

What conclusion do you draw from the result?

- 18. The following data relates to advertising expenditure (in Lakhs of rupees) and sales (in crores of rupees)

Advertising expenditure:	10	12	15	23	20
Sales:	14	17	23	25	21

Estimate;

- (i) The sales corresponding to the advertising expenditure of Rs. 30 lakhs, and
- (ii) The advertising expenditure for the sales of Rs. 35 crores.

**UNIT-V**

- 19. The total cost of producing 'x' units of steel per week is given by Rs ( $x^3 - 10x^2 + 200x + 1000$ ). Find-

- (i) Fixed Cost (ii) Variable Cost (iii) Marginal Cost (iv) Total Cost when output is 9 units (v) Variable cost when output is 18 units (vi) minimum marginal cost.

- 20. Determine the Laspeyre, the Paasche, the Fisher and the Walsch price index from the following data:

Items	Price in 2020	Quantity in 2020	Price in 2024	Quantity in 2024
Pen	5	20	7	18
Pencil	4	25	5	20

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**UG Even Semester Examination, May 2025**

**BUSINESS ADMINISTRATION**  
(2nd Semester)

Course No.: BBA-SEC-151  
**(Quantitative Analysis Tools-1)**

*Full Marks: 70*

*Pass Marks: 28*

*Time: 3 hours*

*The figures in the right margin indicate full marks for the question.*

**Section-I: To answer 4 questions out of 5 from each unit =1 marks x 20 questions=20**

**UNIT-1**

1. What is statistics?
2. What is standard deviation?
3. What is Skewness?
4. What is kurtosis?
5. What is the Arithmetic Mean?

**UNIT-II**

6. What is a hypothesis?
7. What are the sources of the Hypothesis?
8. What is a Type I Error?

- 9. What are the general procedures for testing a hypothesis?
- 10. What is the formula of Chi-Square?

**UNIT-III**

- 11. What is the Grand Mean?
- 12. What is the Variation between Samples?
- 13. What is the Variation within Samples?
- 14. What is Variance?
- 15. What is the Table value of a test statistics?

**UNIT-IV**

- 16. What is correlation analysis?
- 17. What is regression analysis?
- 18. What is the meaning of the regression coefficient  $b_{yx}$  ?
- 19. What is indicated by the correlation coefficient (r)?
- 20. What are independent and dependent variables?

**UNIT-V**

- 21. What do you mean by time series analysis?
- 22. Write the formula for Fisher Price Index.
- 23. What do you mean by Consumer Price Index?
- 24. What is the current year in an index number?
- 25. Write one merit of time series analysis?

- iv) Relationship between  $\alpha$  ( alfa) and Type I error.

**UNIT-III**

- 5. Explain the steps involved in one-way ANOVA Calculation
- 6. The Table below shows the lifetimes under control conditions, in hours in excess of 1000 hrs, of samples of 60 W electric light bulbs of three different brands.

BRAND		
A	B	C
16	18	26
15	22	31
13	20	24
21	16	30
15	24	24

Assuming all lifetimes to be normally distributed with a common variance, test at a 1% significance level, the hypothesis that there is no difference between the three brands with respect to mean lifetime. The table value of F with df (2,12) at a 1% significance level is 6.927

**UNIT-IV**

- 17. The following table gives the supply and price figures for a commodity for 6 days. Calculate the correlation coefficient between price and supply.

Day:	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.
Price:	20	30	25	20	15	8
Supply:	10	12	15	20	23	28

**Section-III: To answer 1 question out of 2 from each unit: 8 x 5 units =40**

**UNIT-I**

1. Calculate Mean, Median, and mode from the data of marks obtained by 11 students:

10,27,24,12,27,27,20,18,15,20,23.

2. Calculate the standard deviation from the marks obtained by 5 students:

Marks: 8,12,13,15,22

**UNIT-II**

3. The results of a Survey to know the educational attainment among 100 persons randomly selected in a locality are given below:

Gender	Education			Total
	Metric	Class XII	Degree	
Male	10	15	25	<b>50</b>
Female	25	10	15	<b>50</b>
<b>Total</b>	<b>35</b>	<b>25</b>	<b>40</b>	<b>100</b>

Can you say that education depends on sex?

(for  $\gamma$  (degree of freedom) = 2, Chai square at 5% level of confidence is =5.99

(Null hypothesis should be clearly stated)

4. Explain the following terms: 2x4=8
  - i) Type II Errors
  - ii) One-tailed test
  - iii) Degree of freedom

**Section\_II: To answer 1 question out of 2 from each unit: 2 marks x5 unit=10**

**UNIT-I**

1. What is the empirical formula developed by Karl Pearson that shows the relationship among mean, median, and mode?
2. What is the Inter-quartile range?

**UNIT-II**

3. What are parameters and statistics?
4. What are  $\alpha$  (level of significance) and  $\beta$  (beta)?

**UNIT-III**

5. What is F-statistics?
6. What is the degree of freedom?

**UNIT-VI**

7. What is probable error?
8. What is the relationship between the correlation coefficient (r) and the regression coefficients  $b_{yx}$  and  $b_{xy}$  ?

**UNIT-V**

9. What are the difficulties involved in constructing an index number?
10. What are the components of time series analysis?