

Roll No.

3796

**B. Tech. 8th Semester (Mech. Engg.)
Examination – May, 2026**

INDUSTRIAL AUTOMATION

Paper : PCC-ME-402G

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Unit. Question No 1 is *compulsory*. All questions carry equal marks.

1. Short Questions :

2.5 × 6 = 15

- (a) Principles of automation.
- (b) Automated Manufacturing Systems.
- (c) What is group technology ?
- (d) Product manufacturability.
- (e) What is main difference between active and passive devices ?
- (f) What is use of AI in mechanical industries ?

3796-1500-(P-3)(Q-9)(26)

P. T. O.

UNIT - I

2. Explain automation in production Systems with principles of automation and basic elements of an automated system. 15
3. Explain material handling systems used in industrial automation. Describe working and applications of (i) Rotary feeders, (ii) Vibratory feeders. 15

UNIT - II

4. Explain the concept of Automated Manufacturing Systems and discuss manufacturing cells, Group Technology (GT). 15
5. Describe Flexible Manufacturing System (FMS) with components, planning and implementation, advantages and disadvantages. 15

UNIT - III

6. Explain evaluation of automatic production systems, product manufacturability, active and passive devices. 15
7. (a) Explain Pneumatic and Hydraulic Control Circuits used in automation. 8
(b) Discuss : Pneumatic sensors and amplifiers. 7

UNIT - IV

8. Explain modeling and simulation in manufacturing plant Automation with need for modeling and applications. 15
9. Explain the following : $5 \times 3 = 15$
 - (a) Artificial Neural Networks
 - (b) Fuzzy decision and control
 - (c) Robotics applications in automation.

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**B. Tech. 8th Semester (Mech. Engg.)
Examination – May, 2026**

PLANT MAINTENANCE ENGG.

Paper : PEC-ME-404G

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Short Questions :

2.5 × 6 = 15

- (a) What is plant commissioning ?
- (b) Define condition monitoring.
- (c) What is decentralized maintenance organization ?
- (d) List two advantages of good plant layout.
- (e) Define codification in spare parts management.
- (f) What is VED analysis ?

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P. T. O.

UNIT - I

2. Explain the concept of plant engineering maintenance. Discuss installation, commissioning, and maintenance planning functions. 15
3. Describe maintenance organization in industry. Explain centralized and decentralized maintenance systems with their advantages and disadvantages. 15

UNIT - II

4. Explain time-based maintenance and condition-based maintenance in detail. Compare their advantages and limitations. 15
5. Discuss contractual maintenance and failure-based maintenance. Explain the hurdles in formulating an effective maintenance strategy. 15

UNIT - III

6. Discuss the factors governing the selection of facility location. Explain the procedure for facility location study. 15
7. Explain flow patterns in facilities and assembly lines. Discuss their importance in efficient plant layout design. 15

UNIT - IV

8. Explain different methods of spare parts classification such as SDE analysis, CIN analysis, and XYZ analysis. 15
9. Discuss maintenance system optimization. Explain codification, standardization, and the advantages and barriers of standardization. 15

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B. Tech. 8th Semester (Mechanical Engg.)

Examination – May - 2026

Power Plant Engineering

Paper : PEC-ME-412-G

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

1. Answer the following questions : $2.5 \times 6 = 15$

- (a) What do you mean by run-off ?
- (b) What are the functions of electrostatic precipitator ?
- (c) Explain significance of load curve in power plant operation.

- (d) Write *two* advantages of nuclear power plants.
- (e) What is OTEC ?
- (f) What are fuel cells ?

