The IIHMR University, Jaipur

School of Pharmaceutical Management

MBA Pharmaceutical Management

Batch 09 (2017-2019)

Data Management and Analysis

Term Examination

Time3 Hours M.M.: 70

Instructions:

Answer all questions.

Q1.The following Business data analytics score is given to you: (10)

48, 69, 44,9, 22,29,38,44,47,54,16,54,59,97.

Based on the above score, prepare the Box plot chart and compute the following:

i. Minimum value

ii. Mean value

iii. Quartile 1 value

iv. Quartile 2 value

v. Quartile 3 value

vi. Maximum value

vii. Lower limit of the series

viii. Upper limit of the series.

ix. Interquartile range

Q2.Based on the above box plot answer the following (10)

a) Outlier item of the series and state reason/s why it is important to remove outlier/s from the series

b) How similar or different are the Mean and Median of the series and in these types of computations among the two values, which value will you prefer and why?

c) Based on the box plot, what inference you have drawn on IQR and how Q1,Q2 and Q3 are similar / different from each other and which quartile according to you is the most important quartile of the series and why?

Q3.A consumer healthcare company conducted a survey 5 years ago and found that the average household income of a particular geographic region is Rs10,000.Mr Gupta who has recently joined the firm as Vice President has expressed doubts about the accuracy of data. For verifying the data, the firm has decided to take 200 households that yield a sample mean (for household income of Rs11,000.Assume that the population standard deviation of household income is Rs1200.Verify Mr.Gupta's doubts using the seven steps of hypothesis testing. Let α =0.05 (20)

Q4.A researcher wants to estimate the average quarterly difference in the net sales of five divisions of a Pharmaceutical company. Due to some reasons, he could not obtain the data on average net sales of these companies. He has taken net sales of the five divisions for six randomly selected quarters as indicated in the following Table: (20)

Quarters	Metabolic (in mn Rs)	Derma (in mn Rs)	Vaccines (in mn Rs)	CNS (in mn Rs)	Nutraceuticals (in mn Rs)
Dec.2012	1460.4	299.9	173.5	1042	2680.2
March 2014	951.1	351.1	156.7	1064	2785.2
June 2015	982.4	1460.9	231	1378	3171.2
June 2016	852.9	1445.6	188.6	1413	3230.6
June 2017	1208.3	1689.6	80.4	1987.6	5145.1
Dec.2017	1182.3	1543.7	50	752	4258

Use one-way ANOVA to analyze the significant difference in the average quarterly net sales .Take 90% as the confidence interval (Table value: $F_{0.10,4,25}$=2.18)

Q5. Write short notes on the following: (10)

a) Binomial Distribution

b) Poisson Distribution

c) Sum of Least Squares

d)Maximum Likelihood estimation

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