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**DMI-ST. EUGENE UNIVERSITY  
DEGREE EXAMINATION – JANUARY – 2023**

**SEM: IV**

**551/552 MA 41 BUSINESS MATHEMATICS**

Time: 3 Hours

Max. Marks: 100

**Answer any Five questions (5 x 20 = 100 Marks)**

1. a) Discuss about odd and even decimals. (5 Marks)
- b) Find the highest common factor and lowest common multiple of 50 and 70 using Venn diagram. (5 Marks)
- c) Briefly discuss about the properties of Real Numbers. (10 Marks)
2. a) What are the three form of quadratic function? (4 Marks)
- b) State some application of the quadratic formula in real life. (6 Marks)
- c) Your college newspaper, has fixed production costs of \$70 per edition, and marginal printing and distribution costs of 40¢/copy. The Collegiate Investigator sells for 50¢/copy.
  - i) Write down the associated cost, revenue, and profit functions.
  - ii) What profit (or loss) results from the sale of 500 copies of The Collegiate Investigator?
  - iii) How many copies should be sold in order to break even? (10 Marks)
3. a) In a Geometric progression, the 4<sup>th</sup> term is 8/9 and the 7<sup>th</sup> term is 64/243. Find the Geometric Progression. (5 Marks)
- b) Find  $x$  so that  $x + 6$ ,  $x + 12$  and  $x + 15$  are consecutive terms of a Geometric Progression. (5 Marks)
- c) The ratio of 6<sup>th</sup> and 8<sup>th</sup> term of an A.P. is 7:9. Find the ratio of 9<sup>th</sup> term to 13<sup>th</sup> term. (10 Marks)

4. a) Find inverse of the matrix  $A = \begin{bmatrix} 2 & 3 & 4 \\ 3 & 2 & 1 \\ 1 & 1 & -2 \end{bmatrix}$  (10 Marks)

b) If the matrix  $A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}$ ,  $B = \begin{bmatrix} 5 & 2 \\ 7 & 4 \end{bmatrix}$ ,  $C = \begin{bmatrix} 5 & 2 \\ 7 & 4 \end{bmatrix}$  (10 Marks)

Find a matrix D such that  $CD - AB = O$ .

5. a) State any four differences between Ratio and Proportion. (4 Marks)
- b) Mr. James has paid simple interest on a certain sum for 2 years at 10% per annum is K750. Find the sum. (4 Marks)
- c) A principal amount becomes K10, 050 at the rate 10% in 5 years. Find the principal. (12 Marks)
6. a) Find the half yearly rate of interest, to get a perpetuity of K 675 for every half yearly from the present value of K 30,000 (10 Marks)
- b) A person has taken a loan of K 700,000 at 16% rate of interest from a finance company. If the repayment period is of 15 years then find the installment he has to pay at the beginning of each month. (10 Marks)
7. a) Discuss the properties of odd and even numbers. (5 Marks)
- b) Explain rational numbers. (5 Marks)
- c) Elaborate the importance of business mathematics in your field of study. (10 Marks)