[52/A-12] SEAT No.____

SARDAR PATEL UNIVERSITY
B.B.A. (General) SEMESTER – II (NC) EXAMINATION
Tuesday, 2nd April 2019
2.00 P.M. to 4.00 P.M.
UM02CBBA06: BUSINESS MATHEMATICS-II

Total Marks: 60

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

Q.1

(a) Evaluate: 05

    (1) $_{10}C_6 + _5C_2 + 3!$ **(2)** $_6P_5 + _5P_3 + \dfrac{4!}{0!}$

(b) In how many ways four cards of (i) different suits (ii) same suit can be selected from 52 playing cards? 05

(c) How many different words can be formed using the following words without repetition? (1) AJANTA   (2) MISSISSIPPI 05

Q.1   **OR**

(a) From 7 students and 4 professors a committee of 6 is to be formed. In how many ways this can be done under the constraint that the committee contains at least two professors? 05

(b) How many arrangements can be made with the letter of the word ANANDPURA? In how many of them vowels occupy even places? 05

(c) Find n : $_nP_3 = 6 \cdot {}_nC_5$ 05

Q.2

(a) Find the maximum or minimum value of the function: $f(x) = 3x^2 + 5x - 3$. 05

(b) Find $\dfrac{dy}{dx}$: 10

    1. $y = 3x^4 + 5x^3 - 2x^2 + 7x + 9$

    2. $y = \dfrac{\log x}{x}$

Q.2   **OR**

(a) Write rules of differentiation. 05

(b)

    1. Total cost C for output x units is given by $C = \dfrac{4}{5}x^5 + 4x^2 + 5$. 10

    Find marginal cost when output is 2 units. Also find Average cost.

    2. Find $\dfrac{d^2y}{dx^2}$, where $y = \dfrac{x^5}{5} - \dfrac{x^4}{4} + \dfrac{x^3}{3} - \dfrac{x^2}{2} + 1$

Q.3

(a) Explain compound interest, annuity and sinking fund. 07

①

(P.T.O)

(b) XYZ Ltd. Purchased an equipment worth Rs. 8,00,000 on 01/01/2018. Its expected life is 10 years. After that period a new equipment will cost 60% more. In order to provide for this, it has been decided to create a sinking fund. Find out the sum to be invested at 14% rate of compound interest at the end of every year.   08

Q.3   **OR**

(a) The population of a city at present is 76162 which was 65673 before 5 years. Find out rate of growth of population.   07

(b) Mr. Naman purchased a machine worth Rs. 4,50,000 on 1-1-2018. Its expected life is 5 years. After that period he will have to buy a new machine. It is expected that he will have to pay the price 20% more. In order to make this provision, what amount he should deposit at 11% rate of compound interest at the end of each year?   08

Q.4

(a) Solve the following LPP by Graphical method: 07

Minimize $Z = 3x + 8y$
Sub. to $x + y \geq 2$,
$\quad\quad x \leq 5$,
$\quad\quad y \leq 4$ and $x, y \geq 0$.

(b) Solve the following minimal assignment problem: 08

<div align="center">Job</div>

		I	II	III	IV
	A	33	28	39	55
Worker	B	45	30	51	43
	C	37	40	36	52
	D	29	33	48	43

Q.4   **OR**

(a) What is Linear Programming? Write its uses.   05

(b) Find an initial basic feasible solution to the following transportation problem by   10
(1) N – W Corner method
(2) Least cost Method

	X	Y	Z	W	supply
A	6	1	9	3	75
B	11	5	2	8	50
C	10	12	4	7	80
Demand	70	30	55	50	

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<div align="center">②</div>