March 2022

B.Com- I SEMESTER

Business Mathematics (BCOMH-104)

Time: 90 Minutes   **Max. Marks:25**

Instructions: 1.   *It is compulsory to answer all the questions (1 marks each) of Part -A in short.*

2.   *Answer any three questions from Part -B in detail.*

3.   *Different sub-parts of a question are to be attempted adjacent to each other.*

PART –A

Q1 (a) Define Proper and Improper subsets.   (1)

(b) If A={1,2,3,4}, B={2,4,5,8} and C={3,4,5,6,7}, Find $A \cup (B \cap C)$ (1)

(c)   Given log 2=0.30103 and log 3=0.47712; find log 0.005.   (1)

(d) Write down De-Morgan 's laws of Set Theory.   (1)

(e) Solve $x^4 - 10x^2 + 9 = 0$ (1)

(f)   If $(n + 1)_{P_3} = 10 \times (n - 1)_{P_2}$, then what is the value of n?   (1)

(g) Find the number of permutations of the letters of the word INDIA.   (1)

(h) The middle term of the expansion $(\frac{a}{x} + \frac{x}{a})^{10}$ (1)

(i)   If $y = x^{logx}$, find $\frac{dy}{dx}$ (1)

(j)   Evaluate $\int_a^b \frac{logx \; dx}{x}$ (1)

PART –B

Q2 (a) In a class of 25 students , 12 have taken Mathematics , 8 have taken Mathematics but   (3)
not Biology. Find the number of students who have taken both Mathematics and
Biology and students who have taken Biology and not mathematics. Each student
have taken either Mathematics and Biology.

(b) Define null set, Singleton set , finite set and Infinite set giving examples.   (2)

Q3 (a) Prove that $(yz)^{logy-logz} \times (zx)^{logz-logx} \times (xy)^{logx-logy} = 1$ (2)

(b) If the sum of first p terms of an A.P. is q and sum of first q terms of an A.P is p, find the sum of (p+q) terms? (3)

Q4 How many words(may not be meaningful words) can be formed with the word TRIANGLE such that (5)

a)the words begin with N

b)the words begin with N but do not end with R?

Q5 (a) In how many ways 8 examination scripts can be arranged so that the best and the worst do not get together? (3)

(b) The second term of G.P series is 9 and fifth term is 243 : find the fourth term of the series. (2)

Q6 Solve the following system of linear equations using Gauss-jordan Method (5)

x+2y-3z=7; 2x+3y+2z=2; 3x-3y-4z=11

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