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SEAT No. _____

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SARDAR PATEL UNIVERSITY

B.Sc Semester – III Examination (CBCS) (NC) (Old Course)

Saturday, 24th September, 2022

Time : 12.30 to 2.30 pm

Statistics

M.Marks : 70

US03FSTA01 (Foundation of Statistics - I)

- Q.1 Multiple choice questions** (1 × 10)
- The sampling technique in which an entire population is first divided into homogeneous groups and then a sample is drawn from each group is called
 - Systematic sampling
 - Simple Random Sampling
 - Stratified Random Sampling
 - None of these
 - The mean and standard deviation of 5, 5, 5, 5, 5, 5, 5, 5 is
 - 5, 1
 - 5, 0
 - 5, 5
 - 1, 5
 - The suitable formula for computing the number of classes in construction of grouped frequency distribution
 - $3.322 \log N$
 - $1 + 0.322 \log N$
 - $1 - 3.322 \log N$
 - $1 + 3.322 \log N$
 - The first step in tabulation is
 - Foot note
 - Source note
 - Captions
 - Classification
 - Which of the following can be determined graphically with the help of ogives?
 - Mean
 - Median
 - Mode
 - Range
 - Difficulty level of question paper (Very difficult, difficult, so-so, easy, and very easy) is?
 - Nominal
 - Ordinal
 - Discrete
 - continuous
 - How often does the Census Bureau take a complete population count in India?
 - Every year
 - Every 5 years
 - Every 10 years
 - Twice a year
 - Sampling is inevitable(essential) in the situation:
 - Blood test of a person
 - Testing life of electronics item
 - To test the quality of a manufactured items
 - All of the above
 - Which of the following measure of dispersion needs the value of mean
 - range
 - quartile deviation
 - mean deviation
 - standard deviation
 - Which of the following is/ are part of statistical table?
 - Caption
 - Head note
 - Foot note
 - All of the above
- Q.2 Fill in the blanks** (4 × 1)
- The main aim of sample survey is to get reliable information about the _____ in less time and at a lower cost.
 - The variance of first 10 natural numbers is _____
 - _____ is the process of arranging data into systematic and compact form.
 - The most commonly used device of presenting business and economical data is _____
- True – False** (4 × 1)
- The headings of the columns of a table are called captions
 - Personal inquiry method is a suitable method of collecting primary data in cases where the informants are literate and spread over a vast area.
 - Median is also called positional average.
 - Systematic sampling is used when the population is heterogeneous.
- Q.3 Short Type Questions (Attempt Any Ten)** (10 × 2)
- What is secondary data? Give any two sources of secondary data.
 - State the limitations of Statistics?
 - With reference to survey sampling, explain the following terms:
 - Parameter
 - Sample
 - Sampling Frame
 - Population Survey
 - Give two examples each of nominal and ordinal data.
 - Define Mode. Give two examples where mode can be used.
 - What is tabulation? State its importance.
 - List out the various methods of collecting primary data. If the informants/respondents are literate and spread over a vast area, which method do you consider to be best?
 - What is classification? State the rules for classification.
 - Find median of the following data:

52	37	66	45	12	45	78	51
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 - List out the various measures of dispersion. Write in brief about any one of them.
 - How will you draw a sample of size 4 from 20 units in the population using Systematic sampling?

12 What is an average? State its uses.

(4 × 8)

Q.4 Long Answer Questions (Attempt Any Four)

(a) (i) Measurements of the left-hand and right-hand gripping strengths of left-handed writers are recorded.

No.	1	2	3	4	5	6	7
Left-hand	140	90	125	130	95	121	85
Right-hand	138	87	110	132	96	110	76

Present the above data through a most suitable diagram. State its objective(s).

(ii) Among the 144 individuals who had experienced acute myocardial infraction (Heart attack), 46 were diagnosed with diabetes. Among 144 individuals who were free of heart disease only 25 suffered from diabetes (a) Present the above data in the two-way frequency table (b) State its objectives.

(b) An analysis of the fat content (%) of a random sample of 175 cheese burgers resulted in the following summarized information: Calculate mode and determine graphically also.

Fat content (%)	26 - 28	28 - 30	30 - 32	32 - 34	34 - 36	36 - 38	38 - 40
No. of cheese burgers	7	22	36	45	33	28	4

(c) Tabulate the following information:

"In 2010 out of total 2000 patients in Krishna Hospital, 1550 were admitted in special ward. The number of women patients was 250, out of which 200 admitted in general ward."

"In 2015 the total patients in special ward was 1725 out of which 1600 were men. The number of patients in general ward was 380 among which 155 were women."

(d) (i) List out the various methods of collecting primary data. Write in brief about any one of them.

(ii) State the various measures of central tendency. Define any one of them. Write its merits and demerits.

(e) (i) Write on the following:

(i) Chief sources of secondary data (ii) Give two examples each of Qualitative and Quantitative data.

(ii) Present the following data through most suitable diagram.

Year	Mobile Internet Users (in millions)		Total
	Rural	Urban	
2012 - 13	04	44	48
2013 - 14	21	70	91
2014 - 15	29	126	155
2015 - 16	68	171	239

Source: IAMAI, Morgan Stanley Research

(f) Two groups of six guinea pigs each were injected, respectively with 0.5 mg, 1.0 mg of a new tranquilizer and the following are the number of minutes it took to fall asleep:

Group - I (0.5 mg)	21	23	19	24	25	23
Group - II (1.0 mg)	19	21	20	18	22	20

Which group has greater amount of variability in the measurements? Justify your answer by calculating suitable statistical measure.

(g) (i) Measurements of the acidity level (pH) of rain samples were recorded at 12 sites in an industrial region.

4.3	4.2	4.5	4.9	4.7	4.8
3.5	5.1	5.0	3.6	4.8	3.6

Calculate median and standard deviation of the acidity level of rain samples.

(ii) Describe in brief about application of Statistics in various fields.

(h) (i) List out the importance of diagrams.

(ii) Present the following data through a most suitable diagram. State its objective(s).

Literacy Rate In Various States Of Urban India

State	1991	2001	2011
Gujarat	76.54	81.84	86.30
Madhya Pradesh	70.81	79.39	82.90
Rajasthan	65.33	76.20	79.70
Maharashtra	79.20	85.48	88.70