

B.B.A. Part—I (Semester—I) Examination

BBA-105 : BUSINESS MATHEMATICS AND STATISTICS

Time : Three Hours]

[Maximum Marks : 80

- Note :—** (1) There are **three** Sections (A, B and C)
(2) Section A – **20** Marks
Section B – **20** Marks
Section C – **40** Marks
(3) All questions are compulsory.
(4) Section B and Section C comprises of short and long questions respectively, **one** each from respective unit having internal choice from the same unit.
(5) Show necessary working notes wherever necessary.

SECTION—A

Choose the appropriate option.

- The GCD of 42 and 98 is 14, then find their LCM :
(a) 7 (b) 147
(c) 588 (d) 294
- Find the simple interest on Rs. 6,510 at 8% p.a. for 219 days :
(a) Rs. 342.50 (b) Rs. 312.48
(c) Rs. 315.75 (d) Rs. 310.30
- What are the two natural numbers which differ by 4 and sum of their squares is 58 ?
(a) -3, -7 (b) 4, 8
(c) 7, 3 (d) -4, -8
- Heema solved 21 questions correctly out of 25 questions in the unit test. What is the percentage of correctly solved questions ?
(a) 84 (b) 78
(c) 74 (d) 88

5. $\int a^x dx = ?$

(a) $a^x \log a + c$

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

(c) $a^x + c$

(d) None of these

6. $\int \frac{2}{x} dx = ?$

(a) $x^2 + c$

(b) $\frac{1}{x^2} + c$

(c) $2 \log x + c$

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

7. $\int dx = ?$

(a) 0

(b) $x + c$

(c) $a + c$

(d) $\frac{1}{x} + c$

8. $\int \frac{dx}{(ax + b)} dx = ?$

(a) $\frac{1}{a} \log |ax + b| + c$

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

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

(d) None of these

9. The Number of percentile is :

(a) 100

(b) 99

(c) 9

(d) 10

10. The nature of Statistics is :

(a) An Art

(b) A Science

(c) Art and Science

(d) None of these

11. The types of data are :

(a) Primary data

(b) Secondary data

(c) Descriptive data

(d) All of these

12. Given : Average mean = 15.6 and median is 33. Find out mode :
- (a) 34.3 (b) 35
(c) 37.4 (d) None of these
13. If the largest and the smallest observation of the data are 170 and 40 respectively then which of the following is the range of the data ?
- (a) 150 (b) 130
(c) 140 (d) 210
14. What is coefficient of correlation when standard variation is 12.19 and mean is 40 ?
- (a) 30.48 (b) 20.48
(c) 40.48 (d) 48.30
15. Which of the following represents unweighted index number ?
- (a) Fisher's price index number (b) Value index number
(c) Walsch's index number (d) Paasche's index number
16. If $P_{01}(L) = 160$ and $P_{02}(P) = 360$, then what is value of $P_{01}(F)$?
- (a) 240 (b) 260
(c) 280 (d) 200
17. If the value of 'r' is 0.18 then conclusion is :
- (a) Low degree correlation (b) High degree correlation
(c) Moderate degree correlation (d) No correlation
18. What is co-efficient of correlation, if $\Sigma xy = 216$, $n = 10$, $SDX = 4.71$, $SDY = 6.03$?
- (a) 0.76 (b) 0.86
(c) 0.96 (d) 0.67
19. Which formula may be used for probable error ?
- (a) $P.E = \frac{0.6745 \times 1 - r^2}{\sqrt{n}}$ (b) $P.E = \frac{0.6745 \times 1 - r^2}{\sqrt{100}}$
(c) $P.E = \frac{0.6745 \times r^2}{\sqrt{n}}$ (d) $P.E = \frac{0.6745 \times r^2}{n}$
20. Correlation is the relation between _____ variables.
- (a) Zero (b) One
(c) Two (d) None of these

1×20=20

SECTION—B

1. Find out simple interest on Rs. 7,20,000 @ 8% for 30 months. 4

OR

The sum of two numbers is 46. Greater number is twice plus one greater than the smaller-number. Find out the numbers. 4

2. Integrate the following with respect to x :

$$\frac{1}{x \cdot \log x \cdot \log (\log x)}, \quad 4$$

OR

Solve : $\int_0^1 \frac{1-x^2}{1+x^2} dx$. 4

3. Find out the value of median from the following data :

Wages in Rs.	10	5	7	11	8
No. of workers	15	20	15	18	12

4

OR

Explain the importance of Statistics. 4

4. Find out Quartile deviation from the following data relating to the marks of the seven students :

Marks : 50 70 80 60 65 40 90 4

OR

From the following data find out standard deviation :

Mean = 45 ; Median = 48

Coefficient of skewness = -0.4 4

5. Calculate coefficient correlation between two variables X and Y :

$$n = 25, \Sigma X = 125, \Sigma Y = 100, \Sigma X^2 = 650, \Sigma Y^2 = 436, \Sigma XY = 520. \quad 4$$

OR

In a distribution of 36 observations, the value of co-efficient of correlation is 0.58, calculate the value of probable error. 4

SECTION—C

1. Solve the following equation :

$$3x + 2y - 26 = 0$$

$$6x + y = 31$$

8

OR

A, B and C purchased a car for Rs. 50,000 of which A pays Rs. 20,000 as his share. They sold it to earn profit of which B gets Rs. 1,200 and C gets Rs. 1,800. Find A's share in the profit.

8

- 2.
- $\tan^{-1} \sqrt{x}$
- .

8

OR

Solve : $\int_0^1 \frac{1}{\sqrt{3+2x-x^2}} dx$.

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3. Find out mode :

No. of days absent	No. of students
Less than 5	29
Less than 10	224
Less than 15	465
Less than 20	582
Less than 25	634
Less than 30	644
Less than 35	650
Less than 40	653
Less than 45	655

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OR

From the following find out mean :

Income	No. of workers
0 - 100	5
100 - 200	10
200 - 300	12
300 - 400	16
400 - 500	27
500 - 600	10
600 - 700	15
700 - 800	5

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4. Find out mean deviation and coefficient of M.D. from the median weight in Kgs :

100, 105, 110, 115, 120, 125, 130, 135, 140

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OR

Find the Index Number by Fisher's formula :

Item	1995		1996	
	Price	Value	Price	Value
A	2	4	1	5
B	3	12	4	20
C	5	15	6	12

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5. Calculate co-efficient of correlation between Income and Expenditure :

Income	Expenditure
45	35
55	40
55	45
55	50
60	40
60	55
65	55
65	60

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OR

The following table gives the frequency according to age group of marks obtained by 67 students in an intelligence test :

Test Marks	Age in years			
	18	19	20	21
200–250	4	4	2	1
250–300	3	5	4	2
300–350	2	6	8	5
350–400	1	4	6	10

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