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B.Sc. (IT)

Term End Exam-2014
May, 2014

BS-104 : MATHEMATICS-II (DISCRETE)

Time : 3 hours *Maximum Marks :60*

Note : ***Section A*** *is compulsory. Attempt* ***any four*** *question from* ***Section -B***.

Section-A (10x2 =20)

1. Explain

a. Disjoint sets

b. Equivalence relation

c. Bijectife function

d. Existential quantities

e. Boolean algebra

f. Write sequence of $a(s,z) = \frac{14}{3-6z}$

g. There are 15 true and false question in an examination. How many sequence of answers are possible?

h. Recurrence relation

i. Find ${}^{n}C_{17}$, if ${}^{n}C_{12} = {}^{n}C_{8}$

j. Conditional statement.

Section-B

2. a. Let A={1,2,3,4,5,6} and Let B_1 = {1,3,5}, B_2 = {1,2,3}. Find the minsets generated by B_1 and B_2. Do minsters. Dominsets form a pantition of A?

b. Let A= {a,b}, B={1,2}, C={2,3}, show that (AxB) U (AxC) = (BUC).

3. a. If fig: R →R are defired by $f(x) = x^2 + 3x + 1$ and g(x)= 2x-3, find (i) got (ii) fof.

b. Prove that sum of first in odd integessequals x^2.

4. a. Solve s(t) -6 s(t-1) + 8s(t-2) = 2.

b. From 6 gentlemen and 4 ladies a committee of 5 is to be formed. In how many ways car this be done if

i) The committee is to include at least one lady?

ii) There is no restriction about its fornatoin.

5. Determine the generating function of 5 when

S(n) -6 S(n-1) + 6 S(n-2) = 0, S(0)=1, S(1) = 2.

6. a. Construct the truth table for {(P→~r)^ (pvr) ^r)]→ a

b. Define converse, inverse and contrapositive of a statement.

7. a. Prove by using Boolean algebra B that abc+abc+abc = ab+bc+ca.

8. b. Let n be a positive integers and Dn denute tte set of all divisors of n. Considering the pantial order of divisibility in Dn, draw Hasse diagram of D100.

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