

B.B.A. Semester - 1 (CBCS) Examination

Oct/Nov-2024 (As Per Syllabus Year June-2018)

ELEMENTS OF BUSINESS MATHEMATICS(ELECTIVE/ALLIED)

2:30 Hours

Marks: 70

Instructions:

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

- Que-1 (A) Prove that ${}^{n-1}P_{r+r} \cdot {}^{n-1}P_{r-1} = {}^nP_r$. (07)
- (B) Compute the sum of 4 digits number, which can be formed using the digits 2, 4, 6 and 8. Each digit is used only once in each arrangement. (07)

OR

- Que-1 (A) Prove that ${}^nC_r = \frac{n!}{r!(n-r)!}$ (07)
- (B) A bag contains 5 white, 3 green and 2 red balls. How many selections of 3 balls can be made so that (i) All three balls are of same colour. (ii) 2 balls of same colour (07)

- Que-2 (A) The 4th term of an A. P. Is 22 and its 10th term is 52, find the sum of its 40 terms. (07)
- (B) The sum of n terms of an A. P. Is $2n^2 + 3n$, find its 20th term. (07)

OR

- Que-2 (A) Find the sum of following series up to n terms. $1.4 + 3.04 + 5.004 + 7.0004 + \dots$ (07)
- (B) If $a - b$, $b - c$, $c - a$, are in G. P. Prove that $(a + b + c)^2 = 3(ab + bc + ca)$ (07)

- Que-3 (A) Expand $(3x + \frac{2}{y})^2$. (07)
- (B) Obtain the co-efficient of x^{16} in the expression of $(2x^2 - x)^{10}$. (07)

OR

- Que-3 (A) State binomial theorem and give its characteristics. (07)
- (B) Prove binomial theorem by principle of mathematical induction. (07)

- Que-4 (A) Explain: Newton's Backward Method (07)
- (B) Estimate the annual premium at the age of 34 years, using the following data. (07)

Age in years	25	30	35	40	45
Annual premium (in Rs.)	27.87	31.81	37.00	43.81	52.75

OR

- Que-4 (A) Explain: Importance and uses of Interpolation and Extrapolation. (07)
- (B) To find the value of y when $x=10$. (07)

x	5	6	9	11
y	12	12	14	16

- Que-5 (A) Find the sum of n terms of the following series: (07)
- $2.5.7 + 5.9.9 + 8.13.11 + 11.17.13 + \dots$

- (B) Prove that $2 + 5 + 8 \dots + (3n-1) = \frac{n(3n+1)}{2}$. (07)

OR

- Que-5 (A) Find the sum of the following series: (07)
- $11^2 + 12^2 + 13^2 + \dots + 20^2$
- (B) Explain the principle of mathematical induction. (07)
