BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BE **SEMESTER : VII**
BRANCH: BT/MECH/PROD/CIVIL **SESSION : MO/19**

SUBJECT: PE7021 MAINTENANCE ENGINEERING

TIME: 3.00Hrs. **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	How product life of software is affected by maintainability.	[2]
Q.1(b)	What is Failure Mode Effect Analysis (FMEA)? Describe the same with suitable example	[4]
Q.1(c)	What do you mean by maintenance job planning? Discuss various steps of maintenance job planning.	[6]
Q.2(a)	How bath tube curve is used for defining maintainability.	[2]
Q.2(b)	With suitable example explain the concept of repairability.	[4]
Q.2(c)	A weather satellite has expected life of 10 years from the time it is placed into earth orbit. Determine its reliability for each of the following lengths of service. Assume that exponential distribution is appropriate. a. 5 years b. 12 years c. 20 years d. 30 years What is the probability that the it will fail between 12 and 20 years after being placed into earth orbit?	[6]
Q.3(a)	Under what condition preventive maintenance is implemented.	[2]
Q.3(b)	Explain the procedure of Reliability centered maintenance.	[4]
Q.3(c)	With an example explain how information system will helps us in developing a good maintenance system in the modern industry?	[6]
Q.4(a)	Make a small note on thermography analysis	[2]
Q.4(b)	Name the different types of lubricant analysis, explain any one.	[4]
Q.4(c)	Define Tero-Technology and state the importance of the same in evolving the “Life Cycle costing” of an asset	[6]
Q.5(a)	Write down the cost associated for calculation of maintainability	[2]
Q.5(b)	Make a comparative analysis between historical and zero based maintenance budgeting	[4]
Q.5(c)	Describe different type of maintenance cost related indices mostly used in industries.	[6]
Q.6(a)	What type of occupational diseases are associated with mining industries?	[2]
Q.6(b)	What measures should be taken to avoid electrical hazards	[4]
Q.6(c)	How personal protective equipment and clothing’s are important for workers working in industry?	[6]
Q.7(a)	Summarize the role of safety training.	[2]
Q.7(b)	Make a brief note on safety measures against the fire hazards in a building	[4]
Q.7(c)	With suitable case study explain the role of safety training in reducing industrial hazards	[6]

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