

FOUNDATION COURSE EXAMINATION

669508

JUNE 2026

FUNDAMENTALS OF BUSINESS MATHEMATICS AND STATISTICS

Time Allowed: 1 hour

Full Marks: 100 (2×50)

SECTION I: FUNDAMENTALS OF BUSINESS MATHEMATICS

(2×20=40 marks)

(Notations and symbols used are as usual.)

1. The ratio of salaries of A and B is 3:4. If B's salary is increased by $\frac{7}{2}\%$ of his total salary, it becomes ₹ 1,24,200. Find the salary of A (in ₹).

- (A) 90,000
- (B) 1,20,000
- (C) 1,05,000
- (D) 1,12,000

2. If $\frac{2x+4}{x+1}$ is the duplicate ratio of $\sqrt{5} : \sqrt{2}$, the value of x is

- (A) 2
- (B) 3
- (C) 4
- (D) 5

3. If x be the mean proportional of 9 and 16, then the value of x is

- (A) 144
- (B) 12
- (C) 5
- (D) ± 12

4. "x varies directly as y", is written as

- (A) $x \propto \frac{1}{y}$
- (B) $x^2 \propto y$
- (C) $x \propto y$
- (D) $x \propto \frac{1}{y^2}$

5. A sum of money at simple interest doubles in 10 years. In how many years, at the same rate, will it be tripled?

- (A) 30
- (B) 25
- (C) 15
- (D) 20

6. A sum of money at compound interest amounts to thrice itself in three years. In how many years will it be 9 times itself?

- (A) 12
- (B) 9
- (C) 8
- (D) 6

7. Find the 8th term of an AP series, where the first term is 1000 and the common difference is -150.

- (A) 100
- (B) -100
- (C) 2050
- (D) -50

8. The 7th term of the series 3, -9, 27, is

- (A) 2187
- (B) -2187
- (C) 729
- (D) -729

P-3(FBMS)

9. The ratio of work done by $(x+2)$ men in $(x-2)$ days to that by $(x-1)$ men in $(x+1)$ days is 4:5. The value of x is

- (A) ± 4
- (B) 6
- (C) 4
- (D) ± 6

10. If P be the set of all prime numbers and $N = \{x : 0 \leq x \leq 9\}$, then $N - (P \cap N)$ is

- (A) $\{0, 4, 6, 8\}$
- (B) $\{1, 2, 4, 6, 8\}$
- (C) $\{1, 4, 6, 8, 9\}$
- (D) $\{0, 1, 4, 6, 8, 9\}$

11. A truck travels 120 km to a depot at 60 km/hr and returns 120 km at 40 km/hr. Find the average speed (km/hr).

- (A) 48
- (B) 64
- (C) 56
- (D) 84

12. The simplest value of $4(8)^{\frac{2}{3}}$ is

- (A) 8
- (B) 16
- (C) 32
- (D) 4

13. The value of $\log_3 \sqrt{3}$ is

- (A) $\sqrt{2}$
- (B) $\frac{1}{\sqrt{2}}$
- (C) 2
- (D) $\frac{1}{2}$

14. If $x! + 3! = 126$, then x is

- (A) 8
- (B) 5
- (C) 6
- (D) 7

15. Which one of following statements is TRUE?

- (A) ${}^n C_n > {}^n C_0$
- (B) ${}^n C_n < {}^n C_0$
- (C) ${}^n C_n = {}^n C_0$
- (D) ${}^n C_n + {}^n C_0 = 1$

16. The values of x satisfying the equation $x^2 + 2x + 1 = 0$ are

- (A) $(-1, -1)$
- (B) $(1, -1)$
- (C) $(1, 0)$
- (D) $(1, 1)$

17. If product of the roots of the quadratic equation $ax^2 + 2x + 6 = 0$ is 3, then the sum of the roots is

- (A) $-\frac{1}{2}$
- (B) $\frac{1}{2}$ ✓
- (C) -1
- (D) 1

18. Given the cost function is $c = 3x^3 - 60x^2 + 50x$ where x is the level of output. Find the level of output at which the average cost is a minimum.

