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3 (Sem-3/CBCS) STA SE

2021

(Held in 2022)

STATISTICS

(Skill Enhancement Course)

Paper : STA-SE-3014

(Statistical Data Analysis using Software Packages)

Full Marks : 50

Time : Two hours

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

1. Answer **any four** from the following as directed : 1×4=4

(a) The intersection of 'less than ogive' and 'more than ogive' provides the Mode.
(State True or False)

Contd.

(b) In SPSS worksheets, each row represents _____.

(Fill in the blank)

(c) What does the function 'SKEW' in MS Excel return?

(d) A variable name in SPSS cannot start with a digit. (State True or False)

(e) For performing the Chi-square test of association in SPSS, what should be the declared variable type for the variables?

(i) Both numeric

(ii) Both string

(iii) One numeric, another string

(iv) None of the above.

(Choose the correct option)

(f) What function is used in MATLAB/Minitab to find the square root of a number?

(g) The function 'MIN' returns the _____ number in MS Excel.

(Fill in the blank)

2. Answer **any three** questions from the following : $2 \times 3 = 6$

(a) Suppose the height of 25 students of a class are given. How will you find the median height using MS Excel/MATLAB/Minitab?

(b) Write the procedure to insert a new variable in an SPSS worksheet.

(c) Write briefly on P-value.

(d) Outline the procedure in MS Excel to find the correlation coefficient of two series.

(e) State the procedure to delete a case in an SPSS worksheet.

(f) State the functions in MS Excel/MATLAB/Minitab to find the arithmetic mean and geometric mean of an array of numeric data.

3. Answer **any two** questions from the following : $5 \times 2 = 10$

(a) Write a detailed note on different graph/chart options available in MS Excel/SPSS/MATLAB/Minitab.

- (b) Consider a sample of 12 energy bars from a number of different stores to represent the population of energy bars available to the general consumer. The labels on the bar claim that each bar contains 20 *gms* of protein. Describe the procedure to test if the energy bars contain 20 *gms* of protein as claimed, using MS Excel/SPSS.
- (c) Data on sales of six different flavoured beverages in the food industry are given. Outline the procedure to construct a Pie chart using MS Excel.
- (d) Three fertilizers are applied to 20 plots of a field to enhance the yield of a certain food product. Describe the test procedure to examine if all the three fertilizers are equally effective in enhancing the yield of food crop, using SPSS.

4. Answer **any three** questions from the following :
10×3=30

- (a) (i) SPSS has basically five different windows. Explain briefly each one of them. 5

(ii) Describe the option 'select cases' available in SPSS. 5

(b) (i) What is a histogram? 1

(ii) Why are histograms useful? 2

(iii) Suppose the blood pressure (BP) readings of 100 patients, admitted to a city hospital are given. Describe the procedure to construct a histogram assuming unequal intervals using MS Excel/MATLAB/Minitab. 4

(iv) Discuss the procedure to generate a list of random numbers between two specified numbers using MS Excel/MATLAB/Minitab. 3

(c) (i) Suppose data on weight (in *kg*) and height (in metres) are given for few employees of a particular firm. Describe the procedure in SPSS to compute a new variable BMI. [Hint : BMI is computed as the ratio of weight in *kg* and square of height in metres]. 5

- (ii) Outline the procedure to create a new variable 'bmi_cat' categorizing BMI as follows :

An adult will be classified as underweight if his/her BMI is less than 18.5 ; normal if $18.5 \leq \text{BMI} < 25$, overweight or obese if $25 \leq \text{BMI} < 30$ and highly obese if $\text{BMI} \geq 30$. 4

- (iii) Construct a frequency distribution table of bmi_cat. 1

- (d) (i) Write a short note on stem and leaf chart. Explain the procedure to construct stem and leaf chart and plot it graphically using MS Excel. 4+3=7

- (ii) Mention the procedure to obtain 'less than ogive' and 'more than ogive' using MS Excel. 3

- (e) (i) Write a note on paired t -test. 3

- (ii) How will you use regression function in MS Excel or SPSS ? 2

- (iii) In a certain experiment to compare two types of animal foods A and B, results of increase in weights were recorded. Describe an appropriate test procedure in SPSS/MS Excel to examine whether food A is better than food B, if the same set of animals were used in both the foods. 5

- (f) (i) Write a note on fitting of curve of the form $y = ab^x$. 5

- (ii) Discuss the steps involved in constructing a Pie chart using MS Excel/MATLAB/Minitab. 5