Roll No. ☐☐☐☐☐☐

Sig. of Candidate._____

Answer Sheet No._____

Sig. of Invigilator._____

BUSINESS MATHEMATICS   HSSC–I

SECTION – A (Marks 10)

Time allowed: 15 Minutes

NOTE:- Section–A is compulsory. All parts of this section are to be answered on the question paper itself. It should be completed in the first 15 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1   Circle the correct option i.e. A / B / C / D. Each part carries one mark.

(i)   The equality of two ratios is called_____

   A.   Proportion   B.   Direct Proportion

   C.   Indirect Proportion   D.   Percentage

(ii)   Rs. 250 is 2 ½ % of Rs_____

   A.   5000   B.   10,000   C.   12,000   D.   25,000

(iii)   The smallest terms of 4/9 to 1/3 are_____

   A.   4:3   B.   3:4   C.   9:3   D.   4:1

(iv)   Rs. 5000 doubles itself in 5 years at the rate of_____

   A.   10%   B.   20%   C.   30%   D.   None of these

(v)   If the payment starts on a certain date and continues for indefinite period, then it is called_____

   A.   Ordinary Annuity   B.   Annuity Due

   C.   Perpetuity   D.   Contingent Annuity

(vi)   Function g(t)=1/20 is_____

   A.   Linear Function   B.   Quadratic Function

   C.   Constant Function   D.   None of these

(vii)   The roots of $ax^2 + bx + c = 0$ are real and unequal if_____

   A. $b^2 = 4ac$ B. $b^2 > 4ac$

   C. $b^2 < 4ac$ D. $b^2 - 4ac = 0$

(viii)   A square matrix A is said to be singular if_____

   A. $|A| \neq 0$ B. $|A| = 0$

   C. $|A| < 0$ D. $|A| > 0$

(ix)   If A is matrix of order 3x4 and B is a matrix of 4x5, then AB matrix will be of order_____

   A.   3x3   B.   3x4   C.   3x5   D.   4x4

(x)   What is the conversion of $\frac{7}{8}$ to binary numbers?

   A. $(0.011)_2$ B. $(0.111)_2$ C. $(0.101)_2$ D. $(0.010)_2$

For Examiner's use only:

Total Marks: 10

Marks Obtained: ☐

—— 1HA 1218——

BUSINESS MATHEMATICS HSSC–I

Time allowed: 2:15 Hours   **Total Marks Sections B and C: 40**

NOTE:- Attempt any eight parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet–B if required. Write your answers neatly and legibly.

SECTION – B (Marks 24)

Q. 2 Attempt any **EIGHT** parts. All parts carry equal marks.   (8 x 3 = 24)

(i) Total cost of heating and lighting was Rs. 10800 of a firm for the winter season. The ratio of consumption between heating and lighting was 3:1. Find heating and lighting cost separately.

(ii) On cut price shop, the price of a pair of shoes was Rs.350, which was 30% less of the actual price. Find the original price.

(iii) What is amount of commission on sale of Rs.25000, if the rate of commission is 5% on the first Rs.15000 and 6% on over Rs.15000?

(iv) Find the market equilibrium point for the following supply and demand functions:
Demand : $P = -3q + 26$
Supply : $P = 4q - 9$

(v) Calculate compound interest earned for Rs.5000 invested for 6 years at the rate of 7% per annum.

(vi) Solve for X: $\dfrac{2X - 4}{5X + 2} = \dfrac{4X - 8}{10X + 3}$

(vii) Solve the equation $3X^2 - 10X + 3 = 0$

(viii) A bag of cement and three bags of sand weigh 19 kg and four bags of cement and two bags of sand weigh 26 kg. Find the weight of a bag of cement and of a bag of sand.

(ix) Find the value of the following by changing into decimal system:
a. $(945)_{10} + (1111)_2$ b. $(101111)_2 - (20)_{10}$

(x) Find multiplicative inverse of the matrix $A = \begin{pmatrix} 4 & -7 \\ 8 & 11 \end{pmatrix}$ and prove that $AA^{-1} = I$

(xi) Find the value of x when $\begin{pmatrix} 8 & x \\ 2 & 4 \end{pmatrix}$ is a singular matrix.

SECTION – C (Marks 16)

Note:- Attempt any **TWO** questions. All questions carry equal marks.   (2x 8 = 16)

Q. 3 a. In a factory, a group of 30 workers working 8 hours a day can produce 3000 units in 20 days. In how many days 25 workers will produce 2500 units by working 10 hours a day.

b. A radio set cost a manufacturer Rs.1200 to produce it and he sells it to a retailer for Rs.1500. Find his mark up per cent on cost.

Q. 4 a. In how many years a sum of Rs.3000 would amount Rs.4814.07 at 6% compounded semi-annually?

b. If Rs.300 are deposited at the beginning of each quarter in an account which earns interest at the rate of 8% compounded quarterly, what will be the amount after the end of 3 and half years.

Q. 5 a. If $\begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}\begin{pmatrix} a & 2 \\ 7 & b \end{pmatrix} = \begin{pmatrix} 31 & 1 \\ 55 & 3 \end{pmatrix}$ then find a and b.

b. A manufacturer produces and sells a product with monthly reveneue R(x)=10x and C(x)=2.50x+1200. How many units must be produced each month to:
(i) Break even   (ii) Make a profit