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[57, 59, A-60 & A-61] No. of printed pages: 3

SARDAR PATEL UNIVERSITY
B. B. A. (General / ITM) (II Semester) Examination
5th April 2016 (Tuesday)
2.30 pm – 4.30 pm
UM02CBBA06 / UM02CBBI06 – BUSINESS MATHEMATICS – II

Total Marks : 60

Note: (1) Figures to the right indicate marks.
(2) Graph paper and log tables will be supplied on request.

Q. 1

(A) Find n: (04)

$${}_nP_4 = 12\ [{}_nP_2]$$

(B) How many different words can be formed using all the letters of the word "TEJAL" without repetition? Out of which in how many words (06)
(i) A is at the start?
(ii) A is at the start and T is at the end?

(C) 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)

OR

Q. 1

(A) Evaluate: (04)
(i) ${}_{10}C_8 \times {}_5C_2$
(ii) ${}_7P_3 \times {}_5P_2$

(B) How many numbers of 6 digits can be formed from the digits 4, 5, 6, 7, 8 and 9; if no digit is repeated? How many of them are divisible by 5? (06)

(C) In how many ways can you select two salesmen and three software programmers out of 7 salesmen and 5 software programmers? (05)

Q. 2

(A) State the rules of differentiation. (04)

(B) Find $\frac{dy}{dx}$: (06)
(i) $y = x^3 + 3x^2 + 100$
(ii) $y = \frac{1}{(3x+4)}$
(iii) $y = x\ (\log x)$

(C) Find maximum and minimum values of $f(x) = x^3 + 6x^2 - 15x + 7$. (05)

OR

Q. 2

(A) Find $\frac{d^2y}{dx^2}$ if $y = \frac{\log x}{x}$. (04)

(B) Find $\frac{dy}{dx}$: (06)
(i) $y = t^2 + t + 1,\ x = 2t^2 + 1$
(ii) $y = \log (5x^2 + 4x + 3)$

(C) The demand function of a commodity is $P = 50 - \left(\frac{5}{2}\right)x$. Determine demand and price for maximum revenue. (05)

Q. 3

(A) Explain the following terms: (04)
(i) Annuity (ii) Sinking Fund

(B) The cost of building a new house at present is ₹ 7,50,000/-. If it increases at 5% every year find out the increased cost of a similar house if it is build after 4 years. (06)

(C) Alok deposited ₹ 15,000/- with a leasing company at 11% rate of compound interest. What amount will he receive at the end of 5 years? How much interest will he get? (05)

OR

Q. 3

(A) Find the compound interest on ₹ 5,000/- at 5% per annum for 5 years compounded annually. (04)

(B) A company issued 50,000 debentures each of ₹ 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. (06)

(C) Nidhi Chemicals fixes a target of producing 50,000 tons at the end of 7 years. If the production grows at a rate of 5% per annum, find the present day production of the company. (05)

Q. 4

(A) Write assumptions of Linear Programming Problem. (04)

(B) Obtain a basic feasible solution of the following transportation problem by North-West corner method. (06)

From	To					Supply
	A	B	C	D	E	
X	4	5	7	9	10	8
Y	3	2	3	6	9	12
Z	8	12	15	30	4	12
W	3	2	11	13	17	8
Demand	4	14	6	8	8	40

(C) Solve the following minimal assignment problem. (05)

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

OR

Q. 4

(A) Explain : Transportation Problem. (04)

(B) Solve the following linear programming problem by graphical method. (06)

Maximise $Z = 3x + 4y$

Subject to,

$2x + 5y \leq 120$

$4x + 2y \leq 80$

$x \geq 0$

$y \geq 0$

(C) Obtain the solution of the following transportation problem by matrix minima method. (05)

From	To			Supply
	A	B	C	
X	10	9	8	8
Y	10	7	10	7
Z	11	9	7	9
W	12	14	10	4
Demand	10	10	8	28