THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF ENGINEERING TECHNOLOGY
DIPLOMA IN TECHNOLOGY LEVEL 4
FINAL EXAMINATION – 2008

MEX4234 – PLANT MAINTENANCE & WORK SERVICES

DATE : 28TH MARCH 2009
TIME : 1400HRS. – 1700HRS.
DURATION : THREE (03) HOURS

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

QUESTION 01

(a) The "maintenance function" should be given a prominent place in any production organization. State the relevance of this statement using the organization chart with indication of hierarchical positions of the maintenance structure of a production organization consisting of a large number of production machinery and other service facilities.

(b) "A large organization spread over a vast geographical area will need decentralization of maintenance by having small maintenance centres in various locations"

Briefly explain the advantages and disadvantages of decentralization of maintenance.

QUESTION 02

(a) Write short notes on (i) Preventive maintenance (ii) Corrective maintenance.

(b) If you are assigned the responsibility of preparing a maintenance programme for a newly established production line in a factory, what information would you need for preparing the programme. Explain.

QUESTION 03

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

(b) What are the facilities provided in a plant and why planning of such facilities is important?

QUESTION 04

(a) "From the design point of view, a machine foundation should satisfy number of requirements". Briefly explain five such requirements.

(b) Explain with appropriate schematic diagrams the mechanism of the two types of vibration isolation in 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 $\frac{\eta N}{P}$, where η is the viscosity of oil, N is the rotational speed and P is the load. Using this graph explain the mechanisms of boundary and hydrodynamic lubrication.

(b) "The seizure of a journal bearing is almost always due to overheating". Briefly explain the common causes for overheating.

QUESTION 06

(a) Name and discuss three important properties of lubricating oil.

(b) List the different techniques of oil lubrication and explain three such techniques in detail with clearly drawn sketches.

QUESTION 07

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

(b) How would you assess the quality of a weld with the facilities available in a ordinary workshop.

QUESTION 08

(a) "The National Environmental Act" is the comprehensive environmental statute in Sri Lanka. What objectives are sought to be achieved by this legislation.

(b) Any development Project which would have an impact on the environment requires approval from the Central Environmental Authority before implementation. For this purpose an Environmental Impact Assessment (EIA) needs to be carried out. Explain what factors are considered in an EIA.

QUESTION 09

(a) Environmental pollution has become a serious problem in Sri Lanka over the last two decades. What reasons can you attribute for this problem?

(b) Disposal of solid waste has become a major concern of environmentalists. What are the environmentally friendly methods of disposal of solid waste?

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