VIT Vidyalankar Institute of Technology
(Accredited A+ by NAAC)
(Autonomous Institute Affiliated to University of Mumbai)

Mid Semester Examination

Branch	Date	Sem.	Roll No. / Exam Seat No.	Subject	Student's Signature	Junior Supervisor's Name and Sign
CMPN		~~VI~~ MSE1		QA		

Question No.	A	B	C	D	E	F	G	H	Total	Total out of (20 /30 / 40)
1										
2										
3										
4										

Examiners Signature	Student's Sign (After receiving the assessed answer sheet)

Q1) Advantage of tabular

a) It is concise
It is easy to read
No extra information is used
Comparision becomes Easy. Also can gain Insight

b) Sturges Rule

$$i = \frac{L - S}{1 + 3.222 \log_{10} n} \qquad K = 1 + 3.222 \log_{10} n$$

where i = class interval
L = Largest Frequency
S = smallest Frequency

(c)

Classes	Tally marks	Frequency
0-10	II	2
10-20	IIII	6
20-30	IIII	5
30-40	II	2
40-45	I	1

$\Sigma f = 16$

(d)

Primary Data	Secondary Data
(1) The data is collected through personal experience	The data is already available and recorded by some researcher
(2) It is first hand data.	It is second hand data.

(e) Arithmetic mean $= \frac{1+3+9+27+82+241+720}{7}$

$= 154.71$

Geometric mean $= \sqrt[7]{1 \times 3 \times 9 \times 27 \times 82 \times 241 \times 720}$

$= 26.97$

(f)

Item	Family
Food	1500
mis	3050
Saving	450

(g) Example of Snowball Sampling method
Dataset of HIV positive people. As these people will not be comfortable to come ahead and provide information/data. We can contact them through NGO or relative or through some ~~Social~~ Social organization

(h) Advantage of Non-probability Sampling
(1) Cost Effective
(2) Diverse population

Q2(a)

$$\text{Mean} = \frac{\Sigma fm}{\Sigma f} \qquad \frac{44.5 \times 6 + 54.5 \times 8 + 64.5 \times 12}{50}$$

$$\frac{44.5 \times 6 + 54.5 \times 8 + 64.5 \times 12 + 74.5 \times 17 + 84.5 \times 7}{50}$$

$$= \frac{3395}{50}$$

mean = 67.9

$$\text{median} = L + \left[\frac{N/2 - m}{f}\right] c$$

median class $= (N/2)^{th} = (50/2)^{th} = 25^{th}$

median class = 60–69

$L = 60$

$N/2 = 25$

$m = 14$

$f = 12$

$c = 10$

$$\text{median} = \frac{60(25 - 14) \times 10}{12}$$

$$= 60 + 9.166$$

median = 69.1666

(b)

$$i \times \frac{4.8 - 20}{1 + 3.222 \log_{10} 16} = 5.7 = 6$$

$$K = 4.8 = 5$$

Y ↓ X →	20-26	26-32	32-38	38-44	44-50	Total
20-26		11	1	1	1	5
26-32			11	1		3
32-38	1	1			1	3
38-44	1	1			1	3
44-50	1		1			2
						16

(c)

Marks	No of students	less than	more than	Relative frequency
0-10	12	12	102	11.76
10-20	6	18	90	5.88
20-30	9	27	84	8.82
30-40	16	43	75	15.68
40-50	20	63	59	19.6
50-60	15	78	39	14.7
60-70	8	86	24	7.84
70-80	8	94	16	7.84
80-90	8	102	8	7.84

Year / Diseases	1935-39		1940-44	
	Cases	Death	Cases	Death
Lead poisoning	677	135	326	90
other poisoning	111	30	109	128
Anthrax	144	165	1477	249
gases	843	25	895	52
Total	1775	355	2807	419

Q3

(b) Sampling has 2 types

(1) Probability Sampling

(i) Simple Random Sampling

In simple random sampling every individual has an equal probability of selecting

Suppose there are 1 to N numbers the apply a Random generator Random(N) for selection

(2) Cluster Based Sampling

The population is divided into clusters and then data is collected

Eg: The division of cluster may be based on the basis of age, gender etc.

(3) Systematic Sampling

Here the data is chosen at a regular interval

Example: If we have a population of 5000 people every 10th individual is choosen for the sample (5000/500 = 10)

(iv) Strategic Sampling

If the population size is very large then a group of population is studied and inference is made from them. This is called strata

(2) Non-probability Sampling

(1) Convinience Sampling

This sampling method is used for the ease of the subjects. The sampling is done at the malls or crowded areas or streets

(2) Judgemental Sampling

This sampling is based on the researchers discrete method

For example :- Who all are interested in doing masters

only those students who are interested in masters are considered

(3) Quota Sampling

Here the population is divided into groups based on differences

(4) Snowball Sampling

Here the data is difficult to trace

Example :- finding out the HIV people