Sardar Patel University, Vallabh Vadhyanagar
External Examination 2019
F.Y.B.B.A. (ITM) – SEM – II (4 year)
UM02CBBI06 - Business Mathematics - II

Date : 02-04-2019 Day : Tuesday Time: 02:00 PM TO 04:00 PM Total Marks: 60

Q-1 (a) Find n if $nP_4 = 12. nP_2$ [05]

(b) In how many ways a committee of 4 persons can be formed from 4 boys and 5 girls in which there are at least 2 boys. [05]

(c) How many four digited numbers can be formed from the digits 1, 3, 5, 7, 9? How many of them are (1) > 9000 (2) Divisible by 5 [05]

OR

Q-1 (a) Evaluate : (1) $10C_3 \times 5C_2$ (2) $7P_3 \times 5P_2$ [05]

(b) Find n if, $2nP_3 = 14. nP_4$ [05]

(c) How many different words can be formed using all the letters of the word "TEJAL" without repetition? Out of which in how many words (1) A is at the start (2) A is at the start and J is at the end [05]

Q-2 (a) Find $\frac{dy}{dx}$ If $y = \frac{1-t}{1+t}$ and $x = \frac{t}{1+t}$ [05]

(b) At which point the function $f(x) = \frac{2}{3}x^3 + \frac{1}{2}x^2 - 6x + 8$ is maximum and minimum? [05]

(c) State the rules of differentiation. [05]

OR

Q-2 (a) Find $\frac{dy}{dx}$, if $y = (3x^2 + 5x + 7)^8$ [05]

(b) Find at which point the function $f(x) = x^3 - 3x + 4$ is maximum and minimum? [05]

(c) Find $\frac{d^2y}{dx^2}$ If $y = \frac{\log x}{x}$ [05]

Q-3 (a) Ritesh deposited Rs. 15000 at 11% rate of compound interest. What amount will he receive at the end of 5 year? How much interest will he get? [05]

(b) Define the term : [05]

(1) Annuity (2) Simple Interest (3) Compound Interest (4) Sinking Fund

(1)

(P.T.O)

(c) The population of a city at present is 76162, Which was 65673 before 5 years. **[05]** Find out the rate of growth of population.

OR

Q-3 (a) Nilima chemicals fixes a target of producing 50,000 tons at the end of 7 **[05]** years. If the production grows at a rate of 5% per annum. Find the present day production of the company.

(b) Shreya limited issued 50000 debentures each of Rs. 100 to be redeemed after **[05]** 10 years. It was decided to create a sinking fund, for this purpose and to invest it at 12.5% rate of compound interest. Find out the sum to be transferred to this fund at the end of every year.

(c) Rs. 4000 are invested for one year at 8% compound rate of interest, if the **[05]** interest is calculated quarterly, What is amount after one year?

Q-4 (a) Write the limitations and uses of linear programming. **[05]**

(b) Solve the following Assignment problem by Hungarian method. **[05]**

	P	Q	R	S
A	12	15	18	8
B	13	10	9	14
C	10	12	15	13
D	7	8	9	14

(c) Solve the following linear programming problem by graphical method : **[05]**
Max $Z = 3x + 4y$
Such That $2x + 5y \leq 120$
$\qquad 4x + 2y \leq 80$
$\qquad x \geq 0, y \geq 0$

OR

Q-4 (a) Solve the following transportation problem by using (1) NWCM (2)VAM **[10]**

	A	B	C	D	Supply
P	15	10	17	18	2
Q	16	13	12	13	6
R	12	17	20	11	7
Demand	3	3	4	5	

(b) Solve the following assignment problem. **[05]**

	P	Q	R	S
A	35	30	41	57
B	47	32	53	45
C	39	42	38	54
D	31	35	50	45