1^{st} Semester Ph.D. (ECE) 2014-15; Optional Mid-Term Examination

Time: $\frac{1}{2}$ ***Hours*** ***Maths for ECE-I,*** 17^{th} ***Nov 2014*** ***Max. Marks: 15***

Give very brief & pertinent answers. 5×3

1. Suppose that T, the time to failure of an item is normally distributed with $E(T) = 90$ hours and standard deviation 5 hours. In order to have a reliability of 0.9, 0.99, 0.999, how many hours of operation may be considered?
2. The units are proposed to be operated in parallel. Assume that each has the same constant exponential failure rate $\alpha = 0.02$. How much of an improvement can be obtained (in terms of increasing the reliability) by operating 3 such units in parallel?
3. Give a complete distribution for **P**, a four point distribution, as $P_1 = \frac{5}{16}$, $P_2 = \frac{1}{16}$, $P_3 = \frac{3}{16}$ and $P_4 = \frac{7}{16}$ are given.

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