Total number of printed pages–15

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Nowgong Girls' College

3 (Sem–4/CBCS) STA SE 1/2/3

2024

STATISTICS

(Skill Enhancement Course)

Answer the Questions from any one Option.

OPTION – A

(Statistical Data Analysis using R)

Paper : STA–SE–4014

OPTION – B

(Database Management System)

Paper : STA–SE–4024

OPTION – C

(Statistical Techniques for Research Methods)

Paper : STA–SE–4034

Full Marks : 50

Time : Two hours

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

Answer ***either*** *in English* ***or*** *in Assamese.*

Contd.

OPTION – A

(*Statistical Data Analysis using R*)

Paper : STA–SE–4014

1. Answer the following questions : 1×4=4

(a) In R programming, the function class() belongs to which library ?

(i) stats

(ii) base

(iii) utils

(iv) class

(Choose the correct option)

(b) Which function cannot be used to import a CSV file in R ?

(i) read·table()

(ii) read·csv()

(iii) read_excel()

(iv) None of the above

(Choose the correct option)

(c) Which of the following statements is true with respect to R language software ?

(i) The variables can be assigned values using only the leftward operator (<-)

(ii) The variables can be assigned values using only the rightward operator (->)

(iii) The variables can be assigned values using only equal to operator (=)

(iv) The variables can be assigned values using leftward, rightward and equal to operator.

(Choose the correct option)

(d) _____ function is used for creating dataframe in R.

(i) data.frame()

(ii) dataframe()

(iii) ·dataframe()

(iv) data frame()

(Choose the correct option)

2. Answer the following questions : 2×3=6

(a) Mention *any two* advantages of using R software.

(b) List and define some basic data structures in R.

(c) What is the difference between seq() and rep() functions in R language?

3. Answer the following questions : ***(any two)*** 5×2=10

(a) Give *any five* features of R.

(b) Write down the R command to draw a pie chart for the following dataset :

13, 15, 21, 28, 30, 32

(c) Write down the R command for calculation of arithmetic mean and variance for given $x_i / f_i (i = 1, 2, ..., 7)$.

(d) Using R program, implement the following :

A sequence from 5 to 10 with a gap 0·2 using seq() function.

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

(a) A random sample of 10 boys had the following I.Q's :

70, 120, 110, 101, 88, 83, 95, 98, 107, 100

Using R programming language determine whether the above data support the assumption of a population mean I.Q. of 100?

(b) Write R codes to

(i) draw frequency polygon for a given data; 5

(ii) draw boxplot for a given data. 5

(c) (i) For the given vectors x and y, write R codes to fit a line of regression and plot a graph. 5

(ii) If on an average, a student completes four assignments in a day, what is the probability that he/she will complete to assignments on the next day?

[Write an R code for the above question] 5

(d) Write down R codes to fit a binomial distribution for a given $x_i / f_i (i = 1, 2, ..., 9)$ and also test the goodness of fit.

(e) Given the following dataset :

X	Y
65	67
66	68
67	65
67	68
68	72
69	72

Write down the R command to carry out the correlation coefficient between X and Y.

(f) Using R software, fit a Poisson distribution to the following data :

No. of errors in a page	No. of pages
0	142
1	156
2	69
3	27
4	5
5	1
Total	400

OPTION – B

(Database Management System)

Paper : STA-SE-4024

1. Answer the following questions as directed : 1×4=4

(i) Which of the following is not a type of database ?

(a) Hierarchial

(b) Network

(c) Distributed

(d) Decentralized

(Choose the correct option)

(ii) Which of the following is not an example of DBMS ?

(a) MySQL

(b) Microsoft Access

(c) IBM DB2

(d) Google

(Choose the correct option)

(iii) Which command is used to remove a relation from an SQL?

(a) Drop table

(b) Delete

(d) Purge

(e) Remove

(Choose the correct option)

(iv) Which of the following is not the utility of DBMS?

(a) Backup

(b) Data loading

(c) Processes organization

(d) File organization

(Choose the correct option)

2. Answer the following questions : 2×3=6

(a) Define data model.

(b) State the levels of data abstraction in DBMS.

(c) What is normalization?

3. Answer ***any two*** of the following : 5×2=10

(a) Define Entity type, Entity set, Key attribute, Value set.

(b) Define 1NF, 2NF and 3NF.

(c) What are aggregate functions? List the aggregate functions supported by SQL.

(d) Define foreign key and superkey with proper example.

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

(a) What do you mean by databse management system? What are the major areas of application of databae management system? What are the major advantages and disadvantages of database management system? 2+3+5=10

(b) (i) Define database. Explain different types of databases. 5

(ii) Explain 2-tier architecture in DBMS with example. 5

(c) (i) What are the purposes of databse management system? 5

(ii) Write the characteristics that distinguish the database approach with the filebased approach? 5

(d) (i) Differentiate file processing system from database management system. 5

(ii) What are the disadvantages of file processing system? 5

(e) What is SQL? Name the categories of SQL commands. Differentiate between static SQL and dynamic SQL. 2+4+4=10

(f) Write down the steps used for conversion of ER diagrams to relation database.

