Roll No. .....

Question Booklet Number

O. M. R. Serial No.

M. Sc. (Fourth Semester)

(NEP) EXAMINATION, 2025-26

STATISTICS

(Statistical Analysis Using SPSS) (Elective)

Paper Code							
B	0	6	1	0	0	5	T

Questions Booklet Series
D

Time : 1:30 Hours] [*Maximum Marks : 75*

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.

2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.

3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।

2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।

3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page) **(शेष निर्देश अन्तिम पृष्ठ पर)**

(Only for Rough Work)

1. Which test is used to examine association between categorical variables ?
   (A) t-test
   (B) Chi-Square test
   (C) ANOVA
   (D) Regression

2. The Select Cases option is located under :
   (A) Analyze
   (B) Data
   (C) Graphs
   (D) Transform

3. Which option allows selecting only certain cases for analysis ?
   (A) Split File
   (B) Select Cases
   (C) Merge Files
   (D) Weight Cases

4. Sorting data in SPSS is done using :
   (A) Data → Sort Cases
   (B) Analyze → Sort
   (C) Graphs → Sort
   (D) Transform → Sort

5. Transform → Compute Variable is used to :
   (A) Delete data
   (B) Create new variables using formulas
   (C) Import data
   (D) Sort data

6. Which SPSS command is used to change data values based on conditions ?
   (A) Recode
   (B) Merge
   (C) Split
   (D) Sort

7. In SPSS, descriptive statistics such as mean and standard deviation are obtained through :
   (A) Analyze → Descriptive Statistics → Descriptives
   (B) Graphs → Histogram
   (C) Transform → Compute
   (D) Data → Sort

8. The range of data is calculated as :
   (A) Maximum + Minimum
   (B) Maximum – Minimum
   (C) Mean – Median
   (D) Mode – Median

