Roll No…….. **Total No. of Printed Pages: 2**
Total No. of Questions: [09]

B. Com (Hons.) (Semester – 1st)
BUSINESS MATHEMATICS
Subject Code: BMAT0111
Paper ID: 140104

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(2 marks each)**

Q1. Attempt the following:

a. Find the 6^{th} term of the G.P. series: 5, 10, 20, 40, …
b. The common difference of an A.P. is 3 and the 15^{th} term is 37. Find the first term.
c. Find the amount on Rs. 5000 in 2 years at 5% per annum compounded annually.
d. Write the formula for the simple interest and amount.
e. The value of a T.V set which was purchased 2 years ago, depreciates at 12% per annum. If its present value is Rs. 9680, for how much was it purchased.
f. Define symmetric and skew-symmetric matrices.
g. Calculate the determinant of $|2 \ -1 \ 3 \ 1|$.
h. A shopkeeper buys an article for Rs. 360 and sells it for Rs. 270. Find his gain or loss percent.
i. A sum of money at simple interest amounts to Rs. 815 in 3 years and to Rs. 854 in 4 years. Find the sum.
j. Find the adjoint of the matrix $A = [1 \ 2 \ 3 \ -1]$

Section – B **(5 marks each)**

Q2. Find the sum of the first 35 terms of an A.P., in which second term is 2 and seventh term is 22.

Q3. Find the compound interest on Rs. 40960 for $1\frac{1}{2}$ years at 12.5% per annuum compounded semi-annually.

Q4. Three shopkeepers A, B and C go to a store to buy stationery. A purchase 12 dozen note-books, 5 dozen pens and 6 dozen pencils. B purchase 10 dozen note-books, 6 dozen pens and 7 dozen pencils. C purchase 11 dozen notebooks, 13 dozen pens and 8 dozen pencils. A note book costs 40 paise, a pen costs Rs. 1-25 and a pencil costs 35 paise. Calculate each individual's bill.

Q5. Find the inverse of the matrix $A = [1 \ 2 \ -2 \ -1 \ 3 \ 0 \ 1 \ -2 \ 1]$.

Q6. Find the value of $|1 \ a \ b+c \ 1 \ b \ c+a \ 1 \ c \ a+b|$.

Section – C **(10 marks each)**

Q7. Find the sum of the following series: $5 + 55 + 555 + 5555 +$ ..... to n terms

Q8. Hari Ram purchased Rahat Patras for Rs 1000. After 5 years he got Rs 2000. Find the rate of interest if the interest is compounded half-yearly. Given that $2^{\frac{1}{10}} = 1.072$

Q9. Solve the following system of equations by Cramer's rule.

$$2x_1 - x_2 + 3x_3 = 9$$

$$x_2 - x_3 = -1$$

$$x_1 + x_2 - x_3 = 0$$