

**THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF ENGINEERING TECHNOLOGY
DIPLOMA IN TECHNOLOGY – LEVEL 04
FINAL EXAMINATION 2005/2006**



**MEX 4234 / MED 2205
PLANT MAINTENANCE AND WORK SERVICES – PART B**

**DATE : 3rd April 2006
TIME : 1015 HRS. – 1230 HRS.
DURATION : TWO HOURS AND FIFTEEN MINUTES.**

ANSWER ANY FIVE (5) QUESTIONS ONLY. ALL QUESTIONS CARRY EQUAL MARKS

Question 1

- (a) What are the cost elements covered under life cycle cost of an asset?
- (b) What is contract maintenance and why do some firms prefer the implementation of contract maintenance?
- (c) What are the advantages and disadvantages of decentralized maintenance?

Question 2.

- (a) Do you think that machine foundations are more complex than ordinary foundations? Give reasons for your answer.
- (b) As the factory engineer you are called upon to install a 70 ton power press. What special requirements should you consider regarding the foundation when installing the press?

Question 3.

- (a) Describe the different welding processes commonly applied for repair and maintenance of machinery.
- (b) Draw and label an oxy - acetylene cutting torch. How does it differ from the oxy - acetylene welding torch?
- (c) Explain how you perform metal spray welding in a workshop. Under what circumstances do we repair components by metal spray welding?

Question 4

- (a) Explain briefly the methods available for purification of air.
- (b) Give the range of particle sizes of impurities that can be purified by the above methods.
- (c) Discuss briefly the advantages and disadvantages of the methods discussed.

Question 5

Write short notes on any five (5) of the following.

- (i) Detergency
- (ii) Water table
- (iii) Incineration
- (iv) Noise pollution
- (v) Cyclone separators
- (vi) Gasifier
- (vii) Black box approach in plant layout.

Question 6

- (a) What are the different criteria that enable evaluation of the alternative solutions in plant layout?
- (b) List the factors that influence in deciding a layout of a machine shop and discuss any three of them.
- (c) What are the facilities to be provided in a plant and why planning of such facilities are important?

Question 7

- (a) Name the types of pumps generally used for sewage handling.
- (b) Explain briefly with sketches the working mechanism of each of the above pumps
- (c) Write the advantages of using pneumatic ejection pump in sewerage pumping.

Question 8

- (a) If you suspect that a rolling bearing on a power transmission shaft does not function properly and shows signs of imminent failure, explain how you would practically monitor and diagnose the defects.
- (b) Discuss following methods of lubrication.
 - i) Gravity
 - ii) Hydrodynamic
 - iii) Splash.

Use sketches to explain your answer. Give an application in each case.

Question 9

- (a) Explain with the help of a flow process diagram purification process of river water or sea water to obtain drinking water.
- (b) How does water get its dissolved oxygen?
- (c) What are the organic pollutants discharged as effluents from industries to the environment? Discuss how such pollutants affect the environment.

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