

Banking	Retail	Insurance
12	8	10
10	8	8
10	6	6
12	8	8
10	10	10

7. A movie producer is bringing out a new movie. In order to develop an advertising strategy, he wants to determine whether the movie will appeal most to a particular age group or whether it will appeal equally to all age groups. The producer takes a random sample from persons attending the preview of the new movie, and obtains the following results :

Opinion	Age Groups				Total
	Under 20	20-39	40-59	60 and over	
Liked the movie	146	78	48	28	300
Disliked the movie	54	22	42	22	140
Indifferent	20	10	10	20	60
Total	220	110	100	70	500

What inference will you draw from this data ? **10**

8. An accounting firm wants to find out whether the current ratio for three companies is same. Random samples of

Roll No.

Total Pages : 05

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STATISTICS AND ANALYTICS FOR
DECISION MAKING
MBA-106

Time : Three Hours]

[Maximum Marks : 70

Note : Attempt *six* questions in all. Q No. 1, comprising of five short answer type questions of 4 marks each, is compulsory, and the remaining eight questions are of 10 marks each, out of which a student is required to attempt any *Five* questions.

1. Explain briefly the following : **5×4=20**

- Type I and Type II error
- Counting rules for determining the number of outcomes
- Multiplication rule of probability
- Non-sampling errors
- Classical Approach and Subjective Approach.

2. Define the concept of sampling. Explain the types of non-probability sampling techniques. **10**

3. A plane's 'black-box' is manufactured by only 3 companies : Company A, Company B, and Company C-who make 80%, 15%, and 5% of all the black-boxes made, respectively. Invariably, some of these are defective. Assuming the percentage of defective black-boxes made by Company A, Company B, and Company C are 4%, 6%, and 9%, respectively. Find the probability that a randomly selected black-box from all black-boxes made that is found to be defective came from Company A, Company B, and Company C. **10**

4. Explain the following : **2×5=10**
 (a) Hypothesis testing for single population mean
 (b) Hypothesis testing for two population mean.

5. Advertisements by Haryana Fitness Center claim that completing their course will result in losing weight. A random sample of fifteen recent participants showed the following weights (in KGs) before and after completing the course. At $\alpha = 0.05$ significance level, can we conclude the participants lost weight ? **10**

Participant	Before	After
1	98	92
2	100	98
3	103	89

4	114	103
5	110	102
6	103	103
7	88	90
8	122	108
9	120	102
10	104	101
11	95	88
12	120	102
13	87	83
14	89	84
15	85	78

6. The manager of a computer software company wishes to study the number of hours senior executives spend at their desktop computers by type of industry. The manager selected a sample of five executives from each of three industries. Note that the populations follow the normal distribution and the variation in each population is the same. At the 0.05 significance level, can she conclude there is a difference in the mean number of hours spent per week by industry ? **10**

eight firms in industry A, six firms in industry B, and six firms in industry C are available. The current ratios are as follows :

Company A	Company B	Company C
1.38	2.33	1.06
1.55	2.50	1.37
1.90	2.79	1.09
2.00	3.01	1.65
1.22	1.99	1.44
2.11	2.45	1.11
1.98		
1.61		

Use Kruskal-Wallis test to determine whether the current ratio for three companies is same. Use $\alpha = 0.05$ level of significance. **10**

9. Explain the role of SPSS in hypothesis testing. Provide a step-by-step guide on how to conduct a hypothesis test using SPSS, including the selection of appropriate tests and interpretation of results. **10**

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