UNIT – I

- 2. Explain the various energy resources available for power generation. Discuss the selection criteria of power plants. Also explain basic thermodynamic cycles used in power plants. 15
- 3. Describe the layout, components and working of a hydroelectric power plant. Also explain the site selection factors for hydroelectric plants. 15

UNIT – II

- 4. Explain the working of a modern thermal power plant. Describe coal handling and ash handling systems used in steam power plants. 15
- 5. Explain combined cycle power plants. Discuss the working of constant pressure gas turbine power plants. 15

UNIT – III

- 6. Explain the principles of nuclear energy and describe different types of nuclear reactors such as PWR and BWR. 15

- 7. What is power plant economics ? Explain the economic load sharing. What are various tariffs methods used for the calculation of electrical energy ? 15

UNIT – IV

- 8. Explain solar energy power generation systems. Discuss solar collectors used for low medium and high temperature applications. 15
- 9. Explain the working principles of the following direct energy conversion systems : $3 \times 5 = 15$
 - (a) Magneto Hydrodynamic (MHD) Power Generation
 - (b) Thermoelectric Power Generation
 - (c) Thermionic Power Generation

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**B. Tech. 8th Semester (Mech. Engg.)
Examination – May, 2026**

AUTOMOBILE ENGINEERING

Paper : PEC-ME-420G

Time : Three hours] [Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No 1 is *compulsory*. All questions carry equal marks.

1. Short Questions : $2.5 \times 6 = 15$
- (a) How automobiles can be classified based on body style.
 - (b) Write short note on clutch.
 - (c) What is Slip Joint ?
 - (d) Name various factors influencing ride comfort.

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P. T. O.

- (e) What is Capacity Rating of battery ?
- (f) Discuss the Sources of Atmospheric Pollution from the automobile.

SECTION - I

2. Discuss the requirements of Automobile Body. Explain the various types of Vehicle Frame, Separate Body Frame, Unitized Body, Car Body Styles, Bus Body & Commercial Vehicle Body styles. 15

3. What is function of a clutch in an automobile ? Explain the principle of friction clutches with the help of neat diagrams. What are the various factors that affect the torque transmission on a clutch? Explain. 15

SECTION - II

4. Discuss the Objective of the Gear Box. Explain the constant Mesh gear box with the help of simple diagram. 15
5. Discuss clearly the constructional details and operation of various rear axle drives, with the engine placed at the front. Illustrate your answer with simple and neat sketches. 15

SECTION - III

6. Differentiate clearly between the functions of a spring and a shock absorber. Explain the construction and working of a telescopic type shock absorber with the help of neat diagrams. 15

7. Explain the Manual steering systems with neat sketch. 15

SECTION - IV

8. What do you mean by brake, give Classification of Brakes. Explain the Principle and constructional details of Drum Brake. 15

9. What are the Purpose and Operation of Charging Systems ? Explain. 15

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3711

**B. Tech. (Computer Science & Engg.)
8th Semester
Examination – May, 2026**

QUALITY ENGINEERING

Paper : PEC-ME-410-G/ OEC-ME-410-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) Define quality and explain its importance in industry.
- (b) What are quality characteristics ?
- (c) Distinguish between variable data and attribute data.

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- (d) What is frequency distribution?
- (e) Write *two* features of ISO 9000 quality system.
- (f) What is Six Sigma approach ? $2.5 \times 6 = 15$

UNIT - I

2. Explain the basic concepts of quality. Discuss quality function, quality characteristics, quality traits and applications of quality concepts in industry. 15
3. What is Total Quality Control (TQC) ? Explain its elements and discuss the role of management in implementing quality circles. 15

UNIT - II

4. Explain the concept of variation in statistical quality control. Discuss frequency distribution and graphical representation of frequency distribution. 15
5. Explain the following probability distributions used in quality engineering : $5 \times 3 = 15$
- (a) Binomial Distribution
- (b) Poisson Distribution
- (c) Hyper geometric Distribution

UNIT - III

6. Explain the quality systems and the need for standardization. Discuss the history, features and steps for registration of ISO 9000 series standards. 15
7. Explain automated inspection systems and industrial inspection. Discuss the different forms of inspection used in manufacturing industries. 15

UNIT - IV

8. Explain the concept of Total Quality Management (TQM). Discuss its characteristics, relevance and approaches for implementation. 15
9. Write short notes on the following quality improvement approaches : $5 \times 3 = 15$
- (a) Kaizen
- (b) Just-In-Time (JIT)
- (c) 5-S Technique