

RGPV ME 7 SEM CBGS SYLLABUS

Elective –III ME- 7004 (2) Reliability Engineering

1. Reliability : Definition, Importance, History, Failure pattern of complex product, Factor of safety and reliability, Reliability analysis procedure, Reliability management Some examples of system failures.
2. Basic probability theory, Set theory, Laws of probability, Probability theorem Random variables and probability distributions, Central limit theorem,
3. Functions of random variables, Single , two and several random variables, Probability distribution functions, density functions for different types of discrete and continuous variables, mean, mode and median, Numerical solutions, Extremal distributions,
4. Modeling of geometry, strength and loads, Fatigue strength, Time dependent reliability of components, Failure rate versus time, reliability and hazard functions and different distributions, Estimation of failure rate, Expected residual life, Series, parallel and mixed systems, complex systems, Reliability enhancement,
5. Reliability based design, Optimization problems, Failure modes and effect analysis, Event tree and fault tree analysis, Reliability testing, Reliability data and analysis, measurement of reliability, Monte Carlo Simulation, Computation of reliability

References:

1. Singiresu S. Rao, Reliability Engineering, Pearson
2. Grant E. L. & Leavelle, Statistical Q. C., T.M.H.
3. Balagurusamy, Reliability Engg., T.M.H.
4. Mahajan , Statistical Q.C.
5. Juran and Grayan, Quality Planning Analysis, T.M.H.