

- 1 (a) If p denotes 'Sita is singing' and q denotes 'Sita is dancing'. Express the following English sentences in language of propositional logic :
- (i) Sita is either singing or dancing
 - (ii) If Sita is dancing then Sita is singing
 - (iii) Sita is either singing or both singing and dancing
 - (iv) If Sita is singing, it does not mean Sita is dancing.
 - (v) Sita is both singing and dancing.

5×2=10

- (b) What are the rules of precedence of operators ? Accordingly show sequence of operation of $PVQ \wedge \neg R \rightarrow S$

4+2=6

UNIT - II

- 2 State all laws of equivalence and consequence of propositional logic.

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OR

- 2 (a) Describe the various inference rules of a Propositional Natural Deduction system.
- (b) Describe the various replacement rules of a Propositional Natural Deduction system.

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UNIT - III

- 3 (a) Symbolize into predicate logic, using quantifiers.
- (i) A thing is a pen only if it writes and holds ink.
 - (ii) All that glitters is not gold.
 - (iii) There is atleast one student who will score full.

3×2=6

- (b) What is quantification ?

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- (c) What do you understand by free and bound variables ?

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OR

