

C.U.SHAH UNIVERSITY

WADHWAN CITY

University (Winter) Examination -2013

Course Name :BBA&MAM Sem-I

Subject Name: -Business Mathematics

Duration :- 2:30 Hours

Date : 09/12/2013

Instructions:-

- (1) Attempt all Questions of both sections in same answer book / Supplementary.
 (2) Use of Programmable calculator & any other electronic instrument is prohibited.
 (3) Instructions written on main answer Book are strictly to be obeyed.
 (4) Draw neat diagrams & figures (If necessary) at right places.
 (5) Assume suitable & Perfect data if needed.

SECTION I**Q.1 Attempt the Following:**

- a) If $f(x) = 2x^2 + 3x - 1$, find out $f(1)$. 1
 b) Give the formula for $\sum x^2 = 1^2 + 2^2 + 3^2 + 4^2 + \dots + n^2$. 1
 c) Give the formulae of finding the nth term in Arithmetic and Geometric Progression. 1
 d) $F: N \rightarrow N$, $f(x) = 5x - 2$, $x \in \{1, 2, 3, 4\}$, find the range of f . 1
 e) Find $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a}$ where $n \in Q$ 1
 f) Find $\lim_{x \rightarrow 3} \frac{x+7}{x-2}$ where $x \in R - \{2\}$ 1
 g) $F: A \rightarrow B$, $f(x) = 2x - 3$ & $R_f = \{-3, 1, 0\}$, Find the domain A of the function f . 1

Q.2 Attempt the following.

- a) If $f(x) = x^3 - 2x + 1/x$, prove that $f(x) + f(-x) = 0$. 5
 b) Find $\lim_{x \rightarrow 2} \frac{x^2 + x - 6}{x^2 - 4}$ 5
 c) The 6th term of an Arithmetic Progression is 121, find the sum of its first 11 terms. 4

OR**Q.2 Attempt the following.**

- a) Find $\lim_{x \rightarrow -7} \frac{x^2 + 11x + 28}{x^2 + 5x - 14}$ 5
 b) If the demand function is $d = f(p) = 400 - 2p^2$, find the demand when $p = 6$. 5
 c) Find five numbers in Geometric Progression whose product is 32 & the product of the last two numbers is 108. 4

Q.3 Attempt the following

- a) A Book publishers finds that the production cost of each book is Rs. 40 & the fixed cost is Rs. 18,000. If each book can be sold for Rs. 60, then determine 7
 1. The cost function.
 2. The revenue function.
 3. The break-even point.
 b) If $f(x) = x^2 + 5$, find out $\lim_{h \rightarrow 0} \frac{f(h+3) - f(3)}{h}$ **OR** 7

Q.3 Attempt the following

- a) A shopkeeper earns Rs. 500 in first week, Rs.700 in second week and Rs.900 in third week. On plotting the points (1,500), (2,700) and (3,900) the shopkeeper feels that a quadratic function may fit the data. Find the quadratic function that fits the data. Also estimate the earnings of fourth week. 7
 b) Find out $\lim_{n \rightarrow \infty} \frac{1+2+3+\dots+n}{(n+3)(n+4)}$ 7



SECTION II

- Q.4 Attempt the Following:**
- a) ${}^{19}C_{x+2} = {}^{19}C_{2x-1}$, find x. 1
 - b) Evaluate $(9.9)^5$ 1
 - c) ${}^{2x}C_3 = {}^xP_4$, find x. 1
 - d) Expand $(a+2b)^5$ 1
 - e) ${}_nP_3=210$, find n 1
 - f) Give the formulae of finding the sum of first n terms in Arithmetic and Geometric Progression. 1
 - g) The 6th term of an Arithmetic Progression exceeds its 3rd term by 21, & its first term is 12. Find out its 20th term. 1

- Q.5 Attempt the following.**
- a) For positive integral values of n prove that: $1+3+5+7+\dots+(2n-1)=n^2$ 5
 - b) Find the sum of the series $1-3+5+7-9+11+13-15+17+\dots$ upto 3n terms. 5
 - c) In how many ways 4 Gujaratis, 2 Punjabis & 1 Madrasi can be selected out of 8 Gujaratis, 4 Punjabis and 3 Madrasis. 4

- Q.5 Attempt the following.**
- a) Obtain the middle term in the expansion of $(a/x - x/a)^{10}$ 5
 - b) Find k if $8P_5=7P_5 + k*7P_4$. 5
 - c) If $3nP_3=(2n+1)P_3$, find n. 4

- Q.6 Attempt the following**
- a) An urn contains 5 red, 3 green & 2 white balls. In how many ways 3 balls can be drawn from it such that 7
 - 1. One ball of each color is included
 - 2. Two balls of the same color and 1 ball of different color are included
 - 3. Three balls of same color are included.
 - b) The sum of three numbers in arithmetic progression is 30. If 2, 4&3 are deducted from them respectively the resulting numbers form a geometric progression. Find the numbers. 7

OR

- Q.6 Attempt the following**
- a) A man borrows Rs.9000 from his friend & promises him to repay the same in 30 installments. If each installment is Rs 20 more than its previous one, find the first and the last installment. 7
 - b) Find the sum of n terms $4*1^2+7*3^2+10*5^2+13*7^2+\dots$ 7

*****9*****

2/2

