P32/P131/CMP221/CMP504/EE/20250111

Time : 3 Hours **Marks : 80**

Instructions :

1. All Questions are Compulsory.
2. Each Sub-question carry 5 marks.
3. Each Sub-question should be answered between 75 to 100 words. Write every questions answer on separate page.
4. Question paper of 80 Marks, it will be converted in to your programme structure marks.

1. Solve any **four** sub-questions.

   a) Define 'Statistics' and explain the scales of measurement. 5

   b) Following is the frequency distribution of waiting time (in seconds) of 200 customers in a cyber cafe. 5

Waiting-time (In seconds)	0-20	20-40	40-60	60-80	80-100	100-120	Total
Customers	20	30	70	50	20	10	200

   Find mean waiting time, [(U = (X – 60) / 20)]

   c) Define Range and write merits and demerits of Range. 5

   d) Different between inclusive method and exclusive method of frequency distribution. 5

   e) Explain pie chart with one example. 5

2. Solve any **four** sub-questions.

   a) Discrete frequency distribution. The data on number of non-confirming units manufactured in a batch of 100 is reported below. 5

x	0	1	2	3	4	5	Total
Boxes	30	45	18	5	1	1	100

   Find standard deviation.

   b) Define mean, median, mode, class limit, frequency. 5

   c) What are the type of charts, draw and explain multiple bar diagram. 5

   d) Explain the coefficient of kurtosis. 5

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e) Following table shows classes, class boundaries, frequencies, class marks. Calculate relative frequencies, percent relative frequencies. 5

Weight in kg	47-49	50-52	53-55	56-58	59-61	62-64	65-67	68-70
Frequency	3	6	9	15	27	20	13	7

3. Solve any **four** sub-questions.

a) Explain the 'coefficient of skewness'. 5

b) There are 40 white balls and 50 black balls in an 20% of white balls and 10% of black balls are marked. A person tosses a fair coin. If coin show head, he selects a ball form white balls, otherwise he select a ball form black balls. What is probability that the selected ball marked? 5

c) Verify whether $f(x) = [4 - 1\,x - 51]\,|\,16$ for $x = 2, 3, ..., 8$ is a probability mass function of some random variable x. If it is obtain $p(x \leq 4)$, $p(x \leq 4)$ and $p(x \geq 6)$. 5

d) Write a note on "Statistical Hypothesis". 5

e) Describe statistical test for testing equality of population means for 5

i) Independent sample

ii) Dependent sample

4. Solve any **four** sub-questions.

a) Explain discrete random variable. 5

b) Describe test for specified population mean. 5

c) Explain random experiments with examples. 5

d) Write properties of central moments. 5

e) Write merits and demerits of mode. 5

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