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Answer Sheet No.

55

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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) A college has 80 teachers of which 60 are commerce teachers and 20 are science teachers. The ratio 3 : 4 represents:

A. Total number of teachers to commerce teachers
B. Science teachers to commerce teachers
C. Commerce teachers to total number of teachers
D. Commerce teachers to science teachers

- (ii) What percent Rs. 84 is of Rs. 400?

A. 22% B. 21%
C. 23% D. 40%

- (iii) The formula to calculate compound interest is:

A. $P[(1+r)^n - 1]$ B. $P[(1+r)^n + 1]$
C. $P[(1-r)^n - 1]$ D. $P[(1-r)^n + 1]$

- (iv) The simple interest for 3 years at 6% is Rs. 180, then the principal is:

A. Rs. 1000 B. Rs. 2500
C. Rs. 2000 D. Rs. 2800

- (v) When the term of an annuity is fixed, it is called;

A. Perpetuity B. Contingent Annuity
C. Annuity Certain D. Compound Interest

- (vi) If $f(x) = 5 + 2x - x^2$, then $f(-3)$ is:

A. 10 B. -10 C. 8 D. -8

- (vii) The solution set of the equation $ax + b = 0$ is:

A. $\frac{a}{b}$ B. $-\frac{b}{a}$ C. $\left\{\frac{-b}{a}\right\}$ D. $\left\{\frac{-a}{b}\right\}$

- (viii) $\{(4,3)\}$ is the solution set of:

A. $x + y = 11$ B. $x + y = 5$
 $x - y = 1$ $2x - y = 9$
C. $x + y = 7$ D. $x + y = 20$
 $x - y = 1$ $x - y = 18$

- (ix) The sum of binary numbers $(11)_2$ and $(10)_2$ is:

A. $(100)_2$ B. $(10)_2$ C. $(101)_2$ D. $(110)_2$

- (x) If $A = \begin{bmatrix} 2 & 1 \\ 6 & 3 \end{bmatrix}$, then its multiplicative inverse:

A. $\begin{bmatrix} 3 & -1 \\ -6 & 2 \end{bmatrix}$ B. $\begin{bmatrix} 2 & 3 \\ 0 & 1 \end{bmatrix}$ C. $\begin{bmatrix} 3 & 0 \\ 2 & 1 \end{bmatrix}$ D. Does not exist

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: 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) A milkman mixes milk with water in the ratio 7:2 respectively. He has 81 litres of mixed milk. What is the quantity of pure milk?
- (ii) Assad's monthly salary is Rs. 5800 per month and his boss promises him a 12% raise at the first of next year. What will be his monthly salary after the raise?
- (iii) A house was sold for Rs. 220000 by an agent, who received a commission of $1\frac{1}{2}\%$. How much commission did he receive?
- (iv) At what annual rate of interest would Rs. 780 amount to Rs. 1320 in 2 years and 3 months?
- (v) Mr. Munir has invested Rs. 25000 at 6% compounded annually. What amount would he received after 4 years?
- (vi) A company is expected to pay Rs. 4 every year on a share of its stock. What is the present value of its stock if money is worth 5% compounded semi-annually?
- (vii) Find the slope and y-intercept of the straight line $4x - 3y - 7 = 0$.
- (viii) Find the market equilibrium point for the following demand and supply functions:
Demand: $P = -3q + 26$
Supply: $P = 4q - 9$
- (ix) Solve $4x^2 - 6x - 5 = 0$ by using quadratic formula.
- (x) Convert $(101101.01)_2$ into a decimal number.
- (xi) Check the singularity of the matrix $A = \begin{bmatrix} 3 & -3 \\ -5 & -5 \end{bmatrix}$

SECTION – C (Marks 16)

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

(2x 8 = 16)

- Q. 3** a. A man needs to borrow Rs. 30,000 for two years. Show by calculation which one of the following loans is more advantageous to him? (04)
- (i) 4.1% simple interest
 - (ii) 4% per annum compounded semi-annually
- b. Find the value of $[(101010011)_2 + (1011111)_2] - (199)_{10}$ by changing into binary number system. (04)
- Q. 4** a. Solve the system of linear equations by Cramer's rule: $x + 3y = 7$ (04)
 $2x - 5y = 12$
- b. If Rs. 300 is deposited in 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 $3\frac{1}{2}$ years? (04)
- Q. 5** a. If $A = \begin{bmatrix} 1 & -1 & 2 \\ 2 & 1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ 2 & 0 \\ -1 & 1 \end{bmatrix}$ then verify that $(AB)^t = B^t A^t$. (04)
- b. A manufacturer offered $33\frac{1}{3}\%$ commission to an agent to sale his old stock. The agent received Rs. 15000 as commission. Find the amount received by the manufacturer. (04)