OEMT212

Reg. No. | | | | | | | | | |

II Semester B.Com./B.B.A./B.C.A./B.A Degree Examination,
July/August - 2024
MATHEMATICS
Commercial Mathematics (Open Elective)
(NEP Scheme)

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates:

Answer All questions.

I. Answer any **FIVE** questions: **(5×3=15)**

1. Define finite and infinite set and give an example for each.
2. If A={2, 3, 6} then find power set of A.
3. If A={a, b, c}, B={c, d} then find (i) $A \times B$ (ii) $A \times A$ (iii) $B \times A$.
4. Evaluate (i) $\frac{8!}{5!}$ (ii) $\frac{12!}{10!\,3!}$.
5. Find the number of permutations of the letters of the word MATHEMATICS.
6. Define the events (i) A or B (ii) A and B (iii) A not B.
7. How to convert ratio into percentage? and solve (i) 1:5 (ii) 8:3.
8. The sales of a company was Rs. 35,000 in August and Rs. 30,000 in september find the decrease in percentage.
9. Find the ratio between the two numbers such that their sum is 50 and the difference is 14.

II. Answer any **THREE** questions: **(3×5=15)**

1. If A={a, b, c}, B={d}, C={e} verify $A \times (B - C) = (A \times B) - (A \times C)$.

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2. In a group of 65 people, 40 like cricket, 10 like Hockey and Cricket. How many like Cricket only and not Hockey? How many like Hockey? Show the result through Venn diagram.

3. A relation R is defined on the set of integers by R={$(x,y)/x$-y is a multiple of 5} show that R is an equivalence relation on Z.

4. Define equivalence relation and give an example of a relation which is Reflexive and Symmetric.

5. If $f(x)=x-1$ and $g(x)=2x^2-3$ find (i) $fog(x)$ (ii) $fog(2)$ (iii) $gof(2)$

III. Answer any **THREE** questions: **(3×5=15)**

1. How many numbers lying between 100 and 1000 can be formed with the digits 0, 1, 2, 3, 4, 5 if the repetition of the digits is not allowed.

2. Find the value of n such that

   (i) ${}^{n}P_5 = 42({}^{n}P_3)$, $n>4$

   (ii) $\frac{{}^{n}P_4}{{}^{(n-1)}P_4}=\frac{5}{3}$, $n>4$

3. A card is drawn randomly from a pack of 52 well shuffled cards. Find the probability that the card drawn is (i) spade (ii) a king or a queen.

4. A bag contains 3 white, 4 red and 2 green balls. One ball is selected at random from bag. Find the probability that the selected ball is (i) white (ii) non-white (iii) white or green.

5. A fair coin is tossed five times. Find the probability of obtaining (i) head in all the tosses (ii) head in atleast one of the tosses.

IV. Answer any **THREE** questions: **(3×5=15)**

1. Sanjana has a monthly salary of Rs. 20,000, she spends Rs. 4,000 per month on cosmetics. What percent of her monthly salary does she spend on cosmetics?

2. Three numbers are in the ratio 2:3:4. If the sum of the squares is 1856. Find the numbers.

3. If $x:y = 2:3$, find $\frac{2x^2 + 5y^2}{x^2 + y^2}$.

4. If two numbers are in the ratio 3:5. If 5 is added to each, they are in the ratio 22:35, then find the numbers.

5. The price of the trouser was decreased by 22% to Rs. 390. What was the original price of the trouser?