B.B.A. Part–I (Semester–I) (Old) Examination

BUSINESS MATHEMATICS & STATISTICS

Paper : BBA/105

Time : Three Hours] [Maximum Marks : 80

SECTION—A

Choose the appropriate option :—

1. An Article which cost Rs. 107 is sold so as to gain 13%, find the selling price :

   (a) 120 (b) 120.19

   (c) 120.91 (d) 119.91

2. The sum of two numbers is 53 and their product is 672. The numbers are :

   (a) 20, 33 (b) 24, 29

   (c) 21, 32 (d) 11, 42

3. HCF of two consecutive even number is always _____.

   (a) 0 (b) 1

   (c) 2 (d) None of these

4. If price of 8 chairs be Rs. 500. The numbers of chairs one can purchase worth Rs. 125 is :

   (a) 2 (b) 3

   (c) 4 (d) 5

5. $\int dx$:

   (a) $\frac{1}{x}+c$ (b) x + c

   (c) 0 (d) a + c

6. The value of $\int \frac{dx}{\sqrt{1-x}}$ is :

   (a) $2\sqrt{1-x}+c$ (b) $-2\sqrt{1-x}+c$

   (c) $\sqrt{x}+c$ (d) $x+c$

7. $\int x^2 (3)^{x^3} dx =$ _____.

(a) $(3)^{x^3} + c$ (b) $\frac{(3)^{x^3}}{3\log 3} + c$

(c) $\log 3(3)x^3 + c$ (d) $x^3 (3)^{x^3}$

8. $\int \frac{dx}{(x - x^2)} =$_____.

(a) $\log x - \log(1 - x) + c$ (b) $\log(1 - x^2) + c$

(c) $-\log x + \log(1 - x) + c$ (d) $\log(x - x^2) + c$

9. The word statistics has been derived from _____ status.

(a) Latin word (b) Spanish word

(c) Indian word (d) Portuguese word

10. Who has defined statistics as numerical statement of facts ?

(a) A.L. Bowley (b) R.A. Fisher

(c) P.C. Mahalnobis (d) C.R. Rao

11. _____ is the science of Averages.

(a) Algebra (b) Statistics

(c) Mathematics (d) Geometry

12. There are how many methods of collecting primary data ?

(a) Two (b) Three

(c) Four (d) Five

13. If $\Sigma p_1 = 1448$ and $\Sigma p_0 = 1040$. The Index Number will be :

(a) 1.39 (b) 0.72

(c) 139.23 (d) 71.82

14. If the Laspeyre's Price Index is 1 and Pasche's Price Index No. is 2.535, the Fisher's Index will be :

(a) 25.35 (b) 2.53

(c) 253.5 (d) 1.59

15. Which of the following is a relative measure of dispersion ?

(a) Standard Deviation (b) CV

(c) Variance (d) Range

16. Coefficient of skewness formula is :

(a) $J = \frac{\bar{a} - z}{SD}$ (b) $J = \frac{z - \bar{a}}{SD}$

(c) $J = \frac{\bar{a} - m}{SD}$ (d) None of these

17. When 'r' is more than 0.75 and less than 1, then conclusion is :

(a) High degree correlation (b) Low degree correlation

(c) Moderate degree (d) Perfect correlation

18. What is co-efficient of correlation, if $\Sigma xy = 216$, $n = 10$, $SDX = 4.71$, $SDY = 6.03$?

(a) 0.67 (b) 0.96

(c) 0.86 (d) 0.76

19. In a distribution of 36 observation the value of coefficient of correlation is 0.58. What is the value of probable error ?

(a) 0.0888 (b) 0.0788

(c) 0.0850 (d) 0.0746

20. Which formula may be used for probable error ?

(a) P.E. = $\frac{0.6745 \times r^2}{n}$ (b) P.E. = $\frac{0.6745 \times (1 - r^2)}{\sqrt{n}}$

(c) P.E. = $\frac{0.6745 \times r^2}{n}$ (d) P.E. = $\frac{0.6745 \times (1 - r^2)}{\sqrt{100}}$ 1×20=20

SECTION—B

1. (a) Kajal borrowed Rs. 1,800 at 10% p.a. from co-operative society. Calculate the amount to paid by her at the end of 5 years. 4

OR

(b) 140 carpenters makes 480 chairs in a certain period. How many carpenters will make 360 chairs in the same period ? 4

2. (a) Evaluate : $\int_0 \frac{1}{(1 + x^2)} dx$. 4

OR

(b) Evaluate : $\int (x + 5)^6 \, dx$. 4

3. (a) Explain in detail meaning of Statistics. 4

OR

(b) Calculate the mean of the following data :

Marks : 50, 40, 78, 55, 60, 58, 73, 43, 35, 48. 4

4. (a) Calculate Index number by using aggregative method :

Item	Price of Year 2020	Price of Year 2022
1	50	54
2	30	40
3	42	46
4	38	42
5	62	46

4

OR

(b) Find out the co-efficient of skewness :

a = 23.80, z = 24, SD = 10.92. 4

5. (a) Explain correlation, with suitable example. 4

OR

(b) From the data given below, calculate the coefficient of correlation :

$\Sigma dxdy = 110$, $\Sigma dx = 152$, $\Sigma dy = 56$, $\Sigma dx^2 = 296$, $\Sigma dy^2 = 194$, $N = 100$. 4

SECTION—C

1. (a) Solve the given linear equation in two variable by elimination method :

$x + 2y = 18$, $3x - 2y = -6$. 8

OR

(b) The combined cost of a mousepad & a keyboard is Rs. 2,340. If their cost are in the ratio of 7 : 5, find their cost. 8

2. (a) Solve : $\int \frac{dx}{3-2x-x^2} dx$. 8

OR

(b) Find the value of $\int 2x.\cos(x^2-5)$. 8

3. (a) Find out the Median :

Marks	Frequency
10–25	6
25–40	20
40–55	44
55–70	26
70–85	3
85–100	1

8

OR

(b) Find the Mode of the following frequency distribution :

Size	Frequency
0–10	5
10–20	11
20–30	19
30–40	21
40–50	16
50–60	10
60–70	8
70–80	6
80–90	3
90–100	1

8

4. (a) From the following data, calculate price Index Number for 2023 with 2022 as base by :

(1) Laspeyere's Method

(2) Paasche's Method

(3) Fisher's Ideal Method.

Commodity	2022		2023	
	Price	Quantity	Price	Quantity
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15
D	20	20	20	25

8

OR

(b) Find out the coefficient of skewness using quartiles :

M : 57, 50, 60, 65, 80, 40, 43, 63, 70, 60, 53, 54, 53, 57, 57. 8

5. (a) From the following 10 pairs of variables, find out the PE and prove that r is not significant :

Variable A	33	36	32	40	33	35	38	40	41	28
Variable B	38	36	31	28	26	30	34	33	34	23

8

OR

(b) The following are the x and y quantity. Find out the coefficient of correlation and probable error :

X	5	6	7	9	12	15	14	16	17	19
Y	10	10	8	7	15	14	14	13	14	12

8