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Register Number :

7773

Name of the Candidate :

DIPLOMA EXAMINATION DECEMBER 2013.

(MAINTENANCE ENGINEERING AND MANAGEMENT)

120 — CONDITION MONITORING AND FAULT DIAGNOSIS

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

All questions carry equal marks.

1. (a) With respect to economic feasibility and initial investment compare preventive and predictive maintenance. Also illustrate suitable examples. (10)
- (b) Mention any two applications of radiation pyrometer? With a neat diagram, explain the working of a radiation pyrometer. (10)
2. Discuss the appropriate condition monitoring methods to diagnose the condition of the following : Draw the necessary sketches.
 - (a) Antifriction bearings
 - (b) Gearbox of automobile's.
3. (a) Describe the working principle of ultrasonic flaw detector to diagnose the surface flaws in an oil pipe line. (10)
- (b) With a neat sketch, describe any one type of torque measuring instrument. (10)
4. (a) What are the causes and effects of vibration on machinery? With a neat sketch explain how vibration level is measured in an air compressor. (10)
- (b) Explain the different types of transducers used for the measurement of noise. Also discuss how noise measurement is considered as a predictive maintenance tool. (10)
5. (a) Classify the different types of wear with a diagram explain any one method measure the abrasion wear. (10)
- (b) Explain the working mechanism and applications of the following instruments
 - (i) spectroscopic analyser
 - (ii) semi conductor pressure sensor. (10)

6. (a) Discuss the effect of strength reducers, stress raisers and residual stresses on failure, with suitable examples. Also enumerate the objectives of 'fractography'. (10)
- (b) Draw the S-N curve for mild steel and aluminum alloys and describe their fatigue strength characteristics. Also state the methods those are used to improve the fatigue strength of metals. (10)
7. (a) What is creep failure? Give few applications. Draw a creep curve and describe the different stages in creep damage. (10)
- (b) Distinguish between 'micro hardness' and 'macro hardness'. Explain any one method of measuring micro hardness. (10)
8. Explain the working mechanism and application of the following NDT methods
- (a) Eddy current testing
- (b) Ultrasonic testing. (10 + 10)
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