

B.B.A. Semester - 1 (CBCS) Examination**Oct/Nov. -2019 (NEW COURSE)****ELEMENTS OF BUSINESS MATHEMATICS(ELECTIVE/ALLIED)****Time: 2:30 Hours****Marks: 70****Instructions:**

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

Que-1(A) Find n if ${}^{2(n+1)}P_{n-1} : {}^{2(n-1)}P_n = 3:5$. (07)

(B) How many different words can be permuted by using all the letters of the
Following words: (1) PERMUTATIONS (2) PROBABILITY (3) COMMITTEE. (07)

OR

Que-1(A) Prove that ${}^nC_r + {}^nC_{r-1} = {}^{n+1}C_r$.

(B) If $P = QC_2$ then prove that $PC_2 = 3(Q+1)C_4$.

Que-2(A) The sixth term of an A.P. is 121. Find the sum of its first 11 terms. (07)

(B) The product of three numbers in G.P. is 729 and sum of their squares is 819. Find the numbers. (07)

OR

Que-2(A) Find the sum of n terms of $9 + 99 + 999 + \dots$

(B) Find the sum of all natural numbers between 500 and 100 which are divisible by 13.

Que-3(A) State binomial theorem and give its characteristics. (07)

(B) If the middle term in the expansion of $(\frac{k}{2} + 2)^8$ is 1120 find the value of k . (07)

OR

Que-3(A) Find the term independent of x (constant) in the expansion of $(x^2 + x^{-1})^{12}$

(B) The first three term in the expansion of $(a+b)^n$ are 1, 14 and 84 respectively.
Determine a , b and n .

Que-4(A) Explain the meaning of interpolation and extrapolation. (07)

(B) By using NBIF estimate the value of y when $x=26$. (07)

x	10	15	20	25	30
y	20	45	115	210	225

OR

Que-4 Interpolate the two values in the following data.

x	4.1	4.2	4.3	4.4	4.5	4.6	4.7
y	18	21	26	?	32	?	40

Que-5(A) Find T_n if $S_n = 2n^2 + 3n$. also find T_{20} . (07)

(B) Find the sum of n terms of $(1)(4) + (3)(7) + (5)(10) + \dots$ (07)

OR

Que-5 Prove that (14)

(1) $1(1!) + (2!) + (3!) + \dots + n(n!) = (n+1)! - 1, n \in \mathbb{N}$.

(2) $(1)(2) + (2)(2^2) + (3)(2^3) + \dots + n(2^n) = (n-1)2^{n+1} + 2, n \in \mathbb{N}$.
