S.S.M.S.

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B.C.S Department

Internal Examination, Sept 2016.

Class: F.Y.B.C.S

Subject: Discrete Mathematics

Time: 2 hr | Marks: 20

Q 1. Attempt the following (10x2=20)

i) Define
   a) Pendent Vertex
   b) Simple Graph
   c) Isolated Vertex

ii) Write negation of each of the following
   a) $\forall x, \exists y, (x+y > xy)$
   b) $\forall x, \exists y, (x^2+y^2+2 \neq 0)$
   c) $\exists x, \forall y, (x+y \leq)$

iii) Draw a Hasse Diagram for the relation 'divides' on set

   $A = \{1, 3, 4, 8, 12, 24\}$

iv) Suppose that function is given by a Boolean Expression such that $f(x1, x2, x3) = (x1 \vee x2) \wedge x3$ find disjunctive normal form of f.

v) Write the following argument in symbolic form.
   "It is below freezing now. therefore it is either below freezing or raining".

vi) Prove that $\sim(p \wedge q) \equiv \sim P \vee \sim q$ by using truth table

vii) Verify for tautology or Contradiction $(a \wedge b) \wedge \sim (a \vee b)$

viii) Prove that $(p \vee q) \rightarrow \sim p$ is contingent

ix) $(p \wedge q) \rightarrow$ p test for tautology.

x) Test validity of argument by direct method $p \vee q, p \rightarrow r, \sim r \vdash q$