Mathematics - Sem 1 - Exam Jun 2019

P30/P32/P131/CMP250/CMP501/EE/201906

Time : 3 Hours **Marks : 80**

Instructions :

1. All Questions are Compulsory.
2. Each Sub-question carry 5 marks.
3. Each Sub-question should be answered between 75 to 100 words. Write every questions answer on separate page.
4. Question paper of 80 Marks, it will be converted in to your programme structure marks.

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1. Solve any **four** sub-questions.

a) Explain types of set with example. 5

b) What is role of Mathematics in computer science? 5

c) Prove that 7^n-1 is divisible by 6 for all natural numbers ≥ 1. 5

d) Explain conversion of a decimal number to a binary number. 5

e) Explain forms of surds. 5

2. Solve any **four** sub-questions.

a) Explain types of logical statements. 5

b) Solve : Consider 4 vowels a, e, o, u & eight consonants b, c, d, p, q, r, s, t from English alphabet. Find the number of five letter words containing 2 different vowels and 3 different consonants from above 12 letters. 5

c) Explain composition of functions with example. 5

d) What is the meaning of equivalence relation? Explain with suitable example? 5

e) Define : 5

i) Null graph

ii) Simple graph

iii) Multigraph

iv) Regular graph

v) Complete graph

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3. Solve any **four** sub-questions.

a) Explain difference of two polynomials with one example. 5

b) Define singular matrix. Give examples of singular matrix and non-singular matrix. 5

c) Define any five types of matrices. 5

d) Explain addition of vectors by Triangular law. 5

e) Solve by Cramer's rule find solution of the following system
$2x + 3y = 36$ and $3x + 2y = 34$. 5

4. Solve any **four** sub-questions.

a) Find multiplication $f(x) \times g(x)$ where $f(x) = 6x^3 + 9x^2 + \frac{1}{2}$ and $g(x) = 4x^3 + \frac{1}{4}x - 4$. 5

b) If a group of 30 people have been trained for a particular computer project. How many ways are there to select 6 people from this group for advance training? 5

c) Construct truth table for the compound statement $\sim(p \wedge q) \vee \sim(q \vee r)$. 5

d) Convert $(30)_{10}$ in to its binary equivalent number. 5

e) Write a short note on surface area of right circular cylinder. 5

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