]

Tire 1	Tire 2
$\bar{x}_1 = 26{,}000$ miles	$\bar{x}_2 = 25{,}100$ miles
$s_1^2 = 1{,}440{,}000$	$s_2^2 = 1{,}960{,}000$

(c)(i) Write short notes on Testing of Hypothesis.

(ii) Independent random samples of 36 and 45 observations are drawn from two quantative populations 1 and 2 respectively. The sample data summary is shown here :

	Sample 1	Sample 2
Sample Size	36	45
Sample mean	1.24	1.31
Sample variance	0.0560	0.0540

Do the data present sufficient evidence to indicate that the mean for population 1 is smaller than the mean for population 2 ? Use $\alpha = 0.05$ level of significance for testing and explain your conclusion. Given that $Z_{0.05} = 1.645$.

[Cont...

(d) A new process for producing synthetic diamonds can be operated at a profitable level only if the average weight of the diamonds is greater than .5 karat. To evaluate the profitability of the process, six diamonds are generated, with recorded weights .46, .61, .52, .48, .57 and .54 karat. Do the six measurement present sufficient evidence to indicate that the average weight of the diamonds produced by the process is in excess of .5 karat ? Given that $t_{.05} = 2.015$ with degree of freedom 5.

(e)(i) Write the multiplicative rules for the probabilities of two events A and B. How can you say the events A and B are independent.

(ii) A population can be divided into two subgroups that occur with probabilities 60% and 40% respectively. An event A occurs 30% of the time in the first subgroup and 50% of the time in the second subgroup. What is the unconditional probability of the event A, regardless of which subgroup it comes from ?

[Cont...

3. Answer any THREE questions. [12×3=36

(a)(i) State and prove Baye's rule.

(ii) A worker-operated machine produces a defective item with probability .01 if the worker follows the machine's operating instructions exactly and with probability .03 if he does not. If the worker follows the instructions 90% of the time, what proportion of all items produced by the machine will be defective ?

(b) In an experiment to determine the effect of nutrition on the attention spans of elementary school students, a group of 15 students were randomly assigned to each of three meal plans : no breakfast, light breakfast, and full breakfast. Their attention spans (in minutes) were recorded during a morning reading period and are shown in table below. Construct the analysis of variance table for this experiment.

[Cont...

No breakfast	Light breakfast	Full breakfast
8	14	10
7	16	12
9	12	16
13	17	15
10	11	12
$T_1 = 47$	$T_2 = 70$	$T_3 = 65$

(c) A random variable x can assume five values : 0, 1, 2, 3, 4. A portion of the probability distribution is shown here :

x	0	1	2	3	4
p (x)	0.1	0.3	0.3	?	0.1

(i) Fid p (3).

(ii) Calculate the population mean and variance.

(iii) What is the probability that x is greater than 2 ?

(iv) What is the probability that x is 3 or less ?

(d) Six points have these coordinates :

x	1	2	3	4	5	6
y	5.6	4.6	4.5	3.7	3.2	2.7

[Cont...

(a) Find the least-square line for the data.

(b) Plot the six points and graph the line. Does the line appear to provide a good fit to the data points ?

(c) Use the least-square line to predict the value of y when x = 3.5.

(e) Table given below displays the mathematics achievement test scores for a random sample of n = 10 college freshmen, along with their final calculus grades.

Student	Mathematics Achievement Test Score	Final Calculus Grade
1	39	65
2	43	78
3	21	52
4	64	82
5	57	92
6	47	89
7	28	73
8	75	98
9	34	56
10	52	75

You are required to prepare a Budget for the production of 7000 units & 10,000 units.

11. Write short notes on (any TWO) :

(i) Job Costing Vs. Process Costing.

(ii) Essentials of Budgetary Control.

(iii) Ratio Analysis.

(iv) Trial Balance.

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DDCE - I - S - MCA - CBCS -
1.5 - (A & FM) - R & B

DDCE - I - S - MCA - CBCS -
1.5 - (A & FM) - R & B

2017

Full Marks - 70

Time : As in the Programme

The figure in the right hand margin indicate marks.

Answer questions according to General Instruction of each Section.

GENERAL INSTRUCTION

Answer All questions from Section - A

(2 × 5 = 10 Marks)

Answer any THREE questions from Section - B

(8 × 3 = 24 Marks)

Answer any THREE questions from Section - C

(12 × 3 = 36 Marks)

Section – A

Answer all.

(i) What is contra entry ?

(ii) What is Budget ? Mention any two types of Budget.

(iii) What is 'Golden Rules of Accounting' ?

(iv) Mention any two methods of depreciation.

(v) What is BEP ?

Section – B

Answer any THREE.

2. "Accounting principles provide guidelines for better preparation and presentation of financial statement". In view of this statement, explain different accounting principles to be observed at the recording and reporting stage.

3. Make a distinction between Marginal Costing & Absorption Costing.

4. Prepare Bank Reconciliation statement of Ms. Priya & Co. from the following information for the month of March, 2017 :

 (i) Opening cash book balance was Rs. 12,745.

 (ii) Mr. X deposited a cheque of Rs. 4,435 on 27th March but cleared on 4th April 2017.

(iii) An amount of Rs. 3,240 directly deposited by a customer in to his account.

(iv) ATM charges Rs. 135 and Cheque book charges Rs. 75 debited by the bank.

