

(L)

March-2016

FYBIS I
OP3ABM

Q.M. II

Time: 2:30 hrs

Total marks: 75

- Note:-
1. All questions are compulsory.
 2. Only simple calculators are allowed.

Q.1[a] Fill in the blanks. [Attempt any 8] [8]

- i. The hypothesis which merely states that the null hypothesis is not true is called _____ hypothesis.
- ii. An inequality of type ' \leq ' is converted in an equality by adding a variable called _____
- iii. A matrix containing only one column is called _____.
- iv. The compound ratio of $\frac{3}{2}$, $\frac{1}{5}$ and $\frac{3}{7}$ is _____.
- v. In reducing balance method, _____ is consider.
- vi. _____ is a sequence of payments made successive periods or intervals of time.
- vii. P/V ratio is the ratio of _____
- viii. _____ risk is undiversifiable and the investors and the investors cannot avoid it.
- xi. The difference between revenue receipt and revenue expenditure is called as _____
- x. If a, b, c, are three quantities of same kind. If ratio a:b is the same as ratio b: c, then a, b, c are said to be in _____

Q.1[b] Define the following terms.[any 7] [7]

- | | |
|------------------------|--------------------|
| 1. Objective Function | 6. Annuity |
| 2. Identity matrix | 7. EOQ |
| 3. Indirect proportion | 8. Null Hypothesis |
| 4. Breakeven Point | 9. Duplicate ratio |
| 5. Fiscal Deficit | 10. Future value |

Q.2[a] A company produces product A & B. Both products are process on the machines M, N & P. The time required in hours to produce one unit on each product on each of the machine is given in the following table. Profits are Rs. 75 per unit of A & Rs. 200 per unit of B. Formulate the LLP & solve graphically to maximize the profit. [8]

[P.T.O.]

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Machine	Time required		total time available
	A	B	
M	3	3	36
N	4	2	40
P	2	6	60

- [b] Solve the following equation using pivotal reduction method. [7]
 $2x + y - z = 0$, $x + y + z = 9$, $2x + 5y + 7z = 52$

OR

- Q.2[p] Solve using simplex method [8]

Max $z = 50x + 100y$
 Subject to $5x + 4y \leq 60$, $5x + 3y \leq 50$
 where $x, y \geq 0$

- [q] Compute inverse of following matrix using pivotal reduction method [7]

$$\begin{bmatrix} 1 & 4 & 0 \\ -1 & 2 & 2 \\ 0 & 0 & 2 \end{bmatrix}$$

- Q.3[a] The ages of Ajay and his younger brother Vijay are in ratio 7:4. Six years ago, their ages were in the ratio 4:1. Find their present ages. [5]

- [b] A stable has 30 cows and enough food to feed them for 16 days. But 10 more cows are bought in. For how many days will the food last now? [5]

- [c] In how many years will sum of money be doubled at 25% p.a. simple interest? [5]

OR

- Q.3[p] A, B and C invested Rs. 10,000, Rs. 20,000 and Rs. 30,000 respectively in a business. At the end of the year, B received Rs. 3,000 as her share in a profit. Find total profit and also find A's and C's share in the profit. [5]

- [q] An article was sold for Rs. 312 at a 20% profit. Find the cost price at which it was bought. [5]

- [r] The simple interest at 20% p.a. on a certain sum of money for 4 yrs is Rs. 25,600. Find the compound interest on the sum at the same rate for the same period. [5]

- Q.4[a] Find the acceptability of the following project using the NPV method. (use 13% p.a. as the interest rate) [8]

[P.T.O.]

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Year	0	1	2	3	4	5
Cash Flow	-70,000	15,000	17,000	20,000	22,000	25,000

- [b] Purchasing department estimated annual consumption of 20,000 units with fixed cost per order being Rs.2000. Carrying cost was 25% of inventory value and purchase cost per unit was Rs.12. Calculate EOQ units and the number of orders. [7]

OR

- Q.4[p] Lucky Ltd. Has given the following data: [8]

	Rs.
Selling Price per unit	20
Direct Material cost per unit	8
Direct Labour Cost per unit	2
Variable Overhead cost per unit	2
Fixed overheads	20,000

Find (i) P/V ratio (ii) Break-Even Sales. (iii) Margin of Safety at a sales level of 1,00,000 (iv) Sales to make a profit of Rs. 5,000

- [q] A TV is purchased for Rs. 5,000 cash down and Rs. 10,000 at the end of each month, for 4 months. Find the cash price of the TV if the payment includes interest payment at 12% p.a. compounded monthly. [7]

- Q.5[a] A industry buys a machine for Rs. 2,00,000. It is estimated that after 4 years, the company will have to discard the machine and its scrap value will be Rs. 25,000. The cost of a new machine at that time is estimated to be 25% higher than now, at Rs. 2,50,000. The Industry decided to create sinking fund by investing a fixed amount at the end of every year at 8% p.a. interest compounded. What sum of money should it provide for each year? [7]

- [b] Find the compound interest on an amount of Rs. 20,000 at 4 % p. a. for 5 years when compounded (i) Annually (ii) Half yearly [8]

OR

- Q.5[p] The number of PCs sold from 1995 to 2001 are as follows: [7]

Year	1995	1996	1997	1998	1999	2000	2001
No. of PCs sold (in thousands)	51	54	59	61	63	65	67

Find a trend line for this data and estimate the number of PC's that would be sold in 2005.

- [q] If $A = \begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 1 & 2 \end{bmatrix}$ then show that, [8]
- (i) $(A+B)(A-B) \neq A^2 - B^2$ and (ii) $(A+B)^2 \neq A^2 + 2AB + B^2$