2024/TDC(CBCS)/EVEN/SEM/
STSSEC–601T (A/B)/086

TDC (CBCS) Even Semester Exam., 2024

STATISTICS

(6th Semester)

Course No. : STSSEC–601T

Full Marks : 50

Pass Marks : 20

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

Candidates have to answer *either* from
Option—A *or* from Option—B

OPTION—A

Course No. : STSSEC–601T (A)

[**Data Analysis Using Software (SPSS)**]

UNIT—I

1. Answer any *three* from the following
questions : 1×3=3

   (a) How many variable types are there in
   SPSS? Name them.

(b) Define string variables.

(c) What is Align?

(d) What is data view in SPSS?

2. Answer any *one* from the following questions : 2

(a) Write the steps to draw pie chart in SPSS.

(b) Write the steps to draw box plot in SPSS.

3. Answer the following question : 5

(a) Write the steps to draw a line diagram and histogram in SPSS.

Or

(b) Write a note on ogive including less than type and more than type.

UNIT—II

4. Answer any *three* from the following questions : 1×3=3

(a) What is range?

(b) Define standard deviation.

(c) Define mean and median with formulae.

(d) Define skewness.

5. Answer any *one* from the following questions : 2

(a) Write the steps to obtain median in SPSS.

(b) Write the steps to calculate mean and standard deviation in SPSS.

6. Answer the following question : 5

(a) Obtain the relation between AM, GM and HM.

Or

(b) Prove that variance is independent of the effect of change of origin but not of scale.

UNIT—III

7. Answer any *three* from the following questions : 1×3=3

(a) What is the m.g.f. of Binomial distribution?

(b) Write probability mass function of Poisson distribution.

(c) Why are normal equations used?

(d) Write the probability density function of normal distribution with range of the parameters.

8. Answer any *one* from the following questions : 2

(a) Write the normal equations of $y = e^{a+bx}$.

(b) Derive mean of Poisson distribution.

9. Answer the following question : 5

(a) Write down the properties of normal distribution.

Or

(b) Write the steps to fit a normal distribution in SPSS.

UNIT—IV

10. Answer any *three* from the following questions : $1 \times 3 = 3$

(a) Define correlation coefficient.

(b) What do you mean by scatter diagram?

(c) Define null hypothesis.

(d) Give the concept of degrees of freedom.

11. Answer any *one* from the following questions : 2

(a) What are the steps to calculate correlation coefficient in SPSS?

(b) Write the SPSS commands for *F*-test.

12. Answer the following question : 5

(a) Write down the properties of correlation coefficient.

Or

(b) What are the important steps in test of significance?

UNIT—V

13. Answer any *three* from the following questions : $1 \times 3 = 3$

(a) State the range of χ^2-distribution.

(b) What is chi-square test used for?

(c) What are the different types of chi-square test?

(d) What is analysis of variance?

14. Answer any *one* from the following questions : 2

(a) Write the steps to perform χ^2-test in SPSS.

(b) Write the procedure of one-way ANOVA in SPSS.

15. Answer the following question : 5

(a) Write the steps to perform χ^2-test for goodness of fit.

Or

(b) Write the assumptions of AOV.

OPTION—B

Course No. : STSSEC–601T (B)

[Data Analysis Using Software (Microsoft Excel)]

UNIT—I

1. Answer any *three* from the following questions : 1×3=3

   (a) What is Microsoft Excel?

   (b) What do you mean by histogram?

   (c) Write the procedure for filtering in Excel.

   (d) How to open a file in Excel?

2. Answer any *one* from the following questions : 2

   (a) Write the steps to draw bar chart in Excel.

   (b) What do you mean by WORKBOOKS and WORKSHEETS?

(Continued)

3. Answer the following question : 5

   (a) Write the steps to draw histogram and pie-diagram in Excel.

   Or

   (b) Explain in detail the use of '$' key.

UNIT—II

4. Answer any *three* from the following questions : 1×3=3

   (a) Define arithmetic mean (AM).

   (b) Define mean deviation about mean.

   (c) Write the formula to calculate harmonic mean (HM) in Excel.

   (d) Define standard deviation (SD).

5. Answer any *one* from the following questions : 2

   (a) Define Kurtosis.

   (b) What do you mean by Geometric mean (GM)?

(Turn Over)

6. Answer the following question :   5

(a) Write the formulae in Excel for computing (i) mean, (ii) median, (iii) mode (iv) variance (v) correlation coefficient.

Or

(b) Write a note on skewness.

UNIT—III

7. Answer any *three* from the following questions : $1 \times 3 = 3$

(a) Define binomial distribution.

(b) Write the probability mass function of Poisson distribution.

(c) Define exponential curve.

(d) Write one property of normal distribution.

8. Answer any *one* from the following questions :   2

(a) How can a polynomial of degree two be plotted in Excel?

(b) Write down the area property of normal distribution.

9. Answer the following question :   5

(a) Obtain the m.g.f. of binomial distribution.

Or

(b) Prove that for a Poisson distribution mean and variance are equal.

UNIT—IV

10. Answer any *three* from the following questions : $1 \times 3 = 3$

(a) Define correlation coefficient.

(b) Define F-statistic.

(c) How is R^2 different from adjusted R^2?

(d) Write the formula for t-test in Excel.

11. Answer any *one* from the following questions :   2

(a) How to calculate correlation in Excel?

(b) How do we use the F-test?

12. Answer the following question : 5

   (a) Explain the procedure of fitting the lines of regression in Microsoft Excel.

Or

   (b) State some applications of t-distributions.

UNIT—V

13. Answer any *three* from the following questions : $1 \times 3 = 3$

   (a) State the limits of χ^2-distribution.

   (b) Define χ^2-statistic.

   (c) Define ANOVA.

   (d) Why is ANOVA used?

14. Answer any *one* from the following questions : 2

   (a) What is a Chi-square test used for?

   (b) Write the assumptions of AOV.

15. Answer the following question : 5

   (a) Write the steps to fit χ^2-distribution in Excel.

Or

   (b) Describe clearly one-way ANOVA.

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