THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF ENGINEERING TECHNOLOGY
DIPLOMA IN TECHNOLOGY LEVEL 4
FINAL EXAMINATION – 2010

MEX4234 – PLANT MAINTENANCE & WORK SERVICES

DATE : 21ST MARCH 2011
TIME : 1400 HRS. – 1700 HRS.
DURATION : THREE (03) HOURS

ANSWER ANY FIVE (05) QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS

QUESTION 01

(a) Draw a typical organizational structure of a medium size industrial enterprise and clearly indicate the positions assigned for carrying out the maintenance function in the enterprise. Briefly explain the duties and responsibilities of the key maintenance personnel at different hierarchical levels.

(b) Explain why decentralized maintenance leads to lower utilization of labour and equipment and higher maintenance cost.

QUESTION 02

(a) Write short notes on (i) Scheduled maintenance, and

(ii) Condition based maintenance.

(b) Draw a typical failure curve of a machine component and explain the various phases of failure.

QUESTION 03

(a) Briefly explain the steps to be followed in a layout design process.

(b) 'It is important to plan maintenance facilities properly in an industry'. Why? What are the bad effects of improper planning?

QUESTION 04

(a) 'The designing of a machine foundation is more complex than a general foundation' Discuss.

(b) Briefly explain the methods to avoid the failure of machine foundations.

QUESTION 05

(a) Draw a graph to show the variation of the coefficient of friction (μ) of a journal bearing with the group of variables $\frac{\eta N}{P}$ (given in usual notation). Using this graph explain the mechanisms of boundary lubrication and hydrodynamic lubrication.

(b) What are the different types of lubricants used in the maintenance of machinery and equipment?

QUESTION 06

(a) 'Bearings are broadly classified into two categories'. Name and explain these two categories.

(b) Explain briefly the common causes for overheating of journal bearings which finally leads to bearing failure.

QUESTION 07

(a) With typical examples, describe the welding processes commonly used for repair and maintenance of machinery and equipment.

(b) Explain the main conditions necessary for a dust explosion to occur. List the four ways to protect a plant from the effects of a dust explosion.

QUESTION 08

(a) 'Cyclones are the principal type of gas-solid separators used in industry'. Briefly explain the advantages and disadvantages of cyclone separators.

(b) Disposal of solid waste is a major problem in urban localities. What are the environmentally friendly methods of disposal of solid waste? Explain.

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