

**B. B. A. (BUSINESS ANALYTICS) DEGREE END SEMESTER EXAMINATION – MARCH 2024****SEMESTER - 2****COURSE : 23U2CRBBA06 - ESSENTIAL STATISTICS FOR BUSINESS ANALYTICS***(For Regular 2023 Admission)*

Time: Three Hours

Max. Marks: 60

**PART A****Answer all questions. Each question carries 1 mark**

1. Define sample.
2. Define census.
3. Define type I Error
4. Give two uses of t distribution
5. Define Karl Pearson's product moment correlation coefficient.
6. Define simple correlation
7. What is regression analysis?
8. Define secular trend.

**(1 x 8 = 8)****PART B****Answer any Six of the following questions. Each question carries 2 marks**

9. Give a situation where (a) Census method cannot be used for data collection.  
(b) Sampling cannot be used for data collection,
10. Briefly explain stratified random sampling
11. Differentiate between Type II error and power of a test.
12. Differentiate between one tailed and two tailed tests.
13. A soap manufacturing company claims that their estimated daily production is 10,000 units. If the production is more, the company expects defective soaps and if the production is less, the cost of production will be more. Set the appropriate hypotheses for testing the claim.
14. Differentiate between direct and indirect correlation.
15. Calculate the covariance between X and Y from the following data  
 $n = 9, \quad \sum X = 45, \quad \sum Y = 108, \quad \sum XY = 597$
16. What are the assumptions of interpolation?

**(2 x 8 = 16)**

## PART C

Answer any four of the following questions. *Each question carries 5 marks*

17. Briefly explain stratified sampling and cluster sampling methods.
18. If the two regression lines are given by  $2X + 3Y = 10$  and  $X + 4Y = 10$ , find the correlation coefficient between X and Y.
19. Calculate the rank correlation between IQ Score and Score in Music from the following data

IQ Score:	3	6	9	12	8	7	10	14	5	17
Score in Music:	7	10	20	5	23	19	21	14	17	15

20. Explain the Chi Square test of independence.
21. A manufacturer of electric wire claims that the average tensile strength of the wire is 3200 units. To test the claim of the company a sample of 36 pieces of wires produced in various shifts were inspected and it was found that the average life is 3100 with a standard deviation of 220 units. Can you accept the claim of the manufacturer at 5% level of significance.
22. Calculate the trend using method of semi averages

Year of export:	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Export in MT:	88	102	119	128	140	161	170	198	206	225

(4 x 5 = 25)

## PART D

Answer any two of the following questions. *Each question carries ten marks*

23. Calculate the coefficient of Correlation between weight and height from the following data
- |         |     |     |     |     |     |     |     |     |     |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Weight: | 53  | 55  | 65  | 67  | 59  | 48  | 54  | 60  | 55  |
| Height: | 161 | 156 | 166 | 163 | 160 | 158 | 162 | 168 | 169 |
24. Explain how you will test whether the variances of two normal populations are the same.
25. A sample of 14 students from college A was found to have an average expenditure of Rs. 3200 per month with a standard deviation of Rs. 400. Another sample of 15 students from college B was found to have an average expenditure of Rs. 3000 per month with a standard deviation of Rs. 350. Test whether mean expenditure per month is the same for students in both the colleges.
26. Calculate the trend values using method of least squares method
- |                  |      |      |      |      |      |      |      |      |      |
|------------------|------|------|------|------|------|------|------|------|------|
| Year of import : | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Import in MT :   | 21   | 27   | 39   | 45   | 58   | 75   | 93   | 112  | 125. |

Also calculate the expected import for the year 2010.

(2 x 10 = 20)

