SARDAR PATEL UNIVERSITY
FY BBA (II SEM.) (NC) (CBCS) EXAMINATION
Tuesday, 17th April 2012
11.00 am to 1.00 pm
UM02CBBA05 / 10: Business Mathematics

Total Marks: 60

Note: (1) Figures to the right indicate marks.
(2) Graph papers and log table will be provided on request.

Q.1

(A) Solve the following equation. [05]

$$^{n}P_3 : {}^{(n+1)}P_3 = 3 : 4$$

(B) How many different numbers of six digits can be formed by using [05]
digits 2, 1, 7, 8, 0, 4 ? How many of them will be divisible by 5 ?

(C) How many different words can be formed by using all the letters of the [05]
following words: (i) VRAJ (ii) COMMITTEE

OR

Q.1

(A) If $^{19}C_{x+2} = {}^{19}C_{2x-1}$ then find x. [05]

(B) In how many ways a committee of 6 persons can be formed from 6 [05]
professors and 8 students so as to include at least one and at the
most 3 professors?

(C) Find the value of $^{9}C_5 + {}^{9}C_6 + {}^{10}C_7 + {}^{11}C_8$. [05]

Q.2

(A) Explain rules of differentiation. [05]
(B) Using definition find f'(x) for the function f(x) = x^2 + 3x. [05]

(C) Obtain $\dfrac{dg}{dx}$ of the following. [05]

(i) y = x^7 + 3logx + e^x (ii) y = x^5.logx

OR

Q.2

(A) Find maximum and minimum values of the function y = x^3 - $9x^2$ + 24x + 2. [05]
(B) The demand function of a commodity is x = 50 + p - p^2. Calculate [05]
elasticity of demand when price of the commodity is 5.

(C) Find $\dfrac{dy}{dx}$ (i) $y = \dfrac{x^2+3}{x+5}$ (ii) $y = \log(3x^2 + 3x + 2)$ [05]

Q.3

(A) Explain the following terms: (i) Annuity   (ii) Sinking Fund [05]
(B) Find the compound interest of Rs. 20000 at 10% for 3 years if interest [05]
is calculated every six months.
(C) Rohitbhai deposits Rs. 2500 at the end of every year at 15% rate of [05]
compound interest with a financier. Find out what amount he would
receive at the end of 20 years from financier.

OR

Q.3

(A) The profit of a company is increasing annually at the rate of 10%. If its [05] present day profit is Rs. 77100, after how many years will it earn Rs. 200000 annually?

(B) Shri Bhupendrabhai purchases a computer and agrees to pay 10 [05] installments each of Rs. 12000 at the end of every year inclusive of interest. If the compound rate of interest is 15%, find out the present value of computer.

(C) M/S Pretty Limited company issued 20000 debentures of Rs. 100 [05] each to be redeemed after 10 years. In order to get a fund to redeem these debentures, it was decided to create a sinking fund and to invest it at a 12% rate of interest. Find out the sum to be transferred to this sinking fund every year.

Q.4

(A) Explain the limitations of Linear Programming. [05]

(B) Solve the following linear programming problem by graphical method. [05]

Max $Z = 8x + 12y$

s.t. $x + y \leq 9$

$3x + 6y \leq 36$

$x \geq 2$ $y \geq 3$

and $x, y \geq 0$

(C) Solve the following transportation problem by matrix minima mathod. [05]

	D_1	D_2	D_3	D_4	Supply
O_1	5	6	8	10	10
O_2	10	8	6	4	15
O_3	2	5	7	9	25
Demand	15	10	10	15	

OR

Q.4

(A) Solve the following transportation problem by N - E corner method. [05]

	A	B	C	D	Supply
O_1	6	4	1	5	14
O_2	8	9	2	6	17
O_3	4	3	6	2	5
Demand	6	10	16	4	

(B) Solve the following transportation problem by Vogel's method. [05]

	D_1	D_2	D_3	D_4	Supply
O_1	21	16	25	13	11
O_2	17	18	14	23	13
O_3	32	27	18	41	19
Requirement	6	10	12	15	

(C) Solve the following assignment problem so that cost is minimum. [05]

		I	II	III	IV
	A	8	26	17	11
Work	B	13	28	14	26
	C	38	19	18	15
	D	19	26	24	10

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