- (A) 10 units ✓
- (B) $\frac{40}{3}$ units
- (C) 5 units
- (D) $\frac{20}{3}$ units

19. If $f(x-1) = \frac{2x-3}{3x+5}$, then $f(2)$ is

- (A) $\frac{1}{11}$
- (B) $-\frac{1}{2}$
- (C) $\frac{3}{14}$
- (D) $\frac{3}{8}$

20. If 60% students passed in Mathematics, 70% students passed in Statistics and 20% students failed in both subjects, then the percentage of students passed in Mathematics only is

- (A) 50%
- (B) 10
- (C) 20
- (D) 40

SECTION II: FUNDAMENTALS OF BUSINESS STATISTICS (2×30=60 marks)

21. Mother tongue of a person is

- (A) Discrete variable
- (B) Continuous variable
- (C) Attribute
- (D) Any of these ✓

22. A pie diagram is used to represent the following data:

Source:	I	II	III	IV
Revenue (in '000 ₹):	18	12	18	24

The central angle corresponding to source III is

- (A) 130°
- (B) 90°
- (C) 140°
- (D) 125° ✓

23. The following data relate to the income of 80 persons:

Income: 1500- (in ₹)	1999	2000- 2499	2500- 2999	3000- 3499
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No. of: persons	10	30	25	15
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What is the percentage of persons earning at least ₹ 2500?

- (A) 45
- (B) 50
- (C) 52
- (D) 55.

24. Find the *odd* one from the following:

- (A) Mean
- (B) Median
- (C) Mode
- (D) Mean Deviation.

25. The average marks of all ten students in a test is 42. The marks of five students are 42, 68, 55, 52 and 53. Find the average marks of the remaining five students.

- (A) 30
- (B) 28
- (C) 35\
- (D) 25

26. Find the mode of the observations 7, 7, 5, 5, 3, 5, 7, 3, 5.

- (A) 5^
- (B) 7
- (C) 6
- (D) 3

27. The median of a series of observations 12, 16, 13, 18, 17, 19, 21 is

- (A) 16
- (B) 17
- (C) 18
- (D) 19

28. The sum of deviations of n observations from the mean is always

- (A) > 0
- (B) ≤ 0
- (C) $= 0$
- (D) ≥ 0

29. Find the 3rd quartile of the following observations: 3, 7, 6, 4, 0, 8, -1, 5, 2.

- (A) 2.5
- (B) 6.5
- (C) 4
- (D) 7

30. A measure of central tendency is to find out the

- (A) variability of the observations.
- (B) central value of the observations,
- (C) minimum value of the observations.
- (D) maximum value of the observations.

31. If the mean and the standard deviation of a set of observations are 50 and 25 respectively, then the coefficient of variation is

- (A) 50%
- (B) 100%
- (C) 25%
- (D) 200%

32. The correlation coefficient of two variables x and y is independent of

- (A) change of origin only
- (B) change of scale only
- (C) both change of origin and scale
- (D) neither change of origin nor change of scale

33. If the rank correlation coefficient between marks in management and mathematics for a group of students is 0.6 and the sum of squares of the differences in ranks is 66, then the number of students in the group is

- (A) 9
- (B) 10
- (C) 11
- (D) 12

34. The slope of regression line y on x is written as

- (A) r_{xy}
- (B) b_{xy}
- (C) b_{yx}
- (D) both b_{xy} and b_{yx}

35. The regression line of y on x is $y = 4 - 0.2x$. Find the predicted value of y when $x = 5$.

- (A) 2.9
- (B) 3.9
- (C) 3.1
- (D) 3

36. The two regression lines are $x = 0.85y + 9.48$ and $y = 0.99x + 1$. Find the approximate values of the means $(\bar{x}, \bar{y})$ of the variables.