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OPTION – C

(Statistical Techniques for Research Methods)

Paper : STA–SE–4034

1. Answer the following questions : 1×4=4

তলত দিয়া প্রশ্নকেইটাৰ উত্তৰ দিয়া ঃ

(a) Study of each unit of a population is known as _____.
(Fill in the blank)

এটা সমষ্টিৰ প্রতিটো গোটৰ অধ্যয়নক_____ বুলি জনা যায়। *(খালী ঠাই পূৰণ কৰা)*

(b) Sample is a _____ of population.

প্রতিদর্শ হ'ল সমষ্টিৰ এটা _____।
(খালী ঠাই পূৰণ কৰা)

(c) Complete enumeration is more expensive in comparison to sample survey. *(State True or False)*

প্রতিদর্শ সমীক্ষাৰ তুলনাত সম্পূর্ণ গণনা পদ্ধতি বেছি খৰছী। *(সঁচা বা মিছা উল্লেখ কৰা)*

(d) If respondent is _____ , then questionnaire method cannot be adopted for data collection.

(Fill in the blank)

উত্তৰদাতা _____ হ'লে ডাকযোগে প্ৰশ্নতালিকা পঠিয়াই তথ্য সংগ্ৰহ পদ্ধতি হাতত ল'ব নোৱাৰি।

(খালী ঠাই পূৰণ কৰা)

2. Answer the following questions : 2×3=6

তলত দিয়া প্ৰশ্নসমূহৰ উত্তৰ দিয়া ঃ

(a) Define statistical data with example.

পৰিসাংখ্যিকীয় তথ্যৰ সংজ্ঞা উদাহৰণেৰে সৈতে দিয়া।

(b) What do you understand by population? Give example.

সমষ্টি বুলিলে কি বুজা? উদাহৰণ দিয়া।

(c) Describe a schedule.

অনুসূচীৰ বিষয়ে বৰ্ণনা কৰা।

3. Answer ***any two*** of the following questions : 5×2=10

তলত দিয়া প্ৰশ্নসমূহৰ পৰা *যিকোনো দুটা* প্ৰশ্নৰ উত্তৰ দিয়া ঃ

(a) Write a note on the difference between qualitative and quantitative research approaches.

গুণগত আৰু পৰিমাণগত গৱেষণা পদ্ধতিৰ মাজৰ পাৰ্থক্যৰ ওপৰত এটা টোকা লিখা।

(b) Describe the advantages of sample survey.

প্ৰতিদৰ্শ সমীক্ষাৰ সুবিধাসমূহৰ বৰ্ণনা দিয়া।

(c) Write a note on the characteristics of an ideal questionnaire.

এখন আদৰ্শ প্ৰশ্নপত্ৰৰ বৈশিষ্ট্যসমূহৰ বিষয়ে এটা টোকা লিখা।

(d) What do you understand by primary data? Briefly explain different methods of collecting primary data.

মুখ্য তথ্য বুলিলে কি বুজা? মুখ্য তথ্য সংগ্ৰহৰ প্ৰণালীসমূহ চমুকৈ ব্যাখ্যা কৰা।

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

তলত দিয়া প্রশ্নবোৰৰ উত্তৰ দিয়া ঃ *(যিকোনো তিনিটা)*

(a) What are different types of research? Write in brief about the necessity of research.

গৱেষণা কিমান প্রকাৰৰ আৰু কি কি? গৱেষণাৰ আৱশ্যকতাৰ বিষয়ে চমুকৈ লিখা।

(b) Write some statistical techniques for data analysis.

তথ্য বিশ্লেষণৰ কিছুমান পৰিসাংখ্যিকীয় কৌশলৰ বিষয়ে লিখা।

(c) What do you understand by data interpretation? What are the precautionary measures should be taken in interpreting data?

'তথ্য ব্যাখ্যা' বুলিলে কি বুজা? তথ্য ব্যাখ্যাৰ ক্ষেত্ৰত লবলগীয়া সাৱধানতাসমূহৰ বিষয়ে লিখা।

(d) What do you understand by secondary data? Describe the sources of secondary data.

গৌণ তথ্য বুলিলে কি বুজা? গৌণ তথ্যৰ উৎসসমূহৰ বিষয়ে বৰ্ণনা কৰা।

(e) What are different types of errors present in sample survey? Explain it.

প্রতিদর্শ সমীক্ষাত উদ্ভৱ হ'ব পৰা বিভিন্ন ধৰণৰ ত্রুটিসমূহৰ বিষয়ে লিখা।

(f) Prepare a questionnaire for a study on 'health and sanitation' in your locality.

তোমাৰ অঞ্চলত 'স্বাস্থ্য আৰু পৰিষ্কাৰ-পৰিচ্ছন্নতাৰ' বিষয়ে অধ্যয়ন কৰিবলৈ এখন প্রশ্নপত্র যুগুত কৰা।

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