Roll No.

Sig. of Candidate._____

Answer Sheet N

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)   An electric meter shows 20 units for consuming electricity in 1 hour. In one day electricity consumed will be_____

    A.   480 units   B.   48 units   C.   0.83 units   D.   1.2 units

(ii)   In a consignment of 700 kg fresh mangoes, 13% of mangoes were found rotten. The quantity of good mangoes was _____

    A.   221 kg   B.   479 kg   C.   538.6 kg   D.   609 kg

(iii)   The amount which is finally received on the investment of Rs. 12000 at 6% simple interest for 3 years is _____

    A.   Rs. 12160   B.   Rs.14160   C.   Rs.2160   D.   Rs.1400

(iv)   A man invests Rs.4000 in the 1st month, Rs.6000 in the 2nd month, Rs.3000 in the 4th month and Rs.8000 in the 7th month in a bank, which pays interest. It is an example of _____

    A.   Annuity due   B.   Ordinary Annuity

    C.   Simple Interest   D.   None of these

(v)   In the equation of straight line $4x - 5y = 10$, the slope and y-intercept are _____.

    A. $\left(\dfrac{4}{5} \,\&\, -2\right)$ B. $\left(\dfrac{-4}{5} \,\&\, 2\right)$ C. $\left(\dfrac{-5}{4} \,\&\, 10\right)$ D.   None of these

(vi)   If 10 more than a number is multiplied by 2 and then divided by 4, the result is 8. What is the number?

    A.   2   B.   4   C.   6   D.   None of these

(vii)   In the equation $2x^2 - 4x + 6 = 0$, the roots will be _____

    A. $(2, -6)$ B.   Imaginary

    C.   Real and equal   D.   Real and unequal

(viii)   In the set of equations $2x - 4y = 10$ and $x - 2y = 5$, the solution set is _____

    A. $\{5, -5\}$ B. $\left\{\dfrac{5}{4}, \dfrac{-5}{2}\right\}$

    C.   Infinitely many solution   D.   No solution set

(ix)   If A is a matrix of order 3 x 4 and is multiplied by another matrix B of order 4 x 2, then the order of product AB is _____

    A.   3 x 4   B.   4 x 2   C.   4 x 3   D.   3 x 2

(x)   Identity matrix must be a _____

    A.   Square matrix   B.   Row matrix

    C.   Rectangular matrix   D.   Singular matrix

For Examiner's use only:

Total Marks: | 10 |

Marks Obtained: | |

BUSINESS MATHEMATICS HSSC–I

Time allowed: 2:15 Hours   **Total Marks Sections B and C: 4**

NOTE: Sections B and C comprise page 1-2. 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)   A shopkeeper allows a discount of 15% on his shop. How much money can a man save if he buys a bag costing Rs. 2500, a shaving set costing Rs. 890 and an iron costing Rs. 2800.

(ii)   A firm sells a single product for Rs. 65 per unit. Variable cost per unit is Rs. 20 for material and Rs. 27.5 for labour. Annual fixed costs are Rs. 100,000. Construct the profit function stated in terms of x, the number of units. What profit is earned if annual sale is 20,000 units?

(iii)   A record indicates that 160 people came to watch one-day cricket match. Total tickets receipts were Rs. 2800. Entry tickets were Rs. 15 for students and Rs. 25 for others. Determine the number of students and non-students who watched the match.

(iv)   A firm sells a product for Rs. 450 per unit. If the profit percentage is 15% , then find the cost price of the product.

(v)   A sum of Rs. 20,000 is invested in a saving account which pays interest at the rate of 8% per annum compounded annually. How much interest will be earned during 10 years?

(vi)   Solve $\left[(555)_{10} + (110110)_2 \right] \times (1110)_2$ and give your answer in Base 2.

(vii)   A homebuyer made a down payment of Rs. 200,000 and will make payments of Rs. 75000 each 6 months for 15 years. The cost of fund is 10% compounded semi-annually. How much will the buyer actually pay for the house?

(viii) Given $A = \begin{bmatrix} 4 & 3 \\ -4 & -2 \end{bmatrix}$. Prove that $AA^{-1} = I_{2 \times 2}$

(ix)   A sportsman covered 15 km on a bicycle at a uniform speed. If he increased his speed by 2km/hr, he would have arrived at the destination $\frac{1}{4}$ hour earlier. Find the original speed.

(x)   What is the number which when multiplied by 2 and added to 8, gives the same result as when it is divided by 2 and added to 32?

(xi)   Given $A = \begin{bmatrix} 1 & 4 \\ 2 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 3 & -1 \end{bmatrix}$ and $C = \begin{bmatrix} 4 & 6 \end{bmatrix}$.

Find $AB^t C$

SECTION – C (Marks 16)

Note: **Attempt any TWO questions. All questions carry equal marks.**

Q. 3 Mr. Amir and Mr. Hamid decided to buy a new car costing Rs.600,000 each.

a. Mr. Amir paid for his car in cash and was given a discount. Given that he paid Rs. 570,0 Calculate the percentage discount he received.

b. Mr. Hamid agreed to pay 60% of the price as a deposit and the balance at 3.5% interest compounded semi-annually in 3 years. Calculate the amount of each semi-annual payment.

Q. 4 **a.** A function is given by $y = 6 - x - x^2$

(i) Tell whether the vertex is maximum point or a minimum point.

(ii) Find the vertex point.

(iii) Tell in which quadrant the vertex lies.

(iv) At which point the graph cuts x-axis.

b. Mr. Kaleem, Mr. Zaheer and Mr. Naveed enter into a business with the capital of Rs. 150,000, Rs. 210,000 and Rs. 360,000, respectively. How much profit will Mr. Zaheer and Mr. Naveed get if Mr. Kaleem gets Rs. 30,000.

Q. 5 **a.** If A= $\begin{bmatrix} 1 & 4 \\ 3 & 2 \end{bmatrix}$ B= $\begin{bmatrix} 2 & 1 \\ 1 & -1 \end{bmatrix}$ and C= $\begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix}$ then show that $(ABC)^t = C^t . B^t . A^t$

b. One straight line l_1 is given by $x + y = 18$ and another straight line l_2 is given by $x - y = 2$. Find:

(i) The slope and y-intercept of l_1 & l_2.

(ii) The point of intersection of l_1 & l_2

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