



OEMT212

Reg. No.

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II Semester B.Sc. (NEP) Degree Examination, October - 2022

MATHEMATICS (Open Elective)

Commercial Mathematics

Time : 2½ Hours

Maximum Marks : 60

Instructions to Candidates:

Answer all the questions.

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I. Answer any five questions.

(5×3=15)

1. Define venn diagram represent a venn diagram for A-B.
2. If $A = \{1, 2, 3\}$ find the power set of A.
3. If $A = \{c, e, f\}$, $B = \{f, g, h\}$, $C = \{g, h, i\}$ Find $(A \cap B) \times (B \cap C)$
4. Compute $\frac{9!}{7! \cdot 3!}$
5. Find the number of permutations of the letters of the word ALLAHABAD.
6. In how many ways can 4 red, 3 yellow and 2 green discs be arranged in a row if the discs of the same colour are indistinguishable.
7. How to convert ratio into percentage? Convert 4:7 into percentage.
8. A house consumes 20 kgs of rice and 5 kgs of wheat compare the consumption of rice and wheat in the form of ratio.
9. Find the ratio between two numbers such that their sum is 50 and difference is 8.

[P.T.O.]



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(3×5=15)

II. Answer any three questions

1. In a class of 150 students, it was found that 95 like burgers and 79 like pizzas. Assuming every student likes at least one of the above. Find the number of students who like both Burgers and Pizzas. Show that result through venn diagram.
2. In a group of 85 people, 40 like Cricket, 20 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 one the set of integers by $R = \{(x, y) : x - y \text{ is a multiple of } 5\}$. Show that R is an equivalence relation on \mathbb{Z} .
4. The function which maps temperature in Farenheit into temperature in Degree Celsius is defined as $T(f) = \frac{5}{9}(f - 32)$. Find
 - i) $T(32)$
 - ii) $T(-49)$.
5. If $f(x) = x - 1$ and $g(x) = 2x^2 - 3$. Find
 - i) $(g \circ f)(x)$
 - ii) $(g \circ f)(2)$

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III. Answer any three questions

(3×5=15)

1. Find the value of n such that
 - i) $nP_5 = 42$. nP_3 ; $n > 4$
 - ii) $\frac{nP_4}{(n-1)P_4} = \frac{5}{3}$, $n > 4$
2. There are 12 points in a plane of which 5 are collinear. Find the numbers of
 - i) Straight lines
 - ii) Triangles that can be formed by joining these points.
3. A card is randomly drawn from a pack of playing cards. Find the probability that the drawn card is
 - i) a spade or a king
 - ii) a king or a queen.



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4. The probability that India wins a cricket match is 0.52. If India plays five matches, find the probability that it wins.
- (1) At least one match
(2) All the five matches
5. The probabilities of two students A and B solving a problem are $\frac{1}{2}$ and $\frac{3}{4}$ respectively. If both of them independently try, what is the probability that the problem is solved?
- (1) Answer any three questions (3×5=15)
1. A person spent 30% of his wealth and there after Rs. 20,00/- and further 10% of the remainder. If Rs. 29,25/- is still remaining. What was his total wealth?
2. In a dance competition 70% of the participants were girls, 35% of the boys and 65% of the girls got qualified for the next round. If 49 girls were eliminated, find the number of boys who were selected.
3. An article was sold at 20% gain on the cost price. Find the ratio of the selling price and cost price.
4. If $a:b=2:3$, $x:y=4:5$ find $(5ax+3by):(10ax+4by)$.
5. If $\frac{a}{b} = \frac{c}{d}$ prove that $\frac{2a+7b}{2x+7d} = \frac{2c+7d}{2x+7d}$

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