

MBA Pharmaceutical management**First year - (2014-2016)****Final Examination – Biostatistics****Date: 10/11/2014****Time: 3 hours****Total Marks: 70****Note:**

- a. Kindly attach question paper with the answer sheet at the time of submission of answer sheet.
- b. All the sections are compulsory.
- c. Marks are indicated against each question.

Section A**Circle the correct option. (Do this question on the question paper) (1 * 10 = 10 marks)**

1. Distribution is considered to be normal if;
 - a. $\text{Mean} > \text{Median} > \text{Mode}$
 - b. $\text{Mean} = \text{Median} = \text{Mode}$
 - c. $\text{Mean} < \text{Median} < \text{Mode}$
 - d. $\text{Mean} > \text{Median} < \text{Mode}$
2. Median is same as;
 - a. First quartile
 - b. Second quartile
 - c. Third quartile
 - d. Forth quartile
3. Which of the following is not a measure of dispersion?
 - a. Range
 - b. Quartile deviation
 - c. Variance
 - d. Median
4. Which of the following is not displayed in box-whisker plot?
 - a. Mean
 - b. Median
 - c. Outliers
 - d. Lower quartile

5. The measure of location which is the most likely to be influenced by extreme values in the data set is the
 - a. range
 - b. median
 - c. mode
 - d. mean
6. A data set consisting of six observations has mean 7. If values of five observations are 2, 4, 8, 10, 12 then the value of sixth observation will be;
 - a. 6.0
 - b. 6.1
 - c. 6.2
 - d. 6.3
7. Find the critical value $Z_{\alpha/2}$ that corresponds to a degree of confidence of 98%.
 - a. 2.575
 - b. 2.05
 - c. 2.33
 - d. 1.75

Write an answer for the following question;

8. How do you determine whether to use the z or t distribution in computing the margin of error _____
9. The summary numbers for either a population or sample are called descriptive statistics. (T / F)
10. The mode is always found at the highest point of a graph of a frequency distribution. (T / F)

Section B

Write short note any two from the following; (within 150 words) (5 * 2 = 10 marks)

- Importance of statistics in Policy and Practice Management
- Describe Measures of dispersion
- Various types of Graphs/Charts (with diagrams)
- Levels of measurement
- Null hypothesis and alternative hypothesis with example

Section C

Attempt any five questions in this section.

- Q1.** Calculate Mean, quartiles and standard deviation for the marks obtained by students in statistics in a university **(10 marks)**

Marks	Number of students
20-30	3
30-40	61
40-50	132
50-60	153
60-70	10
70-80	51
80-90	2

- Q2a.** Present the quarterly output of 4 companies given below graphically by choosing appropriate graph/chart; **(Q2a & 2b: 5 marks each)**

Quarter Company	Q1	Q2	Q3	Q4
Company 1	907	934	224	430
Company 2	745	383	924	961
Company 3	538	732	746	824
Company 4	856	926	192	786

and

- Q2b.** The number of employees, average wages per employee and variance of wages per employee for two pharmaceutical companies are given below;

Particulars	Company A	Company B
Number of employees	100	200
Average wage per employee (Rs.)	5000	8000
Variance of wages per employee (Rs.)	6000	10000

Which company has more uniform wages?

- Q3.** In an intelligence test administered on 1000 students, the average was 42 and SD 24.
- Find The number of students exceeding the score of 58 **(3 marks)**
 - The number of students lying between 30 and 66 **(4 marks)**
 - If 40% student have failed in this intelligence test what is the score below which they have failed. **(3 marks)**

Q4. In a random sample of 1000 persons from City X, 150 were found to be consumers of cigarettes. In another sample of 800 persons from City Y, 480 were found to be consumers of cigarettes. Is there a significant difference between cities X and Y as far as consumers of cigarettes are concerned? (At 1% level of significance) **(10 marks)**

Q5. In a weight gain study of a pharmaceutical company, seven pairs of twins were allocated at random to two alternative diets and their weight gain measured after a fixed time. Find out whether there is any difference in terms of weight gain due to Diet A and Diet B. **(10 marks)**

Pairs	Diet A	Diet B
Pair 1	10	16
Pair 2	17	20
Pair 3	8	14
Pair 4	15	15
Pair 5	17	16
Pair 6	12	16
Pair 7	14	17

Q6. Two sample polls of votes for two candidates A and B for a public office are taken, one from among the residents of rural areas. The results are given in the table below. Examine whether the nature of the area is related to voting preference in this election. Given, the tabulated value of Chi-square at 1 d. f. is 3.81.

Area	Votes for		Total
	A	B	
Rural	620	380	1000
Urban	550	450	1000
Total	1170	830	2000

Q7a. Put "Yes/No or N/A" with regard to the Characteristics against Level of Measurement **(Q7a & 7b: 5 marks each)**

Characteristics	Nominal	Ordinal	Interval	Ratio
Labeled				
Ordered				
Known difference				
Zero in arbitrary				
Zero Means none				

and

Q7b. Write the level of measurement for variables given in the table below.

Sl. No.	Variable	Level of measurement																																												
7b.1	Bicycle model 1. Road, 2. Touring, 3. Mountain, 4. Cruiser																																													
7b.2	Cost expressed in Rupees, e.g: Rs 1500/-																																													
7b.3	Year in college First year, Second year, Third Year																																													
7b.4	Number of questions asked during the class lecture																																													
7b.5	State of Indian economy is a matter of concern product (Likert scale) 1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly disagree																																													
7b.6	The group of the study participants 1. Routine 2. Placebo 3. Experimental																																													
7b.7	What is your position on capital punishment 1. Support 2. Oppose 3. Not sure																																													
7b.8	<table><tr><td colspan="3">Which of the following food items do you tend to buy at least once per month? (Please tick)</td></tr><tr><td>Okra</td><td>Palm Oil</td><td>Milled Rice</td></tr><tr><td>Peppers</td><td>Prawns</td><td>Pasteurised milk</td></tr></table>	Which of the following food items do you tend to buy at least once per month? (Please tick)			Okra	Palm Oil	Milled Rice	Peppers	Prawns	Pasteurised milk																																				
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