GUJARAT TECHNOLOGICAL UNIVERSITY MAM - SEMESTER- II• EXAMINATION – WINTER 2015

| Su | bjec | t Code: 4120503 Date:16/12/201 | Date:16/12/2015 | | | | | | | |
|------------------|--|---|-----------------|--|--|--|--|--|--|--|
| Su Tii Ins | bject me:0 truction 1 2 3 | t Name: Business Statistics 2.30 PM TO 05.30 PM To 05.30 PM To tal Marks: ons: . Attempt all questions. . Make suitable assumptions wherever necessary. . Figures to the right indicate full marks. | 70 | | | | | | | |
| Q.1 | (a) (b) | Explain various types of graphical depiction of data. The following lists the number of fatal accidents by scheduled commercia airline over a $17 -$ year period according to the Airport Authority of India. Using these data, compute the mean, median, and mode. 4,4,4,1,4,2,4,3,8,6,4,4,1,4,2,3,3 | | | | | | | | |
| Q.2 | (a) | A data set contains the following six values. | 07 | | | | | | | |
| | (b) | Find the population standard deviation. Given $X = \{1,3,5,7,8,9\}$, $Y = \{2,4,7,9\}$ and $Z = \{1,2,3,4,7\}$, solve the following: a) $X \cup Z$ b) $X \prod Y$ c) $X \prod$ d) $X \cup Y \cup Z$ e) $X \prod Y \prod Z$ f) $(X \cup Y) \prod Z$ | 07 | | | | | | | |
| | | g) $(Y \Pi Z) U (X \Pi Y)$ OR | | | | | | | | |
| | (b) | Define following: 1. Experiment 2. Event 3. Elementary Events 4. Sample Space 5. Unions 6. Intersections 7. Complementary Events | 07 | | | | | | | |
| Q.3 | (a) | In a manufacturing plant, machine A produces 10% of a certain product, machine B produces 40% of this product, and machine C produces 50% of this product. 5% of machine A products are defective, 12% of machine B products are defective, and 8% of machine C products are defective. The company inspector has just sampled a product from this plant and has found it to be defective. Determine the revised probabilities using bayes theorem that the sampled product was produced by machine A, machine B, or machine C. | | | | | | | | |
| | (D) | OR | | | | | | | | |
| Q.3 | (a) | Determine the mean, the variance and the standard deviation of the following discrete distribution. X $P(x)$ 1 0.238 2 0.290 3 0.177 4 0.158 5 0.137 Discuss New web bility and the | 07 | | | | | | | |
| | (b) | Discuss Non probability sampling methods. | 07 | | | | | | | |

| Q.4 | (a) | Determine the equation of regression line from the following data. | | | | | | | | 07 | | |
|-----|--------------|--|----------|----------|------------|----------|--------------|-----------|------------|-------------------|--------------|--|
| - | | Х | 12 | 21 | 28 | 8 | 20 | | | e | | |
| | | Y | 17 | 15 | 22 | 19 | 24 | | | | | |
| | (b) | Determine the Interquartile range on the following data. | | | | | | | | | 07 | |
| | | 44 | 18 | 39 | 40 | 59 | | | | | | |
| | | 46 | 59 | 37 | 15 | 73 | | | | | | |
| | | 23 | 19 | 90 | 58 | 35 | | | | | | |
| | | 82 | 14 | 38 | 27 | 24 | | | | | | |
| | | 71 | 25 | 39 | 84 | 70 | | | | | | |
| | OR | | | | | | | | | | | |
| Q.4 | (a) | Explain exponential distribution. | | | | | | | | 07 | | |
| | (b) | Explain normal distribution | | | | | | | | 07 | | |
| Q.5 | (a) | Determine the probability for the following normal distribution problem. $\mu = 604$, $\sigma = 56.8$, X < 635. | | | | | | | | 07 | | |
| | (b) | Determine the following exponential probabilities. | | | | | | | | 07 | | |
| | | $P(X \ge 5 \setminus \lambda = 1.35)$ | | | | | | | | | | |
| | | × × | (| , | | | OR | | | | | |
| 0.5 | (a) | Deter | mine th | ne value | e of the | coeffici | ent of c | orrelati | on. r. for | the following dat | a. 07 | |
| χ | () | X | 4 | 6 | 7 | 11 | 14 | 17 | 21 | 8 | | |
| | | Y | 18 | 12 | 13 | 8 | 7 | 7 | 4 | | | |
| | (b) | Value | es are u | niforml | v distri | buted be | etween | 200 and | 240. | | 07 | |
| | () | 1) What is the value of $f(x)$ for this distribution? | | | | | | | | | _ | |
| | | 2) Determine the mean and standard deviation of this distribution | | | | | | | | | | |
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