[Cont....

(v) Bank has directly collected dividend and interest amounting Rs. 2,278.

(vi) Cheque amount Rs. 7,500 issued to CESU on 31st March 2017 cleared on 5th April 2017.

(vii) An amount Rs. 750 wrongly debited by the bank.

(viii) A cheque amounting Rs. 4,335 deposited on 25th March dishonoured.

(ix) An amount of Rs. 3,150 deposited by Mr. Ranjan to Mr. X. account on 30th March 2017.

5. From the following information, prepare a Cost Sheet showing cost per unit, total cost & profit.

Items	(Rs.)	Items	(Rs.)
Direct Material	60,000	Office Salaries	15,000
Direct Labour	45,000	Manager Salary	25,000
Direct Expenses	25,000	Selling Expenses	10,000
Factory Wages	10,000	Advertisement Expenses	8,000
Factory Expenses	5,000	Opening WIP	10,000
Factory Supervision	10,000	Closing WIP	8,000
Output - 10,000 units		Selling Price per unit is Rs. 220/-	

[Cont...

[4]

6. From the following information, you are required to calculate :

(i) Profit

(ii) P/V Ratio

(iii) BEP in units & sales value (in Rs.).

(iv) Number of units that must be sold to earn a profit of Rs. 30,000.

Output	3000 units
Selling Price	Rs. 90,000
Variable Cost	2/3rd of Selling Price
Total fixed cost	Rs. 20,000

Section – C

Answer any THREE :

7. Discuss the qualitative characteristics and various tools for Financial Statement analysis.

8. Journalize the following transactions :

(a) 1.3.2017 M/s Ashirbad & Co. commenced business with cash Rs. 5,00,000, Stock - Rs. 35,000, land & Building - Rs. 250,000, Creditor - Rs. 50,000.

[5]

(b) 2.3.2017. Goods sold through cheque Rs. 2,00,000.

(c) 5.3.2017. Computer purchased and cheque paid Rs. 35,000.

(d) 7.3.2017. Bought a type writer from Amitav Rs. 10,000.

(e) 11.3.2017. Goods purchased for cash Rs. 1,50,000.

(f) 15.3.2017. Electicity charges paid to CESU through cheque Rs. 1,237.

(g) 20.3.2017. Payment of stationery Rs. 500 & Telephone Rs. 1,000.

(h) 21.3.2017. Selling of goods to Rosy Rs. 8,750.

(i) 24.3.2017. Cash withdrawn for personal use Rs. 50,000.

(j) 31.3.2017. Received from Ravi for full settlement Rs. 8,700.

9. On 31st March, 2016, the following Trial Balance was extracted from the book of Mr. Buxi & Co. :

Particulars	Debit (Rs.)	Credit (Rs.)
Capital		90,000
Plant & Machinery	80,000	
Purchases and Sales	2,60,000	4,07,000
Returns	6,000	6,275
Opening Stock	30,000	
Discounts	350	800
Bank Charges	75	
Debtors & Creditors	45,000	25,000
Salaries	26,800	
Wages	40,000	
Carriage Inward	750	
Carriage Outward	1,200	
Rent, Rates & Taxes	10,000	
Advertisement	2,000	
Furniture	20,000	
Cash at Bank	6,000	
Cash in Hand	900	
Total	**5,29,075**	**5,29,075**

[Cont...

Prepare the P/L accounts for the year ending 31st March, 2016 and Balance Sheet on that date after taking in to the following additional Information :

(i) Closing Stock as Rs. 35,000.

(ii) Depreciation on Plant & Machinery @ 15%, Furniture 10%.

(iii) Outstanding Salaries Rs. 3,000 & Prepaid Rent Rs. 750.

10. The expenses for the production of 5000 units in a factory are given as follows :

Particulars	Rs. (per unit)
Material	50
Labour	20
Variable Overheads	15
Fixed Overhead (Rs. 50,000)	10
Administrative Expenses (5% variable)	10
Selling Expenses (20% fixed)	6
Distribution Expenses (10% fixed)	5

2017

Full Marks - 70

Time : As in the Programme

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Answer ALL questions.

1. Answer all questions. [2×5

    (a) What should be the language of an official letter ?

    (b) What is the difference between a CV and a Bio Data ?

    (c) What is a topic sentence in a paragraph ?

    (d) Why is eye contact important in an interview ?

    (e) What is the role of a moderator in a GD ?

    [Cont...

2. Answer any THREE of the following : [8×3

(a) Write a paragraph in 150 words on "The effect of Computers in our everyday lives".

(b) Discuss the techniques of a proper Group Discussion.

(c) Draft a Notice and Agenda for a meeting to be held in your organization to discuss the new policies in the market.

(d) As the Secretary of the Students Union, write a letter to invite a celebrity for an event.

(e) State the different parts of a Report and discuss the importance of each.

3. Answer any THREE of the following : [12×3

(a) Why is body language an important part of the communication process ? Explain with examples.

(b) IBM wants to recruit new trainees. Prepare your CV and attach a covering letter.

[Cont...

(c) The College canteen is not functioning properly. Prepare a report regarding the same.

(d) Write an essay on 'The Educational System in India' or "Information Explosion".

(e) State the different ways in which you can prepare notes.

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DDCE - I - S - MCA - CBCS - 1.6 - (B & CE) - R & B