12 – STD   FIRST REVISITION EXAM - 2024
STATISTICS
Time: 3.00 Hours   **Maximum Marks :70**
PART-I

Note: (i) Answer all the questions. **YouTube/ Akwa Academy**   **15 x 1 = 15**
        (ii) Choose the most appropriate answer from the given four alternatives and write the option code and corresponding answer

1. Critical region of a test is
   (a) rejection region   (b) acceptance region
   (c) sample space   (d) subset of the sample space

2. In general, large sample theory is applicable when
   (a) $n > 100$ (b) $n > 50$ (c) $n > 40$ (d) $n > 30$

3. If n is the degree of freedom of chi-square distribution then its variance is
   a) n b) n–1 c) 2n d) n+1

4. ANOVA technique originated in the field of
   (a) Industry   (b) Agriculture   (c) Medicine   (d) Genetics

5. In one-way classication with 30 observation and 5 treatments the degrees of freedom for error Is
   (a) 29   (b) 4   (c) 25   (d) 150

6. The null hypothesis in the ANOVA is that all the population means are
   (a) Equal   (b) Variable   (c) Unequal   (d) none of the above

7. If the calculated value of F is greater than the critical value at the given level of significance then the H0 is
   (a) Rejected   (b) Not rejected   (c) Always true   (d) Sometimes true

8. The statistical device which helps in analyzing the co-variation of two or more variables is
   (a) variance   (b) probability   (c) correlation coefficient   (d) coefficient of skew ness

9. If the two variables do not have linear relationship between them then they are said to have
   (a) positive correlation (b) negative correlation (c) uncorrelated (d) spurious correlation

10. Rank correlation is useful to study data in _____ scale.
    (a) ratio   (b) ordinal   (c) nominal   (d) ratio and nominal

11. Arithmetic mean of the regression coefficients bXY and bYX is
    a) $> rXY$ b) $\geq Rxy$ c) $\leq rXY$ d) $< rXY$

12. The regression lines intersect at
    a) (X, Y) b) (X, Y) c) (0, 0) d) (1, 1)

13. The index that satisfies factor reversal test is
    (a) Paasche's Index (b) Laspeyre's Index (c) Fisher's Ideal Index (d) Walsh price index

14. When there is no proper system of recording births and deaths, Vital Statistics are collected through
    a) Registration Method (b) Census Method (c) Survey Method (d) Analytical Method

15. Which one is the correct sequence of activities in project work?
    a) formulating objectives, report writing, data analysis, project work plan
    b) report writing, data analysis, project work plan , formulating objectives
    c) formulating objectives, data analysis report writing, , project work plan
    d) formulating objectives, , project work plan, data analysis, report writing.

                                                    12 STATISTICS Page 1

PART –II
6 x 2=12

Note: Answer any six from the following questions. Question No. 24 is compulsory.

16. Define sample space in Statistics
17. Define chi-square Statistic
18. What is Analysis of Variance ?
19. Write the two simple linear regression equations.
20. Define index number.
21. What is short-term forecast ?
22. What are the components of a time series ?
23. Define population or target group under study.
24. The number of live births recorded and the number of Infants died in a town during a given period are 400 and 25 respectively. Calculate the Infant mortalityrate(IMR) of the town.

PART-III
6 x 3=18

Note: Answer any six from the following questions. Question No. 33 is compulsory.

25. In test for population proportion, if $n = 500$ and $np = 383$, then calculate the value of the test statistic under $H0 : P = 0.68$.
26. Write short note on testing the significance of goodness of fit.
27. Write the model ANOVA table for one-way classification.
28. State the methods of weighted aggregate index numbers
29. There were 15,000 persons living in a village during a period and the number ofpersons died during the same period was 98. Find the crude death rate ?
30. Verify whether the given data: $N = 100$, $(A) = 75$, $(B) = 60$ and $(AB) = 15$ is consistent.
31. State the characteristics of a project.
32. A coin is tossed 1,000 times and head turned up 519 times. Test the hypothesis at 5%level of significance, that the coin is unbiased
33. Calculate Price Index Number for 2016 from the following data by simple aggregate method, taking 2016 as base year.

Commodities	2015 Price per kg	2016 Price per kg
Apple	100	140
Orange	30	40
Pomegranate	120	130
Guava	40	50

PART - IV
5 x 5 = 25

Note ; Answer all the questions

34 a) A company producing LED bulbs finds that mean life span of the population of its bulbsis 2000 hours witm a standard derivation of 150 hours. A sample of 100 bulbs randomly chosenis found to have the mean life span of 1950 hours. Test, at 5% level of significance, whether themean life span of the bulbs is significantly different from 2000 hours.

OR

b) A company gave an intensive training to its salesmen to increase the sales. A random sample of 10 salesmen was selected and the value (in lakhs of Rupees) of their sales per

month, made before and after the training is recorded in the following table. Test whether there is any increase in mean sales at 5% level of significance.

Salesman	1	2	3	4	5	6	7	8	9	10
Before	15	22	6	17	12	20	18	14	10	16
After	17	23	16	20	14	21	18	20	10	11

YouTube/ Akwa Academy

35. a) e illness caused by a virus in a city concerning some restaurant inspectors is not consistent with their evaluations of cleanliness of restaurants. In order to investigate this possibility, the director has five restaurant inspectors to grade the cleanliness of three restaurants. e results are shown below.

Carry out two-way ANOVA at 5% level of significance.

Inspectors	Restaurants		
	I	II	III
1	71	55	84
2	65	57	86
3	70	65	77
4	72	69	70
5	76	64	83

OR

b) Distinguish between correlation and regression.

36. a) Find the Karl Pearson's coefficient of correlation for the following data.

Wages	100	101	102	102	100	99	97	98	96	95
Cost of living	98	99	99	97	95	92	95	94	90	91

How are the wages and cost of living correlated?

OR

b) Given the following data, estimate the marks in statistics obtained by a student who hasscored 60 marks in English.Mean of marks in Statistics = 80, Mean of marks in English = 50, S.D of marks in Statistics =15, S.D of marks in English = 10 and Coefficient of correlation = 0.4

37. a) 29. Construct (1) Laspeyre's index, (2) Paasche's index, (3) Marshall-Edgeworth index, and (4) Fisher ideal index for the following data taking 2014 as base year.

Items	Year 2014		Year 2015	
	Price	Quantity	Price	Quantity
A	6	50	10	56
B	2	100	2	120
C	4	60	6	60
D	10	30	12	24
E	8	40	12	36

OR

b) Find the trend values by semi-average method for the following data

Year	1965	1966	1967	1968	1969	1970	1971	1972
Production of bleaching powder (in tonnes)	7.4	10.8	9.2	10.5	15.5	13.7	16.7	15

38. a) What are the importance of Vital Statistics?

OR

b) In project work planning, state the aspects to be focused?

12 **STATISTICS** Page 4