- (A) (65.2, 65.55)
- (B) (62.55, 67.76)
- (C) (65.55, 65.2)
- (D) (67.76, 62.55)

37. Calculate the correlation coefficient of the following data having some missing values:

x :	6	2	10	4	?
y :	9	11	?	8	7

Given, mean of $x = 6$ and mean of $y = 8$.

- (A) 0.85
- (B) -0.85
- (C) 0.92
- (D) -0.92

38. Given the following data:

Average rainfall of a place = 40 cm, standard deviation of rainfall = 3 cm, mean wheat yield = 800 quintal, standard deviation of wheat yield = 10 quintal and correlation coefficient = 0.6. Estimate the wheat yield (in quintal) of the place in a year if the rainfall is 72 cm.

- (A) 772
- (B) 753.84
- (C) 864
- (D) 824

P-3(FBMS)

39. If S denotes the sum of the probabilities of an event E and its complement E^c , then S is

- (A) 0
- (B) 1
- (C) $\frac{1}{2}$
- (D) $0 < S < 1$

40. Two persons A and B appear for an interview for two vacancies. The probability of selection of A is $\frac{1}{3}$ and that of B is $\frac{1}{5}$. Find the probability that only one of them will be selected.

- (A) $\frac{2}{5}$
- (B) $\frac{4}{5}$
- (C) $\frac{3}{5}$
- (D) $\frac{1}{5}$

41. If an unbiased coin is tossed once, the events head (H) and tail (T) are

- (A) equally likely but not mutually exclusive.
- (B) mutually exclusive but not equally likely.
- (C) both mutually exclusive and equally likely.
- (D) neither mutually exclusive nor equally likely.

42. If a perfect die is thrown two times in succession, what is the probability of getting the sum 8?

- (A) $\frac{1}{18}$
- (B) $\frac{1}{6}$
- (C) $\frac{5}{36}$
- (D) $\frac{1}{3}$

43. Two balls are drawn randomly from a bag containing 6 white and 4 black balls. The probability that the drawn balls are black is

- (A) $\frac{2}{15}$
- (B) $\frac{3}{5}$
- (C) $\frac{1}{10}$
- (D) $\frac{1}{3}$

44. A card is drawn randomly from a well shuffled pack of 52 cards. Find the probability that the card is either a black or a queen.

- (A) $\frac{17}{52}$
- (B) $\frac{15}{26}$
- (C) $\frac{29}{52}$
- (D) $\frac{7}{13}$

45. If $P(A|B) = 0.25$, then the value of $P(A^c|B)$ is

- (A) 0.75
- (B) 0.5
- (C) 0.3
- (D) 0.8

46. Find the trend value for the year 2023 of the following series using a 3-year weighted moving average with weights 1, 2, 1:

Year:	2021	2022	2023	2024	2025
Value:	2	4	5	7	8

- (A) 3.75
- (B) 5.75
- (C) 3.5
- (D) 5.25

47. If $\sum P_0 Q_0 = 1360$, $\sum P_n Q_0 = 1900$, $\sum P_0 Q_n = 1324$, $\sum P_n Q_n = 1880$, then the Paasche's Price Index number is

- (A) 188.0
- (B) 139.7
- (C) 142.0
- (D) 97.4

48. The consumer price index number for the year 2025 was 313 with 2020 as the base year. The average monthly wage of the workers in a factory in 2025 was ₹ 160. The real wage (in ₹) is

- (A) 40.30
- (B) 46.20
- (C) 48.20
- (D) 51.12

49. 3-year moving averages for 2016 and 2017 are 20 and 30 respectively. If the value for the year 2018 is 45, then the value for 2015 is

- (A) 15
- (B) 20
- (C) 23
- (D) Cannot be determined

50. From the following data, construct a price index number for the year 2020 taking 2015 as base year:

price for the year 2015 = ₹ 5.30 and price for the year 2020 = ₹ 7.95.

- (A) 105
- (B) 120
- (C) 125
- (D) 150