9. Which measure shows variability of data ?
   (A) Mean
   (B) Median
   (C) Standard Deviation
   (D) Mode

10. The most frequently occurring value in a dataset is called :

(A) Mean

(B) Mode

(C) Median

(D) Variance

11. Which measure represents the middle value of ordered data ?

(A) Mean

(B) Mode

(C) Median

(D) Range

12. Which measure represents the average value of a dataset ?

(A) Mean

(B) Range

(C) Variance

(D) Frequency

13. Tabulation of data refers to :

(A) Graphical representation

(B) Arrangement of data in rows and columns

(C) Data transformation

(D) Regression analysis

14. Frequency tables in SPSS are generated using :

(A) Analyze → Descriptive Statistics → Frequencies

(B) Graphs → Histogram

(C) Transform → Recode

(D) Data → Merge

15. In SPSS, the Chart Builder is located under :

(A) Data menu

(B) Analyze menu

(C) Graphs menu

(D) Transform menu

16. A Pie chart represents :

(A) Frequency distribution

(B) Correlation

(C) Proportion of categories

(D) Time series data

17. Which graph is used to show distribution of continuous data ?

(A) Pie Chart

(B) Histogram

(C) Bar Chart

(D) Line Chart

18. Which chart is best for representing categorical data ?

(A) Histogram

(B) Bar Chart

(C) Scatter Plot

(D) Line Graph

19. Which SPSS menu is used to compute descriptive statistics ?

(A) Analyze

(B) Graphs

(C) Data

(D) Transform

20. Each row in SPSS Data View represents :

(A) A variable

(B) A case/observation

(C) A graph

(D) A command

21. Each column in SPSS Data View represents :

(A) A case

(B) A variable

(C) A frequency

(D) A chart

22. Which option in SPSS is used to import data from Excel ?

(A) File → Open → Data

(B) Analyze → Import

(C) Transform → Import

(D) Graphs → Import

23. In SPSS, the window used to define variable properties is :

(A) Data View

(B) Variable View

(C) Output View

(D) Chart Builder

24. The SPSS window used to enter raw data is called :

(A) Output Viewer

(B) Syntax Editor

(C) Data View

(D) Variable View

25. SPSS stands for :

(A) Statistical Program for Social Sciences

(B) Statistical Package for the Social Sciences

(C) Statistical Processing System Software

(D) Statistical Procedure for Social Studies

26. Bootstrapping in SPSS is used for :

(A) Increasing sample size physically

(B) Estimating sampling distribution through resampling

(C) Calculating means

(D) Removing outliers

27. Which SPSS feature allows combining datasets ?

(A) Merge Files

(B) Split File

(C) Recode

(D) Frequencies

28. SPSS Syntax is mainly used for :

(A) Data entry

(B) Automating and reproducing analyses

(C) Drawing charts

(D) Printing reports

29. In factorial ANOVA output, significance of interaction is tested using :

(A) t-statistic

(B) F-statistic

(C) Chi-square

(D) Z-test

30. Which SPSS plot helps visualize interaction effects ?

(A) Scatter Plot

(B) Line Plot (Interaction Plot)

(C) Histogram

(D) Box Plot

31. The main effect refers to :

(A) Combined effect of variables

(B) Effect of one independent variable on dependent variable

(C) Correlation between variables

(D) Difference in variance

32. Interaction effect in factorial ANOVA means :

(A) Independent variables affect dependent variable separately

(B) Combined effect of independent variables

(C) No effect of variables

(D) Only main effects are present

33. In SPSS, Factorial ANOVA is performed using :

(A) Descriptive Statistics

(B) General Linear Model → Univariate

(C) Bivariate Correlation

(D) Crosstabs

34. Factorial ANOVA is used when :

(A) There is one independent variable

(B) There are two or more independent variables

(C) There is only one dependent variable

(D) Data is categorical only

35. Which SPSS test is commonly used for post-hoc comparisons ?

(A) Tukey HSD

(B) Pearson Test

(C) Chi-square

(D) Spearman Test

36. If the p-value in ANOVA is less than 0.05, we :

(A) Accept the null hypothesis

(B) Reject the null hypothesis

(C) Ignore the results

(D) Increase the sample size

37. The ANOVA table includes which statistic for testing significance ?

(A) t-value

(B) F-value

(C) r-value

(D) z-value

38. The null hypothesis in One-Way ANOVA states that :

(A) All group means are equal

(B) All variances are equal

(C) Means are different

(D) Sample sizes are equal

39. In SPSS, One-Way ANOVA is found under :

(A) Analyze → Compare Means → One-Way ANOVA

(B) Analyze → Regression

(C) Analyze → Correlate

(D) Analyze → Descriptive Statistics

40. One-Way ANOVA is used to compare :

(A) Two group means

(B) Three or more group means

(C) Two variances

(D) Two correlations

41. Which statistic in SPSS helps detect multicollinearity ?

(A) VIF (Variance Inflation Factor)

