

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Mechanical Engineering



0045

Study Programme : Bachelor of Science Honours in Engineering
Name of the Examination : Final Examination
Course Code and Title : DMX5211 Plant Maintenance
Academic Year : 2024/25
Date : 22nd February 2026
Time : 1330-1630h
Duration : 3 hours

General instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Five (5)** questions in **Two (2)** pages.
3. Answer **all** questions.
4. All questions carry equal marks.
5. Answer for each question should commence from a new page.
6. This is a Closed Book Test (CBT).

Question 01

- a. State and explain any four objectives of plant maintenance in an industrial organization. (4 Marks)
- b. Draw a neat sketch of the Bath-Tub Curve for a mechanical component. (3 Marks)
- c. Name the three stages shown in the curve and briefly explain each stage. (6 Marks)
- d. List and briefly explain four common causes of failure in industrial equipment. (4 Marks)
- e. State two suitable maintenance actions for each stage of the Bath-Tub Curve. (3 Marks)

Question 02

- a. Explain what is meant by Scheduled Maintenance. (4 Marks)
- b. Explain difference between Scheduled Maintenance and Condition-Based Maintenance. Highlight when and why you would choose each method. (8 Marks)
- c. List four parameters that are commonly used to monitor the condition of machines. (4 Marks)
- d. Briefly explain how each parameter helps to identify machine problems. (4 Marks)

Question 03

- a. Explain the role of the maintenance department in ensuring safety in an industrial plant. (6 Marks)
- b. Name and explain the working principle of any two air pollution control devices used in industries. (6 Marks)
- c. List four causes of industrial fires. (4 Marks)
- d. What is meant by spontaneous combustion? (4 Marks)
Explain briefly how it can create a fire hazard in industries.

Question 04

- a. Explain the importance of lubrication in machinery with respect to efficient operation and service life. (6 Marks)
- b. Explain the following terms: (6 Marks)
 - (i) Boundary lubrication
 - (ii) Hydrodynamic lubrication
- c. List and briefly explain four important properties of a good bearing material. (4 Marks)
- d. State two common causes of bearing overheating in machines. (4 Marks)

Question 05

- a. What is the main concept of Total Productive Maintenance (TPM)? (3 Marks)
- b. State any four benefits of practicing Total Productive Maintenance (TPM) in an organization. (4 Marks)
- c. List the Big Six Wastes that are eliminated by a TPM system. (6 Marks)
- d. What is a Computerized Maintenance Management System (CMMS)? (3 Marks)
- e. State any three uses of a Computerized Maintenance Management System (CMMS) in maintenance management. (4 Marks)

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