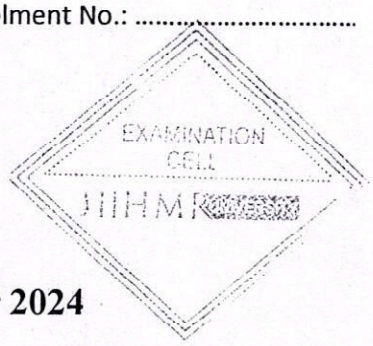
Enrolment No.: .....



IIHMR UNIVERSITY

School of Digital Health

MBA Healthcare Analytics
Batch-01st (2024-2026)
First Year, Term 1, End Term Examinations, December 2024

CC – 602 Statistical Reasoning

Time - 3 Hour **Maximum Marks: 50 (Minimum Marks: 20)**

Instructions to students:

- **This question paper contains 2 printed pages.**
- **Don't write anything on the Question Paper except your Enrolment No.**

Part A (Maximum Marks: 5)

Q1. Choose the correct option for the following (1 mark each):

(a). Which of the following represents a null set?
(i) {1, 2, 3}
(ii) {}
(iii) {0}
(iv) {x | x is a natural number less than 1}

(b). Which of the following is a characteristic of the normal distribution?
(i) Skewed to the left
(ii) Bell-shaped curve
(iii) Equal probabilities for all outcomes
(iv) No mean or variance

(c). Which scale of measurement includes a true zero point?
(i) Nominal scale
(ii) Ordinal scale
(iii) Interval scale
(iv) Ratio scale

(d). In a bar chart, the heights of the bars represent:
(i) Categories
(ii) Data values
(iii) Frequency of data
(iv) Cumulative data

(e). The sampling method where every member of the population has an equal chance of being selected is called:
(i) Stratified sampling
(ii) Simple random sampling
(iii) Cluster sampling
(iv) Quota sampling

Part B (Maximum Marks: 15)

Answer <u>any three</u> of the following questions (5 mark each).

Q2. A die is rolled once. What is the probability of getting:
(a). A number greater than 4

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Q3. Compute the mean, median, and mode, SD and Outliers for the following data:
5,7,9,7,10,7,85, 7, 9, 7, 10, 7, 85,7,9,7,10,7,8

Q4. Solve:
If A={a,b,c}A = \{a, b, c\}A={a,b,c} and B={c,d,e}B = \{c, d, e\}B={c,d,e},
find AUBA \BAUB, A∩BA \BA∩B,

Q5. Draw Standard curve and explain the concept of standard curve and CI in detail.

Part C

(Maximum Marks: 30)

Answer the following questions in detail (10 marks each).

Q6. A survey is conducted to understand the relationship between education level and preference for a specific brand. The observed data is as follows:

Education Level	Brand A	Brand B	Brand C
High School	30	20	10
Undergraduate	50	30	20
Postgraduate	20	40	30

Using a significance level of 5%, test whether there is an association between education level and brand preference.

Q7. A group of patients is tested for their blood pressure before and after a treatment. The data is as follows:

Patient	Before Treatment	After Treatment
1	150	140
2	160	155
3	145	138
4	155	150
5	148	140

At a 1% significance level, test whether the treatment significantly reduced the blood pressure.

Q8. A company investigates the effects of two factors—training method (Method A and Method B) and age group (Under 30 and 30 & Above)—on employee productivity. The productivity scores are recorded as follows:

Training Method	**Under 30**	**30 & Above**
Method A	60, 62, 64	55, 58, 60
Method B	70, 72, 75	65, 68, 70

Test whether there is a significant interaction between the training method and age group on productivity using a two-way ANOVA at a 5% level of significance.