Reg. No.															

Question Paper Code	12760

M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Second Semester

M.E - CAD/CAM

20PCDEL202 – RELIABILITY IN ENGINEERING SYSTEMS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Define the term reliability.	2	K1	CO1
2.	Summarize how hazard rate is estimated.	2	K2	CO1
3.	Describe mortality of a component.	2	K2	CO2
4.	Define posteriori probability.	2	K1	CO2
5.	Write a short note on empirical methods.	2	K2	CO3
6.	Classify the different types of data collection.	2	K2	CO3
7.	List the various series and parallel components.	2	K1	CO4
8.	Briefly examine Baye's theorem.	2	K2	CO4
9.	Give a note on accelerated life testing.	2	K2	CO5
10.	Name some characteristics of high wear-out.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Illustrate the importance regarding the measures of reliability in monitoring.	13	K2	CO1
		OR			
	b)	Classify the characteristics and functions of a bath tub curve.	13	K2	CO1
12.	a)	Demonstrate the importance and different aspects of regarding mortality curve.	13	K2	CO2
		OR			
	b)	Illustrate the priori and posteriori probabilities with suitable example.	13	K2	CO2
13.	a)	Illustrate about grouped data used in failure data analysis.	13	K2	CO3
		OR			
	b)	Discover the importance of FMEA in reliability.	13	K2	CO3

14.	a)	Analyze the m/n configuration in REL functions and analysis.	*13*	*K4*	*CO4*
		OR			
	b)	Evaluate the importance of standby system used in redundancy.	*13*	*K5*	*CO4*
15.	a) i)	Explain the reliability monitoring techniques with reference to sustainability.	*7*	*K2*	*CO5*
	ii)	Explain the evolution of condition based monitoring system.	*6*	*K2*	*CO5*
		OR			
	b)	Examine time terminated model in reliability monitoring.	*13*	*K2*	*CO5*

PART - C (1× 15 = 15 Marks)

16.	a)	Briefly describe the concept of reliability, maintainability and availability.	*15*	*K2*	*CO6*
		OR			
	b)	A module of an automatic machine has 10 components in series. Each component has an exponential time to failure distribution with a constant failure rate of 0.05 per 4000 hours. What is the reliability of each component and the module after 2000 hours of operation? What is the mean time to failure of the module?	*15*	*K3*	*CO6*