647510 **BBAbmMD201A-1C** **Seat No :_____**

B.B.A. Semester - 1 (NEP-2020) Examination

OCT/NOV-2024

Basic Mathematics (Multidisciplinary Course)

Time: 2:00 Hours **Marks: 50**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q.1(A) Define 'permutation ' and 'combination' (05)

Q.1(B) Find value of 'n' (05)

(i) ${}^{n}p_5 = 240240$ (ii) ${}^{11}p_n : {}^{12}p_n = 3 : 4$

OR

Q.1(A) If ${}^{20}C_5 + 2({}^{20}C_4) + {}^{20}C_3 = {}^{n}C_r$ find n and r. (05)

Q.1(B) In how many ways can a committee of five persons be formed out of 6 boys and 7 girls such that each committee must include at least one boy. (05)

Q.2(A) Find value of $(\sqrt{5} + 1)^5 - (\sqrt{5} - 1)^5$ (05)

Q.2(B) Find middle term in the expansion of $(\frac{x}{3} - \frac{3}{x})^5$ (05)

OR

Q.2(A) Find the constant term in the expansion of $(3x^2 - \frac{1}{x})^9$ (05)

Q.2(B) The fifth term in the expansion of $(1 + x)^{11}$ is 24 times its third term find value of x. (05)

Q.3(A) In usual notation prove that $1^2+2^2+3^2+4^2+\ldots\ldots\ldots+n^2 = \frac{n(n+1)(2n+1)}{6}$ (05)

Q.3(B) By using principal of Mathematical Induction prove that (05)

$1.3 + 2.4 + 3.5 + \ldots + n(n+2) = \frac{n(n+1)(2n+7)}{6}$

OR

Q.3(A) In usual notation prove that $1+2+3+4+\ldots\ldots\ldots+n = \frac{n(n+1)}{2}$ (05)

Q.3(B) By using principal of Mathematical Induction prove that (05)

$\frac{1}{5.6} + \frac{1}{6.7} + \frac{1}{7.8} + \ldots\ldots\ldots + \frac{1}{(n+4)(n+5)} = \frac{n}{5(n+5)}$

Q.4(A) Define: Arithmetic and geometric progression. (05)

Q.4(B) Find the sum of numbers between 200 and 400 exactly divisible by 7 . (05)

OR

Q.4(A) The A.M. of two numbers exceeds their G.M. by 14 and the first number is 9 times the second number. Find the two numbers. (05)

Q.4(B) The product of first and second terms of G.P. is 256 and that of second and third terms is 16. Find fifth term. (05)

Q.5(A) Explain the meaning of interpolation and extrapolation. State their Uses. (05)

Q.5(B) From the following data interpolate y for x = 34 (05)

x	25	30	35	40	45
y	27.87	31.81	37.00	43.81	52.75

OR

Q.5(A) Find missing value from the following data. (05)

year	1975	1980	1985	1990	1995
Population (in '000')	12	14	18	?	32

Q.5(B) Find value of f(5) from the following data. (05)

X	0	2	3
f(X)	2	6	10

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