(B) Mean Square

(C) Chi-square

(D) Skewness

42. Multicollinearity in regression refers to :

(A) High correlation between independent variables

(B) High correlation between dependent variables

(C) Low variance in variables

(D) Large sample size

43. In regression output, the Beta coefficient represents :

(A) Intercept

(B) Standardized regression coefficient

(C) Error variance

(D) Mean difference

44. Which SPSS option allows saving predicted values and residuals during regression ?

(A) Options

(B) Statistics

(C) Save

(D) Plots

45. The adjusted R^2 is used because it :

(A) Always increases with more variables

(B) Adjusts for number of predictors in the model

(C) Measures correlation

(D) Calculates mean differences

46. In SPSS linear regression output, which value indicates the proportion of variance explained by the model ?

(A) Adjusted Mean

(B) R Square

(C) Standard Error

(D) Beta Coefficient

47. In regression analysis, the dependent variable is also known as :

(A) Predictor variable

(B) Independent variable

(C) Response variable

(D) Control variable

48. Which SPSS output table shows the strength and direction of the relationship between two variables ?

(A) Model Summary

(B) Correlations Table

(C) ANOVA Table

(D) Coefficients Table

49. In correlation analysis, the value of Pearson's correlation coefficient *r* ranges between :

(A) 0 to 1

(B) – 1 to + 1

(C) – 2 to + 2

(D) 0 to 10

50. In SPSS, which procedure is primarily used to compute the Pearson correlation coefficient ?

(A) Compare Means

(B) Correlate → Bivariate

(C) Regression → Linear

(D) Analyse → Descriptive Statistics

51. The main objective of cluster analysis is to :

(A) Reduce sampling error

(B) Classify objects into homogeneous groups

(C) Test statistical significance

(D) Estimate population mean

52. The distance measure commonly used in cluster analysis is :

(A) Euclidean distance

(B) Chi-square distance

(C) t-distance

(D) Regression distance

53. Hierarchical clustering produces :

(A) Scatter plot

(B) Dendrogram

(C) Histogram

(D) Box plot

54. In cluster analysis, objects in the same cluster are :

(A) Dissimilar

(B) Similar to each other

(C) Randomly selected

(D) Independent

55. Cluster analysis is an example of :

(A) Supervised learning

(B) Unsupervised learning

(C) Parametric testing

(D) Hypothesis testing

56. Cluster analysis is used for :

(A) Grouping similar objects

(B) Regression prediction

(C) Correlation measurement

(D) Hypothesis testing

57. According to Kaiser's criterion, factors with eigen values greater than :

(A) 0

(B) 0.5

(C) 1

(D) 10

58. Eigen value in factor analysis represents :

(A) Number of observations

(B) Variance explained by a factor

(C) Mean value

(D) Correlation coefficient

59. The rotation method used to simplify factor structure is :

(A) ANOVA rotation

(B) Varimax rotation

(C) Chi-square rotation

(D) t-test rotation

60. The factor loading represents :

(A) Correlation between variable and factor

(B) Mean of variables

(C) Variance of variables

(D) Frequency of variables

61. The method commonly used for extracting factors is :

(A) Principal Component Method

(B) Chi-square Method

(C) Regression Method

(D) t-test Method

62. Factor analysis groups variables based on :

(A) Frequency

(B) Correlation among variables

(C) Sample size

(D) Standard deviation

63. Factor analysis is mainly used for :

(A) Classification

(B) Data reduction and identifying underlying factors

(C) Testing correlation

(D) Regression analysis

64. A smaller value of Wilks' Lambda indicates :

(A) Poor discrimination

(B) Better discrimination between groups

(C) No discrimination

(D) Equal group means

65. Wilks' Lambda in discriminant analysis measures :

(A) Correlation

(B) Group separation

(C) Mean difference

(D) Variance

66. The primary objective of discriminant analysis is to :

(A) Reduce variables

(B) Predict group membership

(C) Measure variance

(D) Test hypothesis

67. In discriminant analysis, predictor variables are usually :

(A) Nominal

(B) Continuous

(C) Binary

(D) Ordinal only

68. The function used in discriminant analysis to separate groups is called :

(A) Regression function

(B) Discriminant function

(C) Correlation function

(D) Distribution function

69. Discriminant Analysis requires the dependent variable to be :

(A) Continuous

(B) Binary or categorical

(C) Ordinal only

(D) Ratio only

70. Discriminant Analysis is primarily used for :

(A) Data reduction

(B) Classification of observations into groups

(C) Measuring correlation

(D) Time series forecasting

71. Nonparametric tests are most appropriate when the sample size is :

(A) Small

(B) Very large

(C) Infinite

(D) Exactly 100

72. A major advantage of nonparametric tests is :

(A) They require strict assumptions

(B) They are unaffected by outliers

(C) They require normal distribution

(D) They require large samples

73. Which test checks whether two independent samples come from the same population distribution ?

(A) Mann-Whitney U Test

(B) Sign Test

(C) Friedman Test

(D) Wilcoxon Test

74. The Wilcoxon Signed Rank Test requires data to be :

(A) Nominal

(B) Ordinal or continuous but not normally distributed

(C) Ratio only

