

EK-198

B.E.(IInd Sem.) (CGPA) CSE Examination-2016

DISCRETE STRUCTURE

Paper - CS-205

Time Allowed : Three Hours

Maximum Marks : 60

Note : Attempt all six questions.

All questions carry equal marks.

Symbols have their usual meanings.

Q.I Write short notes on the following—

- (a) Explain countable and uncountable sets with example.
- (b) Explain lattice and its properties.
- (c) Explain group and its properties.
- (d) Explain Hamiltonian walk by using suitable example.
- (e) What is graph coloring ? Explain by suitable example.

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P.T.O.

Unit-I

Q.II Given that—

$A = \{ x : x \text{ is a even natural number less than or equal to } 10 \}$

and

$B = \{ x : x \text{ is an odd natural number less than or equal to } 10 \}$

Find—

- (i) $A - B$
- (ii) $B - A$
- (iii) Is $A - B = B - A$?

or

If $f(x) = \sqrt{x+1}$ and $g(x) = x^2 + 2$, calculate fog and gof.

Unit-II

Q.III Use the truth tables method to determine whether

$(p \rightarrow q) \vee (p \rightarrow \neg q)$ is valid.

or

Differentiate between syntax and semantics propositional logic.

(3)

Unit-III

Q.IV Differentiate between Boolean and Pseudo-Boolean Lattices with example.

or

Discuss Tarski's fixed point theorem.

Unit-IV

Q.V What is Ring ? Explain all the properties of Ring with example.

or

Explain the following—

- (a) Semi group
- (b) Monoid

Unit-V

Q.VI Explain the Pigeon-Hole principle and its advantages.

or

What do you mean by graph isomorphism, show it by example.
