Sig. of Candidate

Sig. of Invigilator.

BUSINESS MATHEMATICS HSSC-I

SECTION - A (Marks 10)

Time allowed: 15 Minutes

Section-A is compulsory. All parts of this section are to be answered on the question paper itself. NOTE: 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.

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

- 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
- What percent Rs. 84 is of Rs. 400? (ii)
 - 22% A.

B. 21%

23% C.

- D. 40%
- (iii) The formula to calculate compound interest is:
 - $P\left(1+r\right)^n-1$ A.

 $P\left[\left(1+r\right)^{n}+1\right]$ B.

 $P\left[\left(1-r\right)^{n}-1\right]$

- $P \left[(1-r)^n + 1 \right]$ D.
- The simple interest for 3 years at 6% is Rs. 180, then the principal is: (iv)
 - Rs. 1000

B. Rs. 2500

Rs. 2000

- Rs. 2800
- When the term of an annuity is fixed, it is called; (v)
 - Perpetuity

Contingent Annuity В

- Annuity Certain
- Compound interest D.
- If $f(x) = 5 + 2x x^2$, then f(-3) is: (vi)
 - 10
- B.
- C.
- D. - 8

- (vii) The solution set of the equation ax + b = 0 is:
 - b
- B.
- C.
- D.

- (viii) $\{(4,3)\}$ is the solution set of:
 - x + y = 11A.

x + y = 5B.

x - y = 1x + y = 7 2x-y=9x + y = 20

C. x - y = 1

- D. x - y = 18
- The sum of binary numbers $(11)_2$ and $(10)_2$ is: (ix)
 - $(100)_{a}$
- $(10)_{a}$
- C. $(101)_{2}$
- D. $(110)_{2}$

- , then its multiplicative inverse: (x)
 - $\begin{bmatrix} 3 & -1 \\ -6 & 2 \end{bmatrix} \qquad B.$
- C.
- 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.

 $(8 \times 3 = 24)$

- (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.

(2x8 = 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)
- - 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)