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**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27**

OPEN ELECTIVE STATISTICS – IV SEMESTER

SEMESTER EXAMINATION – APRIL 2019

**STOE 4116: DESCRIPTIVE STATISTICS**

Time: 1½ Hours Max: 35 marks

This question paper has **THREE** parts and **TWO** printed page

**PART – A**

**I Answer any FIVE of the following: 5 x 2 = 10**

1. Which scale is used to convert non numerical to numerical in following cases and why?



1. Define sample space with an example.
2. Define types of data collection methods with an example.
3. Give the formula for combined standard deviation and explain the terms.
4. Company “**Vale SA”** stock has the following prices:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Jan-01 | Jan-02 | Jan-03 | Jan-04 | Jan-05 | Jan-06 | Jan-07 | Jan-08 | Jan-09 | Jan-10 |
| $25 | $19 | $20 | $25 | $23 | $25 | $23 | $20 | $24 | $21 |

Find the average of these prices using arithmetic mean.

1. Write down the formula for Spearman’s Rank correlation and mention any two applications.
2. Give the model of simple linear regression and explain the terms.

 **PART – B**

 **II Answer any THREE of the following: 3 x 5 = 15**

1. Form an inclusive type class interval for the following data which gives the heights of 40 persons and construct a frequency table.

150 133 134 129 176 136 151 121 128 180 171 123 148 170 146 153 173 141 151 145 163 181 168 146 149 136 130 151 150 145 128 169 122 129 144 137 129 150 160 155.

1. A) Differentiate between cluster sampling and stratified sampling. (2)

B) Write a note on non-probability sampling. (3)

1. A) Explain i) Deterministic experiment ii) mutually exclusive event (2)

B) A bag containing lettered scrabble pieces has the following letter distribution

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  Alphabets | A | b | c | d | e | f | g | h | I | j | k | L | m |
| No of Alphabets | 9 | 2 | 2 | 4 | 12 | 2 | 3 | 2 | 9 | 1 | 1 | 4 | 2 |
| Alphabets | N | o | p | q | r | s | t | u | V | w | x | Y | z |
| No of Alphabets | 6 | 8 | 2 | 1 | 6 | 4 | 6 | 4 | 2 | 2 | 1 | 2 | 1 |

The first letter is chosen at random from the bag. Find the probability that it is

1. An *e* (b) In the first half of the alphabet (c) A vowel (3)

d

1. A) A marketing firm has conducted survey of 1,000 households. Determine the average number of TVs each household own and compute range & its relative measure (3)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. of TVs per household | 1 | 2 | 3 | 4 |
| No. of house holds | 73 | 378 | 459 | 90 |

B) List out any four relative measures of dispersion. (2)

1. Demand for onions depends on its’ price / kg.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Price / kg in Rs. | 2 | 6 | 40 | 14 | 18 | 22 | 10 | 8 | 25 |
| Demand in kgs  | 21 | 16 | 14 | 13 | 12 | 11 | 14 | 16 | 6 |

a) Fit a regression line of demand on price. (4)

b) Estimate the demand when the price (per kg) of onion is Rs. 15 (1)

**PART – C**

**III Answer any ONE of the following: 1 x 10 = 10**

1. A) Imagine you survey your friends to find the kind of movie they like best:

|  |
| --- |
| ***Table:* *Favourite Type of Movie*** |
| **Comedy** | **Action** | **Romance** | **Drama** | **SciFi** |
| 4 | 5 | 6 | 1 | 4 |

Use pie chart to represent the data with appropriate title and labels and comment on the result. (5)

 B) Supposedly consider that your team is an intern to the PVR film Studios, Bangalore. The manager wants you to find the audiences’ and critics’ ratings for the bollywood movies released recently. He also interested in knowing the genres preferred by the audience. He also wants you to find out the factors that people are looking out for in a movie. (5)

Prepare a suitable questionnaire to collect information from audiences.

1. A) Give any two advantageous and disadvantageous of geometric mean. (4)

B) A paediatric registrar has measured the X: pulmonary anatomical dead space (in ml) and Y: height (in cm) of 15 children. The data are given in table. Check whether there is any relation between the two variables. (6)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Child number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Height (cm) | 116 | 116 | 120 | 130 | 137 | 147 | 147 | 154 | 160 | 160 | 164 | 171 | 176 | 178 | 179 |
| Dead space  (in ml)  | 34 | 38 | 57 | 45 | 47 | 54 | 57 | 44 | 81 | 74 | 77 | 78 | 62 | 85 | 106 |