

Reg. No. :

**1264 Q.P. Code : [15 BBA 02/15 BBACA 02/
15 BBAIB 02/15 BBA-RM 02/
17 BBABPM 03]**

(For the candidates admitted from 2017 onwards) For
B.B.A/CA/RM/IB – (2015 -2019) only

B.B.A DEGREE EXAMINATION, APRIL 2021.

First Semester

Part III — Business Management/ CA/IB/RM/BPM

MATHEMATICS FOR MANAGEMENT – I

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

- The order of the matrix $A = \begin{bmatrix} 1 & 2 & 3 & 4 \end{bmatrix}$ is
 - 1×4
 - 4×1
 - 2×2
 - 1×1
- A diagonal matrix in which all the diagonal elements are equal is called
 - Square matrix
 - Unit matrix
 - Scalar matrix
 - Singular matrix

3. Let $A = \{1, 2, 3\}$ $B = \{1, 2, 3, 4, 5\}$ then $n(A \cap B)$ is
- (a) 5 (b) 3
(c) 4 (d) 7
4. If $A = \{1, 2, 3, 4, 5\}$ and $B = \{3, 5, 7, 9, 10\}$ then $B - A$ is
- (a) $\{1, 2, 3\}$ (b) $\{3, 4, 5\}$
(c) $\{7, 9, 10\}$ (d) $\{1, 2, 4\}$
5. Data can be obtained through a statistical _____
- (a) Survey (b) Methods
(c) Report (d) Samples
6. The method of determining mode is
- (a) Mode = 3 Median - 2 Mean
(b) Mode = 2 Median - 3 Mean
(c) Mode = 2 Median + 3 Mean
(d) Mode = 3 Median + 2 Mean
7. Quartile deviation is _____ of S.D.
- (a) 0.6745 (b) 0.5745
(c) 10.84 (d) 0.6050

8. When the coefficient of skewness is zero the distribution is
 (a) U-Shaped (b) J- Shaped
 (c) Symmetrical (d) V- Shaped
9. When quantitative data are arranged in the order of their occurrence the resulting statistical series is called
 (a) Correlation (b) Regression
 (c) Index number (d) Time series
10. The devices for measuring differences in the magnitude of a group of related variables are _____
 (a) Index numbers (b) Time series
 (c) Regression (d) Standard error

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) If $A = \begin{bmatrix} 2 & 3 & 1 \\ 1 & 2 & 3 \\ 3 & 3 & 5 \end{bmatrix}$ $B = \begin{bmatrix} 4 & 1 & 2 \\ 3 & 2 & 5 \\ 1 & 2 & 0 \end{bmatrix}$ and
 $C = \begin{bmatrix} 0 & 1 & 3 \\ 4 & 1 & -2 \\ 3 & 1 & 3 \end{bmatrix}$ then solve the equation
 $2(x + B) = 3(x + A) + C$?

Or

- (b) Find the matrices of order 2 such that

$$2x - 3y = \begin{bmatrix} 2 & 5 \\ 3 & 1 \end{bmatrix} \quad 3x + 2y = \begin{bmatrix} 7 & 1 \\ 4 & 5 \end{bmatrix}$$

12. (a) By using Venn-diagram prove that
 $(A \cap B)' = A' \cup B'$.

Or

- (b) Two equal sums were lent out at 7% and 5% simple interest respectively. The interest earned on the two loans adds up to Rs.960 for 4 years. Find the sum lent out?

13. (a) Write functions of statistics?

Or

- (b) Write the limitations statistics?

14. (a) Write the merits and demerits of quartile deviation.

Or

- (b) A random sample of 5 college students is selected and their grades in Mathematics and statistics are found to be

Mathematics : 85 60 73 40 90

Statistics: 93 75 65 50 80

Calculate the rank correlation coefficient.

15. (a) Explain the uses of time series.

Or

- (b) Explain the uses of Index numbers.

SECTION C — ($5 \times 8 = 40$ marks)

Answer ALL questions.

16. (a) If $A = \begin{bmatrix} 5 & 4 & -2 \\ 4 & 5 & -2 \\ -2 & -2 & 2 \end{bmatrix}$ show that A satisfies the equation $(A - 10I)(A - I) = 0$. Hence find A^3 .

Or

- (b) Solve the following equations using matrix method $2x + 4y + z = 5$, $x + y + z = 6$; $2x + 3y + z = 6$.
17. (a) Out of a group of 50 teachers in a High school 30 teach mathematics, 20 teach English and 25 teach Science. 10 teach both Mathematics and Science and non teach Mathematics and English then
- (i) How many teach science and English?
- (ii) How many teach only English?

Or

- (b) Two years ago a man purchased a plot of 1,200 sq. metres at Rs.16 per square meter and put up a factory by installing machinery worth Rs.15,000. His erection and construction cost was Rs.1,150 which was borrowed at 3% simple interest. If the value of the land rises by 5% every year and the value of the machinery depreciates by $7\frac{1}{2}\%$ every year, what is the man's gain or loss when the factory with all instalments and the land is sold for Rs.36,000.

18. (a) Write the applications of statistics.

Or

- (b) Calculate median and mode of the data given below. Using them find Arithmetic mean.

Marks : 10 20 30 40 50 60

No. of students : 8 23 45 65 75 80

19. (a) Calculate the mean deviation about the mean for the following frequency distribution.

C.I 20-30 30-40 40-50 50-60 60-70

f 3 8 9 15 20

C.I 70-80 80-90 90-100

f 13 8 4

Or

- (b) Find the rank correlation for the following data :

Statistics : 1 2 3 4 5 6 7 8 9 10

Mathematics : 1 4 2 5 3 9 7 10 6 8

20. (a) Fit a straight line trend to the following data and estimate the value of y corresponding to $x = 6$.

x : 0 5 10 15 20 25

y : 12 15 17 22 24 30

Or

- (b) Calculate price index number for 1945 by

(i) Bowley's method and

(ii) Fisher's method.

| Commodity | 1935 | | 1945 | |
|-----------|-------|----------|-------|----------|
| | Price | Quantity | Price | Quantity |
| A | 4 | 50 | 10 | 40 |
| B | 3 | 10 | 9 | 2 |
| C | 2 | 5 | 4 | 2 |