ASSIGNMENT

Course Code	**:**	**MMPO-007**
Course Title	**:**	**Maintenance Management**
Assignment Code	**:**	**MMPO-007/TMA/JULY/2026**
Coverage	**:**	**All Blocks**

Note: Attempt all the questions and submit this assignment to the Coordinator of your study centre. Last date of submission for July 2026 Semester is 31st October 2026 and for January 2027 Semester is 30th April 2027.

1. Prepare a suitable maintenance costing framework for a medium-sized manufacturing organization and explain how allocation and apportionment of maintenance overheads can improve cost control and budgeting effectiveness.

2. Discuss how Reliability-Centred Maintenance (RCM) can improve equipment performance and operational efficiency in an industrial organization.

3. Discuss the relationship between sustainability, safety and maintenance management and explain the elements of sustainable and safe maintenance practices such as digital record keeping, prognostic tools, diagnostic tools and environmental impact management.

4. How can modern Maintenance 4.0 technologies and IT-enabled maintenance systems contribute toward effective maintenance management, improved decision-making and reduced downtime? Explain with suitable examples.

5. Write a short note on the followings:
   a. Zero Based Budgeting (ZBB) in Maintenance
   b. Preventive Maintenance and Breakdown Maintenance
   c. Green Maintenance and Sustainable Development
   d. Bathtub Curve in Reliability Engineering

1. Prepare a suitable maintenance costing framework for a medium-sized manufacturing organization and explain how allocation and apportionment of maintenance overheads can improve cost control and budgeting effectiveness.

Answer

A maintenance costing framework should show where maintenance money is spent, which equipment or department caused the expenditure, and whether the expenditure is giving useful results. For a medium-sized manufacturing organization, the system need not be very complicated. It should be detailed enough to identify avoidable cost, but simple enough for maintenance supervisors, stores and accounts staff to use regularly. The framework can be built around cost centres, cost elements, work orders and a periodic comparison of actual cost with budget.

1. Establish maintenance cost centres

The plant may first be divided into suitable maintenance cost centres such as machining, fabrication, assembly, utilities, material handling and common services. Major machines with high maintenance expenditure can also be treated as separate cost objects. Every maintenance job should carry a work-order number and the equipment or department code. This creates a clear link between the work done and the cost incurred.

2. Collect the main elements of maintenance cost

The organization should collect direct labour cost, spare parts and consumables, outside repair or contract charges, special tools and hired equipment, utilities used for maintenance, and the administrative cost of the maintenance department. Labour time can be taken from job cards or digital work orders, while material cost can be obtained from stores issue notes. Repeated collection in the same format makes month-to-month comparison possible.

Cost element	Typical record/source	Treatment
Direct maintenance labour	Time sheet / work order	Allocate to the machine or department
Spare parts and repair material	Stores issue / purchase record	Allocate where directly identifiable