

Roll No.....

Time allowed : 3 hours

Maximum marks : 100

Total number of questions : 8  
Total number of printed pages : 6

## PART—A

(Answer Question No.1 which is compulsory and any two of the rest from this part.)

1. (a) Discuss *any two* of the following in the context of information systems :
  - (i) What is 'black box concept' ? Describe briefly 'artificial system' and 'cybernetic system'.
  - (ii) Define 'management information system' (MIS). What are the characteristics of MIS ?
  - (iii) Define 'microprocessor'. In the context of microcomputer, define the terms 'motherboard' and 'port'.

(4 marks each)
- (b) Explain briefly *any eight* of the following :

(i) RAM	(ii) CD-ROM
(iii) TPS	(iv) Bandwidth
(v) LAN and WAN	(vi) Network structure
(vii) Hybrid computer	(viii) ERP
(ix) DVD	(x) Recycle bin.

(1 mark each)
- (c) Convert *any two* of the following from one number system to another number system as indicated against each, and show your working notes :
  - (i)  $(312)_8 = ( \quad )_{10}$
  - (ii)  $(256.875)_{10} = ( \quad )_2$
  - (iii)  $(25)_{10} = ( \quad )_{16}$

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(iv)  $(F14)_{16} = ( \quad )_2$  (2 marks each)

2. Distinguish between *any three* of the following in the context of information technology :

- (i) 'Multiprocessing' and 'time-sharing'.
- (ii) 'Indexed sequential' and 'random' file organisation methods.
- (iii) Programming languages 'C' and 'C++'.
- (iv) 'Information' and 'data'.

(5 marks each)

3. (a) Define 'hierarchy of information systems'.

(3 marks)

(b) Discuss salient features of a 'non-impact printer' with examples.

(3 marks)

(c) Define 'security'. What are the major concerns of security of computer hardware ?

(3 marks)

(d) What is the importance of CASE tools ?

(3 marks)

(e) Discuss the resources of CASE tools.

(3 marks)

4. (a) Write short notes on *any three* of the following :

- (i) Plotters
- (ii) File types in a computer environment
- (iii) Flow charts
- (iv) HTML.

(3 marks each)

(b) Identify whether the following are programmed

or non-programmed decision situations and give reasons in support of your answer. Attempt *any three* :

- (i) Ordering parts of an aircraft assembly line.
- (ii) Selecting a site for a new industrial unit.
- (iii) Assigning job to personnel of production department at shop floor.
- (iv) Decision for continuing the production of a product at a particular plant.

*(2 marks each)*

#### **PART—B**

*(Answer Question No.5 which is compulsory and any two of the rest from this part.)*

5. (a) Discuss *any three* of the following with suitable examples :
- (i) Statistics is a method of decision-making in the face of uncertainty.
  - (ii) Dispersion is used in two senses.
  - (iii) Methods used for measurement of trend.
  - (iv) Assumption of linear programming technique.
  - (v) Law of statistical regularity.
- (3 marks each)*
- (b) State, with reasons, whether the following statements are true or false. Attempt *any two* :
- (i) Index numbers are barometers of economic activities.
  - (ii) Quartile deviation takes into account the middle 50% of the observations.
  - (iii) Median is affected by extreme observations.

*(3 marks each)*

- (c) Present the following data relating to percentage of marks obtained by 60 students in the form of frequency table with ten class-intervals of equal width, one class-interval being 40–49 :

41 17 33 63 54 92 60 58 70 06 67  
82  
33 44 57 49 34 73 54 63 36 52 32  
75  
60 33 09 79 28 30 42 93 43 80 03  
32  
57 67 24 64 63 11 35 82 10 23 00  
41  
60 32 72 53 92 88 62 55 60 33 40  
57

*(5 marks)*

6. (a) What are the important characteristics of an 'average' ?

*(4 marks)*

- (b) The pass result of 50 students who took up a Class Test is given below :

<i>Marks</i>	<i>Number of Students</i>
4	8
5	10
6	9
7	6
8	4
9	3

If the average marks for all the 50 students were 5.16, find out the average marks of the students who failed.

*(4 marks)*

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- (c) The mean and standard deviation of 10 observations are 35 and 2 respectively. Find out the changed mean and standard deviation if :
- each observation is increased by 4, and
  - each observation is multiplied by 5.
- (2 marks each)*
- (d) Why are two regression lines ? When do we use one in preference to the other ?
- (3 marks)*
7. (a) Fit a trend line to the following data by using the method of least squares. Calculate the trend values and predict the value for the year 2008 :
- |                     |      |      |      |      |      |
|---------------------|------|------|------|------|------|
| Year                | 2003 | 2004 | 2005 | 2006 | 2007 |
| Production (Tonnes) | 82   | 94   | 96   | 107  | 100  |
- (7 marks)*
- (b) Ten competitors in a beauty contest were ranked by three judges in the following orders :
- |              |   |   |   |    |   |    |   |    |   |   |
|--------------|---|---|---|----|---|----|---|----|---|---|
| First Judge  | 1 | 6 | 5 | 10 | 3 | 2  | 4 | 9  | 7 | 8 |
| Second Judge | 3 | 5 | 8 | 4  | 7 | 10 | 2 | 1  | 6 | 9 |
| Third Judge  | 6 | 4 | 9 | 8  | 1 | 2  | 3 | 10 | 5 | 7 |
- Use the method of rank correlation to determine which pair of judges has the nearest approach to common tastes in beauty.
- (8 marks)*
8. (a) Solve the following linear programming problem by graphical method :
- Maximize  $Z = 20x + 30y$

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$$\begin{array}{l} \text{Subject to} \quad 3x + 2y \leq 210 \\ \quad \quad \quad 2x + 4y \leq 300 \\ \quad \quad \quad y \leq 65 \\ \hline \quad \quad \quad x, y \geq 0. \end{array}$$

(7 marks)

- (b) From the following data, construct the Laspeyre's, Paasche's and Fisher's indices of prices :

<i>Item</i>	<i>Base Year</i>		<i>Current Year</i>	
	$p_0$	$q_0$	$p_1$	$q_1$
A	4	20	10	15
B	8	4	16	5
C	2	10	4	12
D	10	5	20	6

(8 marks)

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