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VCD 17/02/17 FYBBI SEM II - ATKT QM-II MARKS 75 2HRS30MIN

Note: - 1) All questions are compulsory and carry equal marks.
2) Figures to right indicate full marks to corresponding sub question.
3) Use of simple calculator is allowed.

Q. 1. A) Fill in the blanks by choosing correct options. (5)

1. The sub triplicate ratio of 27:8 is _____
   a) 3:2 b) 9:4 c) 2:3 d) 9:2
2. 55% of 2400 is _____
   a) 132 b) 1320 c) 1200 d) none of these
3. The compound interest on Rs. 2000/- for three years at the rate of 5%p.a. compounded yearly is _____.
   a) 205 b) 306.25 c) 315.25 d) 345
4. The difference between compound and simple intrest on Rs. 3000/- at 10%p.a. for 2 years is Rs. _____
   a) 3 b) 30 c) 300 d) none of these
5. An annuity in which each payment is made at the end of time period is called _____
   a) Annuity due b) Annuity certain c) Immediate annuity d) Uniform annuity

B) State True of False. (5)

i) If the interest is charged only on the principal, then it is called simple interest
ii) The forth proportional to 1,4 and 16 is 64
iii) The present value is always greater than the future value.
iv) Annuity calculations usually use compound interest.
v) Percentage is ratio with 100 as its denominator

C) Define the terms. (5)

i) Non-Singular Matrix, ii) Uniform annuity iii) Principal
iv) Row Matrix v) Ratio

Q. 2. A) Find the matrix X such that $2X - 3A = B$ where (7)

$$A = \begin{bmatrix} -1 & 0 & 2 \\ 1 & 2 & -1 \\ 2 & 1 & 1 \end{bmatrix} \text{ and } B = \begin{bmatrix} 1 & 2 & 1 \\ 0 & -1 & 3 \\ 4 & 1 & 6 \end{bmatrix}$$

B) Solve the following equations simultaneously using reduction method. (8)

$2x - 3y + z = 3$, $3x + y - 2z = 8$, $x - 2y - 3z = 5$

OR

Q. 2. P) If $A = \begin{bmatrix} 2 & 3 \\ 4 & 0 \end{bmatrix}$, $B = \begin{bmatrix} -1 & -2 \\ 0 & 2 \end{bmatrix}$, $C = \begin{bmatrix} 0 & 6 \\ 8 & 7 \end{bmatrix}$

Verify that A X (B X C) = (A X B) X C (7)

Q) Solve the following equations simultaneously using matrix inversion method. (8)

$x + 3y - z = 3$, $2x - y + 6z = 7$, $-x + 2y + z = 2$

Q. 3 A) A, B and C invested Rs.1,00,000/-, Rs. 2,50,000/- , Rs. 1,50,000 /- respectively in a business. At the end of the year C incurred a loss of Rs. 7,500/- as his share. Find A's and B's share of loss. (5)

B) Find the simple interest on Rs. 50,000/- from 14th November 2006 to 10th March 2007 at 10% per annum. (5)

C) A Shop keeper bought 2 tables at a cost of Rs. 8200/- each. She sold 1 table at 8% profit and other at 3% loss. Find the total percentage of total gain or loss. (5)

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OR

Q. 3 P) A loan of Rs. 1,00,000/- is to be returned in four equal monthly installments at 12% per annum. i) Calculate EMI using reducing balance method. ii) Calculate for each month the break up of EMI into interest payment nad principal repayment. (8)

Q) A person has to pay an institution Rs. 15,000/- at the end of 2 years and Rs. 10,000/- at the end of 3 years from now. If he decides to settle the payments now, what is the present value at interest compounded 8% per annum. (7)

Q. 4 A) Compare project P and Q verifying their acceptability 16% per annum interest rate (8 using NPV method.

Year	0	1	2	3	4	5
Cash Flow for Project P (Rs)	-80000	25000	30000	35000	40000	45000
Cash Flow for Project Q(Rs)	-80000	21000	28000	35000	42000	47000

B) The number of PCs sold by a company is as follows. (7)

Year	1991	1992	1993	1994	1995	1996	1997	1998
No Of PCs in (000)	48	51	54	59	61	63	65	69

Fit a trend line for this data and estimate the demand for PCs for year 2001.

OR

Q.4 P) A factory requires 1500 units of an item per month, each costing Rs. 27/-. The cost per order is Rs. 150/- and the inventory carrying charges workout to be 20% the average inventory. Find out the economic order, quantity and the number of orders per year. (8)

Q) The Sales turnover and Profit during two periods were as follows. (7)

Year	2002	2003
Sales (Rs.)	20,00,000	30,00,000
Profit earned (Rs.)	2,00,000	4,00,000

You are required to compute the following assuming that the fixed Cost remains the same in both the period.

i) Profit / Volume Ration
ii) Fixed Cost
iii) The amount of Profit/Loss when Sales Rs. 10,00,000/-

Q. 5 A) Explain briefly EMI using reducing balance method and flat interest rate method (8 (7)

B) Explain briefly Net present value

.OR (8)

Q. 5 P) Explain the concept of debt service ratio (7)

Q) Write a note on properties of matrix multiplication

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