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| KLS Gogte Institute of Technology (Autonomous), Belagavi - Department of Mathematics  Subject: **Engineering Mathematics – III** Academic Year: 2016-17 Code: **15MAT31**  Semester: **III** (All Branches) **Improvement Test** Date: 12 –11 – 2016  Max. Marks: 25 Duration: 1 Hr **.**  **Instructions: Answer all FIVE questions.** (each question carries FIVE marks)   1. A random variable X has the following probability function:  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |  | 0 | k | 2k | 2k | 3k |  |  |  |   Find the value of k, mean, evaluate . [L3,a]   1. In sampling a large number of parts manufactured by a machine, the mean number of defectives in a sample of 20 is 2. Out of 1000 such samples, how many would be expected to contain at least 3 defective parts. [L3,a] 2. If the probability of a bad reaction from a certain injection is 0.001 determine the chance that out of 2000 individuals more than two will get a bad reaction. [L2,a] 3. In a test on 2000 electric bulbs, it was found that the life of a particular make, was normally distributed with an average life of 2040 hours and S.D. of 60 hours. Estimate the number of bulbs likely to burn for 4. More than 2150 hours b) less than 1950 hours and c) between 1920 hours and 2160 hours. [L2,a]  |  |  |  |  | | --- | --- | --- | --- | | x\y | -3 | 2 | 4 | | 1 | 0.1 | 0.2 | 0.2 | | 3 | 0.3 | 0.1 | 0.1 |  1. A joint PDF is:   Find mean of x, variance of y, correlation of (x y). [L3,a] |

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