

2018

Time : 3Hrs

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

Answer any five questions selecting two from each group in which Q. No. 1 is compulsory.

1. Choose the correct answer:

(a) $A \oplus B = \dots\dots$

(i) $A \cup B$

(ii) $A \cap B$

(iii) $(A \cup B) - (A \cap B)$

(iv) None of these

(b) The equivalence classes of two arbitrary element under the equivalence relation R are

(i) Identical or disjoint (ii) Not identical or disjoint

(iii) Identical and disjoint (iv) None of these

(c) The sequences gateway of

Tally \rightarrow Display \rightarrow day book is used to perform

(i) Alter a sales order

(ii) To denote a sales order

(iii) To view the order position

(iv) None of these

P.T.O.

(d) Tally permits you to change the data using the button

- (i) F_2 : Period (ii) F_2 : Time
(iii) F_3 : Imp. info. (iv) None of these

(e) Which one of the following is true?

- (i) Identity elements in a group is unique
(ii) Inverse elements in a group is not unique
(iii) Commutation property is essential for an algebraic system to be a group.
(iv) Semi group must have an identity element

(f) The balance sheet equation given by

Owners equity = Assets - Liabilities

Show that

- (i) The owners claims are the amount left over after deducting the liabilities from the assets.
(ii) The owners claim are the amount left over after including the liabilities in the assets.
(iii) The owners claim are the amount left over after deducting the liabilities in the total benefit.
(iv) No of these

(g) Formula $(P \vee q) \leftrightarrow (P \leftrightarrow q)$ is

- (i) A Tautology (ii) Autology
(iii) Contradiction (iv) None of these

(h) A Lattice is

- (i) An algebraic structure

(ii) Is an ordered set simply

(iii) Not an algebraic structure

(iv) None of these

Group 'A'

2. (a) Define symmetric difference of two sets with examples and represent it through Van diagram.

(b) Find the sets A and B if

$$A - B = \{1, 3, 7, 11\}, B - A = \{2, 6, 8\} \text{ and}$$

$$A \cap B = \{4, 9\}$$

3. (a) Construct the truth table for the compound propositions given by

$$(p \rightarrow (q \rightarrow s)) \wedge (\neg r, \vee p) \wedge q$$

(b) Without using truth table, prove that

$$P \rightarrow (q \rightarrow P) \equiv \neg p \rightarrow (p \rightarrow q)$$

4. (a) Using mathematical induction, show that

$$1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

(b) If $f(a,b)$ is defined recursively by

$$f(a, b) = \begin{cases} 5 & \text{if } a < b \\ f(a-b, b+2) + a & \text{if } a \geq b \end{cases}$$

where a and b are non negative integers, find

$$f(2, 7), f(10, 3) \text{ and } f(15, 2)$$

5. (a) Prove that the set of integers is an abelian group with respect to ordinary additions.

(b) Minimise the function

$$f(a, b, c, d) = \sum (2, 3, 7, 9, 11, 13) + \sum \phi (1, 10, 15) \text{ by}$$

Karrahag map method, where $\sum \phi$ denotes the don't care terms. Also make optimum use of don's care terms.

Group 'B'

6. (a) Discuss for creating new groups other than pre defined in detail.
- (b) Write the function of Button's on the Button panel of Tally.
7. (a) HP desgine main function and services a board array of products including results of product sales for the year ended October 31, 2018 are (\$ in millions):
- | | |
|---------------------------------|-----------|
| Sales of products | \$ 58,939 |
| Cost of merchandise sold | 43,689 |
| Beginning merchandise inventory | 5,797 |
| Ending merchandise inventory | 6,065 |
- (i) Calculate the 2018 gross profit and gross profit percentage of HP.
- (ii) Calculate the inventory turnover ratio.
8. "A stock split can be achieved by means of a stock dividend." Do you agree? Explain.
9. Notes on any two
- Pre defined vouchers
 - Multiple godown
 - Security Control in Tally
 - Managing Groups
