Q.27 If $C = \begin{bmatrix} -4 & 9 \\ 3 & 0 \\ 8 & -2 \end{bmatrix}$, $D = \begin{bmatrix} 0 & -1 \\ 1 & -2 \\ 2 & -3 \end{bmatrix}$ and $E = \begin{bmatrix} 9 & 4 \\ -2 & -3 \\ 0 & 5 \end{bmatrix}$, find $E - D + C$.

Q.28 What is the importance of Statistics in business?

Q.29 Give an introduction to Statistics and write its types.

Q.30 Write any five merits of Arithmetic mean.

Q.31 What are the characteristics for an ideal measure of central tendency?

Q.32 Write the formula to find geometric mean and hence find the geometric mean of 4, 16, 64, 256.

Q.33 Write the formula to find harmonic mean and hence find the harmonic mean of 3, 6, 12, 15.

Q.34 Write any five demerits of Standard Deviation.

Q.35 Find the median of following frequency distribution, where X is the size and F is the corresponding frequency:

X	1	2	3	4	5	6
F	7	12	17	19	21	24

Section-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 (i) Write any five benefits of euqated monthly instalment (EMI).

(ii) Write the five differences between mean and median.

Q.37 Define the following:

(i) Matrix (ii) Square Matrix

(iii) Row Matrix (iv) Upper Triangular Matrix

(v) Diagonal Matrix

Q.38 Find the Mean Deviation about mean for following:

Marks (X)	2	4	6	8	10
Frequency (F)	2	5	7	4	2

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Roll No. .....

1st Year / Common

Subject : Applied Mathematics-I

Time : 3 Hrs. M.M. : 100

Section-A

Note: Multiple Choice questions. All question are compulsory. (10x1=10)

Q.1 If P is the principal, n is the number of years for which the principal is used, $r\%$ is the rate of interest per annum and S is the simple interest, then which of the following is true?

(a) $S = \frac{P \times r \times n}{100}$ (b) $S = \frac{P \times r}{100}$

(c) $S = \frac{P \times n}{100}$ (d) None of these

Q.2 In case of compound interest, if P is the principal, A is the amount, i is the interest on Re.1 for 1 year and n is the number of years (interest paid), then which of the following is true?

(a) $A = P(1-i)^n$ (b) $A = P(1+n)^i$

(c) $A = P(1+i)^n$ (d) None of these

Q.3 $\begin{bmatrix} 3 & 3 & 3 \end{bmatrix}$ is a _____ matrix.

(a) scalar (b) column

(c) row (d) scalar and row both

Q.4 $-5\begin{bmatrix} 1 & 8 & 0 \\ 0 & -3 & 2 \end{bmatrix} =$ _____

(a) $\begin{bmatrix} -5 & 8 & 0 \\ 0 & -3 & 2 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -40 & 0 \\ 0 & 15 & 2 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & 8 & 0 \\ 0 & -3 & 2 \end{bmatrix}$ (d) None of these

Q.5 "Statistics are not 100 per cent precise as is Mathematics". Select the correct option:

(a) The above statement is a merit of Statistics

(b) The above statement is a limitation of Statistics

(c) The above statement is a benefit of Statistics

(d) None of these

Q.6 Which of the following types of data are used in Statistics?

(a) Quantitative

(b) Qualitative

(c) Both Quantitative and Qualitative

(d) None of these

Q.7 Which of the following is true in general?

(a) A.M. $\geq$ G.M. $\geq$ H.M. (b) A.M. $\leq$ G.M. $\leq$ H.M.

(c) A.M. = G.M. = H.M. (d) None of these

Q.8 What is the mode of following 3, 6, 9, 12, 15, 15, 12, 9, 6, 3 ?

(a) 6 (b) 9

(c) 12 (d) 15

Q.9 If $\bar{x}$ is the mean of $x_1, x_2, x_3, ..., x_n$, then standard deviation is given by

(a) $\sqrt{\sum\left(x_i - \bar{x}\right)^2}$ (b) $\sqrt{\sum \frac{\left(x_i - \bar{x}\right)}{n}}$

(c) $\sqrt{\left(x_i - \bar{x}\right)^2}$ (d) None of these

Q.10 Standard deviation for the observations 3, 3, 3 is _____.

(a) 0 (b) 1

(c) 2 (d) 3

Section-B

Note: Objective type questions. All questions are compulsory. (10x1 = 10)

Q.11 Write any two imporatnce of Business Mathematics.

Q.12 Write in 20 words about the scope of Business Mathematics.

Q.13 What is the simple interest of Rs. 1,000 for 10 years at 10% p.a.?

Q.14 What is the difference between simple interest and compound interest?

Q.15 Give an example of identity matrix.

Q.16 Define Statistics.

Q.17 Mode = 3 Median – 2 Mean? (True/False)

Q.18 The mean of first 10 natural numbers is 5? (True/False)

Q.19 The second quartile Q_2 is same as median? (True/False)

Q.20 Define Quartile deviation.

Section-C

Note: Short type questions. Attempt any twelve questions out of fifteen questions. (12x5 = 60)

Q.21 How is Business Mathematics useful in decision making? Write in 150-200 words.

Q.22 What is Business Mathematics? Write in 150-200 words.

Q.23 What sum of money will amount to Rs. 1380 in 3 years at 5% per annum simple interest? Calculate it.

Q.24 Find the compound interest on Rs. 2,000 for 4 years at 10% per annum.

Q.25 Find the matrix $A = \left[a_{ij}\right]$ of order 2 x 3 where $a_{ij} = \frac{i + 2j}{2}$.

Q.26 Find $3A - 2B$, if $A = \begin{bmatrix} -1 & 8 & -5 \\ -6 & 0 & 10 \\ -7 & 3 & -4 \end{bmatrix}$ and $B = \begin{bmatrix} -3 & 3 & 3 \\ 7 & -4 & 12 \\ 6 & -9 & 8 \end{bmatrix}$.