4E2917

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B. Tech. IV Semester (Main/Back) Examination - 2012

Computer Science & Information Technology

4CS3 Discrete Mathematical Structures

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions. Selecting **one question** from **each unit**. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated Clearly).*

Unit - I

1. a) Explain Quantifiers **(4)**

b) State the converse of each of the following implications

i) If 2 + 2 = 4, then I am not the Queen of England

ii) If I am not president of US, then I will walk to work

iii) If I am late, then I did not take the train to work.

iv) If I have time and I am not too tired then I will go to the store **(12)**

OR

1. a) Explain converse, Inverse and contrapositive of implications **(8)**

b) Using propositional Logic, prove the validity of the argument. $[(p \vee \sim q) \Rightarrow r] \wedge (r \Rightarrow s) \wedge P \Rightarrow S$ **(8)**

Unit - II

2. a) Prove by contradiction there is no rational number p/q whose square is 2 **(8)**

b) Let n be an integer. Prove that if n^2 is odd, then n is odd (Indirect Method)**(8)**

OR

2. a) Prove that any amount of postage greater than or equal to 8 rupees can built using only 3 rupees and 5 rupees stamps. **(8)**

b) Test the Liner search algorithm for partial correctness. **(8)**