(D) Binary only

75. In SPSS, nonparametric tests can be accessed through :

(A) Analyze → Nonparametric Tests

(B) Graphs → Chart Builder

(C) Transform → Compute

(D) Data → Sort

76. Nonparametric tests are especially useful for :

(A) Nominal and ordinal data

(B) Continuous data only

(C) Normally distributed data

(D) Large samples only

77. Which nonparametric test compares more than two related samples ?

(A) Friedman Test

(B) Mann-Whitney Test

(C) Chi-square Test

(D) Kolmogorov-Smirnov Test

78. Which nonparametric test compares more than two independent groups ?

(A) Mann-Whitney Test

(B) Kruskal-Wallis Test

(C) Wilcoxon Test

(D) Sign Test

79. The Kolmogorov-Smirnov test is used to :

(A) Compare means

(B) Test goodness of fit of distribution

(C) Test correlation

(D) Compare variances

80. Nonparametric tests generally use :

(A) Raw scores

(B) Means

(C) Ranks or signs of data

(D) Standard deviations

81. The Mann-Whitney U test is applied when samples are :

(A) Dependent

(B) Independent

(C) Equal in size only

(D) Normally distributed

82. The Sign test is used for :

(A) Comparing two related samples

(B) Comparing three independent samples

(C) Testing variance

(D) Testing correlation

83. Spearman's rank correlation coefficient is denoted by :

(A) r

(B) ρ (rho)

(C) t

(D) F

84. Which test is used to measure rank correlation ?

(A) Pearson correlation

(B) Spearman rank correlation

(C) Regression analysis

(D) Chi-square test

85. The Friedman test is used as a nonparametric alternative to :

(A) Two-way ANOVA without replication

(B) One-way ANOVA

(C) Independent t-test

(D) Regression

86. The Kruskal-Wallis test is a nonparametric alternative to :

(A) Independent t-test

(B) Paired t-test

(C) One-Way ANOVA

(D) Correlation

87. The Wilcoxon Signed Rank Test is an alternative to :

(A) Independent t-test

(B) Paired t-test

(C) One-way ANOVA

(D) Chi-square test

88. Which of the following is a nonparametric alternative to the independent samples t-test ?

(A) Mann-Whitney U test

(B) Paired t-test

(C) ANOVA

(D) Z-test

89. Nonparametric tests are mainly used when :

(A) Data follow normal distribution

(B) Population variance is known

(C) Assumptions of parametric tests are not satisfied

(D) Sample size is very large

90. Nonparametric tests are also known as :

(A) Distribution-free tests

(B) Parametric tests

(C) Linear tests

(D) Regression tests

91. SPSS Output files are generally saved with extension :

(A) .sav

(B) .xls

(C) .spv

(D) .doc

92. In SPSS Output Viewer, results of analysis are displayed in :

(A) Data Table
(B) Output Tables and Charts
(C) Variable View
(D) Syntax Editor

93. If the p-value is less than 0.05, we :

(A) Accept null hypothesis
(B) Reject null hypothesis
(C) Ignore results
(D) Increase sample size

94. In hypothesis testing, the significance level commonly used is :

(A) 0.50
(B) 0.10
(C) 0.05
(D) 0.90

95. Independent Samples t-test in SPSS is located under :

(A) Analyze → Compare Means → Independent Samples t-test
(B) Analyze → Regression
(C) Data → Split
(D) Graphs → Chart Builder

96. The Paired Samples t-test is used when :

(A) Groups are independent
(B) Data are unrelated
(C) Observations are paired or matched
(D) There are three groups

97. The Independent Samples t-test compares :

(A) Two independent groups
(B) Two dependent groups
(C) More than two groups
(D) Frequencies only

98. The t-test is used to compare :

(A) Means of two groups
(B) Variances of two groups
(C) Frequencies of categories
(D) Correlations

99. Which statistic measures the difference between observed and expected frequencies ?

(A) t-value
(B) F-value
(C) Chi-Square statistic
(D) z-score

100. The Chi-Square test is performed in SPSS through :

(A) Analyze → Correlate
(B) Analyze → Descriptive Statistics
(C) Analyze → Descriptive Statistics → Crosstabs
(D) Graphs → Pie

(Only for Rough Work)

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the correct answer and mark the same in the OMR Answer-Sheet as per the direction :

Example :

Question :

Q. 1 (A) ● (C) (D)
Q. 2 (A) (B) ● (D)
Q. 3 (A) ● (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.

6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.

7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.

8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.

9. There will be no negative marking.

10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.

11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.

12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. : On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर—A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छाँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ● (C) (D)
प्रश्न 2 (A) (B) ● (D)
प्रश्न 3 (A) ● (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।

6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।

7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।

8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।

9. निगेटिव मार्किंग नहीं है।

10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।

11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।

12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण : प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।