

(A-17)

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SARDAR PATEL UNIVERSITY
BBA (GEN) (II-Semester) Examination
Thursday, 26 March 2015
2.30 - 4.30 pm

UM02CBBA05/10 - Business Mathematics - II

Total Marks: 60

- Q.1(a) Find n if
- (1) $nP_3 = 6 \cdot nC_5$ (05)
 - (2) ${}_{(n+1)}C_6 : nC_5 = 11:6$ (05)
- (b) How many words can be formed using all the letters of the word "SONA"? Out of them how many words
- (1) Start with Vowel? (05)
 - (2) Start with N? (05)

OR

- Q.1(a) How many three digit numbers can be formed using the digits 1,2,4,5,6,7,8? How many of the are
- (1) Even numbers? (05)
 - (2) Greater than 500? (05)
- (b) Find the number of committees of 5 members from 7 boys and 4 girls can be formed such that each committee contains at least one girl. (05)
- (c) Evaluate :
- (1) $20C_3 \times 10C_1$ (05)
 - (2) ${}_{10}P_2 \div {}_5P_0$ (05)

- Q.2(a) Obtain $\frac{d^2y}{dx^2}$ if $y = \log x$ (05)
- (b) The cost function C of manufacturing a certain article is given by (05)
- $$C = 2x^2 + \frac{105}{x} + 25$$
- where x is the number of articles manufactured.
Find x for minimum value of C. Also find minimum cost.
- (c) Obtain dy/dx if (05)
- $$y = \frac{1-t}{1+t} \text{ and } x = \frac{t}{1+t}$$
- (05)

OR

- Q.2(a) Find the maximum and minimum values of (05)
- $$f(x) = \frac{2}{3}x^2 + \frac{1}{2}x^2 - 6x + 8$$
- (b) Write the rules of differentiation. (05)
- (c) Find dy/dx if $y = \left(\frac{2x+3}{4x+5}\right)^6$ (05)

- Q.3(a) A sum of Rs. 4000 is invested for one year at 8% compound rate of interest, if the interest is calculated quarterly, what is the effective rate of interest ? (05)
- (b) Explain the terms :
 (1) Sinking Fund (2) Effective rate of interest
 (3) Simple interest (4) Compound interest (04)
- (c) The population of a city at present is 76162, which was 65673 before 5 years. Find out the rate of growth of Population. (06)

OR

- Q.3(a) Rekha Limited issued 50,000 debentures each of Rs. 100 to be redeemed after 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. (05)
- (b) Cost of building a new house is Rs. 4,70,000 at present. If it increases at 8% every year, find out the increased cost of a similar house if it is built after 3 years ? (05)
- (c) What is an aggregate amount for Rs. 4000 at 12% rate of compound interest for 3 years if the interest is compounded every six months ? (05)

- Q.4(a) Write the uses and limitation of Linear Programming. (05)
- (b) Solve the following LPP by graphical method. (05)

$$\text{Max } Z = 200x + 300y$$

$$\text{s.t. } 3x + 3y \leq 135$$

$$5x + 2y \leq 180$$

$$y \leq 2x, x, y \geq 0$$

- (c) Solve the following A.P. (05)

	I	II	III	IV
A	0	7	14	21
B	12	17	22	27
C	12	17	22	27
D	18	22	26	30

OR

- Q.4(a) Solve the following Transportation problem by (1) NWCM (2) VAM (10)

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

- (b) Use the graphical method to solve the following LPP (05)
- $$\text{Max } Z = 3x_1 + 5x_2$$
- s.t. $3x_1 + 2x_2 \leq 18$
- $$x_1 \leq 4$$
- $$x_2 \leq 6, x_1, x_2 \geq 0$$

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