SEAT No._____

No. of Printed Pages: 02

[A-5]

SARDAR PATEL UNIVERSITY

B.B.A. (General) (2010 BATCH) SEMESTER – II EXAMINATION (NC)

Tuesday, 10th April 2018

10.00 a.m. to 12.00 p.m.

UM02CBBA05/10: BUSINESS MATHEMATICS-II

Total Marks: - 60

Note: Log table & Graph Paper will be provided on request.

Q.1

(a) A committee of 6 is to be formed from 6 students and 3 professors. In how many ways this can be done so that the committee contains at least 3 students? (07)

(b) Do as directed: (08)

1. Evaluate: ${}_{10}C_3 * {}_6C_5$
2. ${}_nP_4 = 12*({}_nP_2)$, find n.

OR

Q.1

(a)

1. In how many ways can 4 girls and 4 boys be seated in a row if boys and girls sit alternate? (07)
2. Find n: ${}_nC_5 = {}_nC_{11}$

(b) How many different words can be formed using the following words without repetition? (08)

(1) MATHEMATICS (2) MISSISSIPPI

(3) LOGARITHM (4) BHARAT

Q.2

(a) Find the maximum value of the function $f(x) = x^3 - 3x$. (07)

(b) Find $\frac{dy}{dx}$: (08)

1. $y = \frac{x^5}{5} - \frac{x^4}{4} + \frac{x^3}{3} - \frac{x^2}{2} + 1$
2. $y = \frac{e^x}{\log x}$

OR

Q.2

(a) Write rules of differentiation. (05)

(b) Find $\frac{dy}{dx}$: (05)

1. $y = t^2 + t + 1,\ x = 2t + 1$
2. $y = 7^x \log x$

(c) Total cost C for output x units is given by $C = \frac{1}{2}x^2 + x + 1$. Find marginal cost. Also find marginal cost when output is 2 units. (05)

Q.3

(a) What is an aggregate amount for Rs. 15,000 at 9% rate of compound interest for 5 years if the interest is compounded (1) Annually? (2) Semi-annually? (08)

C.P.T.O.

(b) Mr. Patel Purchased a machine for Rs. 4, 50,000. Its expected life is 5 years. After that period a new machine will Cost 20% more. In order to provide for this, he was decided to create a sinking fund and to invest it at 12% rate of compound Interest. Find out the sum to be transferred to the sinking fund by Mr. Patel on 31st December of every year. (07)

Q.3 **OR**

(a) **(I)** Define following: (08)

1. Compound interest 2. Sinking fund 3. Annuity

(II) Mr. Kamal purchased a machine for Rs. 600,000 on 1-1-2016. The expected life the machine is 10 years. After that period he will have to buy a new machine. It is expected that he will have to pay the price 1.5 times higher compared to the price today. In order to make this provision, what amount he should deposit on every 31st December at 13% rate of compound interest?

(b) Mr. Naman borrows Rs. 32,000 at the rate 15% of simple interest and invest it on the same day at 13% of compound interest. At the end of 4 years how much profit or loss will he have? (07)

Q.4

(a) Solve the following minimal assignment problem: (05)

	Job			
Man	I	II	III	IV
A	34	30	41	55
B	47	31	53	45
C	39	42	38	54
D	31	35	49	45

(b) Solve given transportation problem by using (10)

(1) N-W Corner method

(2) Least cost Method

	X	Y	Z	W	Supply
A	15	12	23	10	12
B	13	16	14	21	13
C	29	26	13	36	15
Demand	6	9	11	14	

Q.4 **OR**

(a) Write uses of Linear Programming. (07)

(b) Solve following LPP by graphical method: (08)

$Maximise\ Z = 300x + 200y$

$Sub.\ to\ x + y \leq 50, 2x + y \leq 80, \quad \& \ x, y \geq 0$

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