

1. Mechatronics (2 Weeks)

Q1: What does "mechatronics" combine?

- a. Biology and chemistry
- b. Mechanical, electronics, and computing systems
- c. Civil engineering and construction

Answer: b) Mechanical, electronics, and computing systems

Q2: Which of these is a key component of a mechatronics system?

- a. Hydraulic pump
- b. Microcontroller
- c. Cement mixer

Answer: b) Microcontroller

Q3: What is the role of sensors in mechatronics?

- a. Generate power
- b. Convert physical quantities into electrical signals
- c. Support structural weight

Answer: b) Convert physical quantities into electrical signals

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Q10: What type of control system is most commonly used in mechatronics?

- a. Open-loop
- b. Closed-loop
- c. Manual control

Answer: b) Closed-loop

2. Reliability Engineering (3 Weeks)

Q11: What is the goal of reliability engineering?

- a. Enhance safety features
- b. Ensure systems perform without failure for a specific period
- c. Reduce operational costs

Answer: b) Ensure systems perform without failure for a specific period

Q12: MTBF in reliability engineering stands for:

- a. Mean Time Before Failure
- b. Maximum Time Between Failure
- c. Mean Time Between Failure

Answer: c) Mean Time Between Failure

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Q20: Which tool is often used in reliability engineering to identify root causes of failures?

- a. Fishbone Diagram
- b. Flowchart
- c. Histogram

Answer: a) Fishbone Diagram

3. Operation and Maintenance of Crane (4 Weeks)

Q21: What is the primary purpose of a crane?

- a. Transport passengers
- b. Lift and move heavy loads
- c. Mix construction materials

Answer: b) Lift and move heavy loads

Q22: Which type of crane is most commonly used in construction?

- a. Tower crane
- b. Gantry crane
- c. Jib crane

Answer: a) Tower crane

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Q30: Which maintenance activity is crucial for safe crane operation?

- a. Periodic lubrication of components
- b. Painting the crane's exterior
- c. Using it below load capacity

Answer: a) Periodic lubrication of components

4. Advancement in Rolling Stock Technology (5 Weeks)

Q31: What does "rolling stock" refer to?

- a. Locomotives and railway vehicles
- b. Spare parts for trains
- c. Control room equipment

Answer: a) Locomotives and railway vehicles

Q32: Modern rolling stock technology focuses on:

- a. Increasing weight of carriages
- b. Enhancing energy efficiency
- c. Manual control systems

Answer: b) Enhancing energy efficiency

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Q40: What is the main advantage of regenerative braking in rolling stock?

- a. Higher speed
- b. Energy recovery and conservation
- c. Reduced passenger discomfort

Answer: b) Energy recovery and conservation

5. Welding and Non-Destructive Testing (6 Weeks)

Q41: Which welding method uses an electrode that melts to form the weld?

- a. TIG welding
- b. MIG welding
- c. Both a and b

Answer: c) Both a and b

Q42: What is the purpose of non-destructive testing (NDT)?

- a. Enhance weld appearance
- b. Identify flaws without damaging the component
- c. Strengthen joints

Answer: b) Identify flaws without damaging the component

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Q50: Which NDT method uses ultrasonic waves?

- a. Magnetic particle testing
- b. Ultrasonic testing

- c. Radiographic testing

Answer: b) Ultrasonic testing

6. E-Office & Manual of Office Procedure (6 Weeks)

Q51: What is the key feature of an e-office?

- a. Filing paper records
- b. Digital documentation and workflow automation
- c. Manual correspondence

Answer: b) Digital documentation and workflow automation

Q52: What is the main goal of the Manual of Office Procedure?

- a. Enhance staff welfare
- b. Streamline office workflows and processes
- c. Increase paper usage

Answer: b) Streamline office workflows and processes

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Q60: What system is used for tracking correspondence in e-offices?

- a. Paper File Register
- b. File Management System (FMS)
- c. Cloud Backup System

Answer: b) File Management System (FMS)
