6. Statistics students believe that the mean score on the first statistics test is 65. A statistics instructor thinks the means score is higher than 65. He samples ten statistics students and obtains the scores 65, 65, 70, 67, 66, 63, 63, 68, 72, 71. He performs a hypothesis test using a 5% level of significance. The data are from a normal distribution. Discuss the above hypothesis in detail with result. **15**

7. What is analysis of variance (ANOVA) ? Draw the contigency table for one way ANOVA. **15**

8. Explain the significance of clinical trials. Outline the design for a clinical trial. **15**

No. of Printed Pages : 04 **Roll No. .....**

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B. Tech. EXAMINATION, May 2018

(Fourth Semester)

(B. Scheme) (Main & Re-appear)

(BME)

BME206B

BIOMEDICAL STATISTICS

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) Discuss the concept of probability distributions. **6**

(b) A sample space is S = {u, v, w, x}. Identify two events as A = {v, w} and B = {u, w, x}. Suppose P(u) = 0.22, P(w) = 0.36, and P(x) = 0.27 : **9**

(i) Determine what P(v) must be

(ii) Find P(A)

(iii) Find P(B).

2. (a) Distinguish between descriptive and inferential statistics; explain how samples and populations, as well as a sample statistic and population parameter, differ. **10**

(b) Find the mean, the median and mode of the {–1, 0, 1, 4, 1, 1}. **5**

3. A sociologist recently conducted a survey of citizens over 60 years of age who have no private health insurance. The ages of 25 uninsured senior citizens were as follows :

60 61 62 63 64 65 66 68 68 69 70 73 73 74 75 76 76 81 81 81 82 86 87 89 90 92

Referring to above data, calculate the arithmetic mean age, median age, standard deviation, first quartile and interquartile range of the uninsured senior citizens. **15**

4. (a) Distinguish between Skewness and Kurtosis. Also explain different measures of Skewness and Kurtosis. **5**

(b) Enlist the axioms of probability. **5**

(c) Define the terms : **5**

(i) Point estimates

(ii) Interval estimates.

5. Discuss and define Type-1 and Type-2 errors. Calculate Sensitivity and specificity, False Positive and False Negative rates : **15**

Diagnosis	Testse result	
	+ive	–ive
+ive	30	3
–ive	20	42