Total No. of pages: 4 BSc/Part-II/STS(H)-IVC(Prac)

2019

Part – II
STATISTICS

(Honours)

Paper - IVC

(Practical)

Full Marks - 50

Time: 4 Hours

The figures in the right hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer all questions.

 The combined heights (in cm) of 11 pairs of brothers and sisters are given below:

Pair No.	Combined Height (in cm)					
1	3.56					
2	3.35					
3	3.33					
4	3.30					
5	3.43					
6	3.38					
7	3.48					
8	3.43					
9	3.51					
10	<i>3.15</i>					
11	3.23					

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2.

Obtain a linear prediction formula for the scores on Statistics in terms of the scores on Mathematics and Physics.

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The result of a survey regarding radio listener's preference for different types of music are given in the following table, with listeners classified by age group.

Ĭ	Age Group						
Type of music preferred	19 – 25	26 – 35	above 35				
Devotional music	80	60	9				
Foreign music	210	325	44				
Indifferent	16	45	132				

Calculate any two measures of association and comment on whether preference for type of music is influenced by age or not.

4. Let the random vector $\mathbf{x} = (\mathbf{x}_1, \mathbf{x}_2, \mathbf{x}_3)'$ have trivariate normal distribution with mean vector $\mathbf{\mu} = (1, 1, 1)'$ and dispersion matrix.

$$\sum = \begin{pmatrix} 0.6 & 0.3 & 0.3 \\ 0.3 & 0.6 & 0.3 \\ 0.3 & 0.3 & 0.6 \end{pmatrix}$$

(a) Find the distribution of the random vector

$$y = px \text{ where } P = \begin{pmatrix} 1 & -1 & 0 \\ 2 & 3 & 1 \\ 3 & 2 & 2 \end{pmatrix}$$

- (b) $a \ 3 \times 3 \ \text{matrix C such that Disp}(y) = I_3 \ \text{where}$ y = cx
- (c) the conditional distribution of x_1 given (x_2, x_3) .
- Lifetime of an electric bulb manufactured by a certain company is assumed to be exponentially distributed with mean 200 hours. What is the probability that
 - (i) a bulb will get extinct before 100 hours? 2
 - (ii) a bulb will function more than 150 hours? 2

 If a sample of 400 bulbs is bought, how many are expected to be in each of the above two groups (i) and (ii)?

 3+3
- 6. Practical Note Book and Viva voce. 5+5

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