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OURTH SEMESTE   B.Sc MICROBIOLOGY-CCSS-(COMPLEMENTARY COURSE)
DEGREE EXAMINATION, NOVEMBER 2012

Biostatistics

MB4C16 (P) – BIOSTATISTICS (Practical)

Maximum: 10 Weightage

Time: 2 Hours

*Answer any five questions'*
*Each carries a weightage of 2*

1. Construct a Histogram and superimpose the frequency polygon for following data.

| Class | : 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 |
|-------|--------|-------|-------|-------|-------|-------|-------|
| Frequency | : 4 | 8 | 11 | 15 | 12 | 6 | 3 |

What is the median and mode from the graph.

2. (a) Find missing-information from the following data.

| | Group III | combined |
|---|-----------|----------|

(b) Following data provides information about runs scored by two batsmen in 10 matches. identify the consistent batsman.

| | | | | | | | | | | |
|-----------|-----|----|----|-----|----|-----|----|-----|-----|-----|
| Batsman 1 | 100 | 10 | 20 | 150 | 2 | 89 | 0 | 3 | 120 | 14 |
| Batsman 2 | | | | 75 | 32 | 2 | 67 | 68 | 15 | 112 |

Find the Quartiles, Quartile deviation and Coefficient of Skewness for the following data

52, 61, 65, 71,73, 78, s4, 58, 63, 89, 83, 91, 73,76, 99, 49, 53, 82

4. Fit a Binomial distribution for the following data under the assumption that male and female births are equally probable

| Male | 0 | 1 | 2 | 3 | 4 | 0 |
|----------------|----|----|----|----|----|---|
| Female | 5 | 4 | 3 | 2 | 1 | 6 |
| No. of families | 10 | 18 | 38 | 20 | 15 | 6 |

**Following** table shows the distribution of the number of students per teacher in 750 colleges. Compute the Harmonic mean and Geometric mean.

| Students | 4 | 7 | 10 | 13 | 16 | 19 | 22 | 25 | 28 |
|----------|---|---|----|----|----|----|----|----|----|
| Frequency | 7 | 46 | 165 | 195 | 189 | 89 | 28 | 19 | 9 | 3 |

6. A public opinion poll surveyed a simple random sample of 1000 voters. Respondents were classified by gender (male or female) and by voting preference (Republican, Democrat. or Independent). Results are shown in the contingency table below.

| | Voting Preferences | | |
|--------|-----------|----------|-------------|
| Gender | Republican | Democrat | Independent |
| Male | 200 | 150 | 50 |
| Female | 250 | 300 | 50 |

Test whether voting preferences are depending on gender or not

7. Suppose the National Transportation Safety Board (NTSB) wants to examine the safety of compact cars, midsize cars, and full-size cars. It collects a sample of three for each of the treatments (cars types). Using the hypothetical data provided below, test whether the mean pressure applied to the driver's head during a crash test is equal for each types of car.

| Compact Cars | Midsize Cars | Full-size Cars |
|--------------|--------------|----------------|
| 643 | 469 | 484 |
| 655 | 427 | 456 |
| 70 | 525 | 402 |

8. The brightness of films produced by 3 different Manufacturers has been compared using 3 different development processes and the data are given below. Test whether the manufacturer and development process have impact or not?

| Manufacturers | Development Processes | | |
|---------------|---|---|---|
| | A | B | C |
| Kodak | 32 | 26 | 28 |
| Fuji | 43 | 32 | 32 |
| Agfa | 23 | 27 | 25 |

9. Fit a regression line for the following data and estimate the pressure for age 50 years. Also find the correlation coefficient.

| Age in years (X) | 56 | 42 | 72 | 36 | 63 | 47 | 55 | 49 | 38 | 42 | 68 | 60 |
|------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Blood, Pressure (Y) | 147 | 125 | 160 | 118 | 149 | 128 | 150 | 1.45 | 115 | 140 | 152 | (55 |

10. en the followin data on three variables $X_1$, $X_2$.

$X_1$: 6,4, 5, 3, 8, 9, 6, 5, 7, 6
X2: 8, 3, 6, 5, 7, 8, 6, 4, 8, 5
X3: 6, 5, 8, 4, 8, 6, 4, 5, 7, 8

Calculate the partial correlation coefficient $r_{12.3}$ and $r_{23.1}$. Also find the multiple correlation coefficients $R_{1.23}$ and $R_{3.12}$. Test for the significance of $r_{12}$.