 Roll No .....

MAM-104

Master of Applied Management (Dual Degree), I Semester

Examination, June 2016

Business Mathematics

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. A man purchased a Cow for Rs. 3000/- and sold it the same day for Rs. 3600/- allowing the buyer a credit of 2 years. If the compounded rate of interest be 10% per annum, then how much the man gain? Also calculate profit ratio.

2. Raja has sports equipment shop last year he had the best year in sales he ever had since he opened the business 10 years ago. Last year Raja's net sales were Rs. 10,00,000 and his net income was Rs. 1,00,000. Contrast that with this years numbers of Rs. 8,00,000 of net sales and Rs. 2,00,000 of net income. What is Raja's return on sales ratio previous year and this year, also what is increase in profit ratio?

3. a) A firm used two inputs to produce a single output. Its production function f is homogeneous of degree 1. An implication of the homogeneity of f_1 is that the partial derivative f_x and f_y with respect to the two inputs are homogeneous of degree zero. Use Euler's theorem to find an expression for the cross partial derivative $f''_{xy}(x, y)$ in terms of x, y and $f''_{xx}(x, y)$.

b) Is the function $30x^{1/2}y^{3/2} - \left(\frac{2x^3}{y}\right)$ homogeneous of any degree? If so which degree? (Give a complete argument for your answer)

4. What are different types of matrices? Give example.

5. One safe investment pays 10% per year, and a more risky investment pay 18% per year. A man has Rs. 1,45,600 to invest and would like to have an income of Rs. 20,000 per year from his investments. How much should be invest at each rate?

6. Solve the following L.P.P.

$$\text{Max} \quad z = 3x_1 + 2x_2$$
$$\text{Subjected to;} \quad x_1 - x_2 \geq 1$$
$$x_1 + x_2 \geq 3$$
$$x_2 \geq 2$$
$$\text{and } x_1, x_2 \geq 0$$

7. A company wants to setup a sinking fund for the repayment of a loan of Rs. 10 Crore at the end of 4 years. It makes equal deposits at end of each month into a fund that earns interest of 12% per year compounded monthly. Determine the size of each deposit and construct a sinking fund schedule (for the first three months only).

8. a) If the discount rate is 12%, what is the present value of receiving Rs. 10,000 per year at end of each of the next 8 years?
b) Write Short Notes on:
i) Stock exchange
ii) Dividend

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