34 (2) RMBI 2·5

2017

RESEARCH METHODOLOGY AND BIOSTATISTICS

Full Marks : 80

Time : Three hours

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

1. Answer the following questions : *(any two)*
   10×2=20

   (a) What are the qualities of a good research? Write about the problems encountered by researchers in India.

   Or

   What is Hypothesis? Elaborate the importance of Hypothesis in Research. Also discuss in brief the characteristics of a Good Hypothesis.

   (b) Write a note on different types of sample design. Discuss the different types of probability and non-probability sampling.

Or

What do you mean by measurement in research ? Discuss the four scales of measurement.

(c) Write in detail about the measures of central tendency.

Or

Write about the application of computer in medical field. Write in detail about Computers and Researcher.

2. Short Answer type : *(any eight)*   5×8=40

(i) Bring out the difference between Questionnaire and Schedule.

(ii) Discuss the role of Statistics in Research.

(ii) Bring out the difference between Primary data and Secondary data. Also write about the different methods of collection of primary data.

Or

Sam sleepresearcher hypothesizes that people who are allowed to sleep only for four hours will score significantly lower than people who are allowed to sleep for eight hours on a cognitive skills test. He brings sixteen participants into his sleep lab and randomly assigns them to one of two groups. In one group he has participants sleep for eight hours and in the other group he has them sleep for four. The next morning he administers the SCAT (Sam's Cognitive Ability Test) to all participants. (Scores on the SCAT range from 1-9 with high scores representing better performance). Compute '*t*' test.

SCAT SCORES

8 hours sleep group (*x*)	5	7	5	3	5	3	3	9
4 hours sleep group (*y*)	8	1	4	6	6	4	1	2

(c) Make a comparison of the mean, median and mode.

Or

A random sample of $n=5$ was selected from vineyard properties for sale in Sonoma County, California, in each of three years. The following data are consistent with summary information on price per acre for disease-resistant grape vineyards in Sonoma County. Carry out an ANOVA to determine whether there is evidence to support the claim that the mean price per acre for vineyard land in Sonoma County was not the same for each of the three years considered. Test at the 0·05 level and at the 0·01 level.

1996 : 30000 34000 36000 38000 40000

1997 : 30000 35000 37000 38000 40000

1998 : 40000 41000 43000 44000 50000

2. Short Answer type : *(any eight)*   5×8=40

   (i)   What are the basic assumptions of ANOVA ?

   (ii) What is the necessity of defining the research problem ?

   (iii) What are the characteristics of binomial distribution ?

(iv) Draw a histogram out of the following data : (use graph paper)

Class-Interval	Frequency
20–30	2
30–40	4
40–50	4
50–60	5
60–70	3
70–80	1
80–90	0
90–100	1

(v) Differentiate between questionnaire and schedule.

(vi) What is the importance of the study of statistics in physiotherapy ?

(vii) Write about the application of computer in research.

(viii) Write about the basic principles of graphical representation.

(ix) What is type I and type II error ?

(x) What is "Editing" in processing operations ?

3. Very short answer : $2 \times 10 = 20$

   (i)   What is Research Design ?

   (ii)   What is Null Hypothesis ?

   (iii) What is Level of significance ?

   (iv)   Mention *any two* criteria for good samples.

   (v)   What is skewness ?

   (vi)   What is Dispersion ?

   (vii) What is Descriptive statistics ?

   (viii) Mention the objectives of research.

   (ix)   What is Research Methods ?

   (x)   What is Parameter ?

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