Roll No. .....

3805

B. Tech. 8th Semester (Mechanical Engg.) Examination – May, 2023

AUTOMOBILE ENGINEERING

Paper : PEC-ME-420-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. Explain the following : $6 \times 2.5 = 15$

(a) Wet Type & Dry Types clutch.

(b) What is the necessity of a gear box ?

(c) Universal Joint.

(d) Classify different types of wheels.

(e) What is camber in automobile ?

(f) Sources of Atmospheric Pollution from the automobile.

UNIT – I

2. What is an Automobile ? How front engine rear drive is different from front engine front drive, explain in detail. 15

3. Explain the working of a single plate clutch with the help of a diagram. 15

UNIT – II

4. Describe the working of a synchromesh gearbox with the help of a sketch. 15

5. Explain the following :

   (a) Torque tube drive. 8

   (b) Radius rod. 7

UNIT – III

6. What is the purpose of independent suspension ? Explain various methods to achieve the same in front and rear axle of car. 15

7. What is wheel alignment ? Discuss various factors of wheel alignments. 15

UNIT – IV

8. State the various functions performed by an automobile tyre. Discuss the properties expected in the same. 15

9. Write short note on :

   (a) Evaporative Emission Control. 8

   (b) Exhaust Gas Recirculation (ECR) Systems.

Roll No. .....

3796

B. Tech. 8th Semester (Mechanical Engg.) Examination – May, 2023

INDUSTRIAL AUTOMATION

Paper : PCC-ME-402-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. Write a short notes on : $2.5 \times 6 = 15$

   (a) Principles of automation

   (b) Simulation

   (c) Vibratory feeder

   (d) Group Technology

   (e) Sensors V s actuator

   (f) Artificial intelligence

UNIT – I

2. (a) Discuss production system on the basis of facilities & support systems availability. 10

   (b) Discuss the levels and types of automations. 5

3. (a) Discuss principal of material handling system and equipment used for it. 7.5

   (b) Discuss the design considerations of material handling system. 7.5

UNIT – II

4. (a) Discuss requirement of storage system. 7.5

   (b) Why automatic data capturing is required in storage system ? 7.5

5. (a) Discuss group technology and its application. 7.5

   (b) Discuss components, applications and benefits of flexible manufacturing systems. 7.5

UNIT – III

6. (a) What do you mean by evaluation of automatic production ? Explain. 10

   (b) What is Sensors, Actuators & Transducer ? 5

7. (a) Discuss the desirable features for selecting measuring devices used in automated system. 7.5

(b) Discuss the definition, operations and theorems of Boolean algebra. 7.5

UNIT – IV

8. Discuss Fuzzy logics with application. 15

9. Discuss the modern techniques used in manufacturing automation for controlling purpose. 15

Roll No. .....

3798

B. Tech. 8th Semester (Mechanical Engg.) Examination – May, 2023

PLANT MAINTENANCE ENGINEERING

Paper : PEC-ME-404-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. Explain the following :

   (a) Corrective Function 5

   (b) Productive Maintenance 5

   (c) Functions of Spare parts 5

UNIT – I

2. Define the term Maintenance or Plant engineering. What are the chief activities of this department in an organization ? 15

3. Distinguish between the decentralization and delegation, with suitable examples. Do you think that decentralization is helpful in increasing the efficiency of the plant engineering department ? Discuss your answer with supporting evidences or examples, 15

UNIT – II

4. (a) Distinguish between No Maintenance technique and Operate to Failure and Corrective maintenance 8

   (b) Discuss different types of failures with suitable classification. 7

5. "Prevention is better than cure" – How do you support with reference to the plant engineering functions ? 15

UNIT – III

6. What are the principal factors affecting the location choice ? What are different types of facility location problem ? 15

7. What are the major criteria taken into consideration for placing a manufacturing firm making lighter items ? 15

UNIT – IV

8. (a) Explain V-E-D, C-I-N and V-E-I-N analyses, Discuss their relevance to the maintenance department. 8

   (b) Enumerate the factors leading to a high failure rate in non-standard items. 7

9. What is codification ? What is its significance in maintenance spare parts management ? What are the advantages of codification ? 15

Roll No. .....

3801

B. Tech. 8th Semester (Mechanical Engg.) Examination – May, 2023

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. Explain the following :

(a) Explain surg tank. 2.5

(b) Explain electrostatic precipitator. 2.5

(c) What is tariffs ? 2.5

(d) What is thermionic power generation ? 2.5

(e) Explain various type of power plant. 2.5

(f) What is PWR ? 2.5

UNIT – I

2. Explain Economizer. Compare steam thermal power plant with hydroelectric power plant. 15

3. Discuss the construction and operation of hydroelectric power plant with neat sketch. 15

UNIT – II

4. What is pulverized fuel ? Discuss PFBC system with neat sketch. 15

5. Explain combined cycle gas turbine power plant. What are the parameters affecting thermodynamic efficiency of combined cycles ? 15

UNIT – III

6. Explain CANDU and give advantage and limitations of nuclear power plant. 15

7. Discuss waste disposal of nuclear power plant. Explain economics of load sharing and load curve. 15

UNIT – IV

8. Discuss OTEC and wind power plants with neat sketch. 15

9. What is thermoelectric power generation ? Explain working of fuel cell with neat sketch. 15

Roll No. .....

3711

B. Tech. 8th Semester (Computer Science & Engg.) Examination – May, 2023

QUALITY ENGINEERING

Paper : PEC-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 Section. Question No. **1** is ***compulsory***. All questions carry equal marks.

1. (a) Explain Quality Traits.

(b) Elements of TQC.

(c) Discuss Poisson Distribution.

(d) Discuss Industrial Inspection.

(e) Explain TQM philosophies.

(f) Discuss about importance of quality in industry.

$2.5 \times 6 = 15$

P. T. O.

SECTION – A

2. Define and explain the objectives of quality control. 15

3. Explain in brief : 15

   (a) Role of feedback in quality control

   (b) Quality function

SECTION – B

4. Compute the average and the standard deviation of the following distribution which shows the result of distribution of resistance of 500 unit of electrical product : 15

Resistance Ohms	Frequency
2.7 – 2.9	02
3.0 – 3.2	16
3.3 – 3.5	46
3.6 – 3.8	88
3.9 – 4.1	138
4.2 – 4.4	113
4.5 – 4.7	71
4.8 – 5.0	22
5.1 – 5.3	04

5. Explain how you will find out the probability of obtaining x defectives in a sample of n items by using Hypergeometric distribution. 15

SECTION – C

6. Describe briefly the ISO : 9000 series standard in general. 15

7. Describe the various steps necessary for obtaining ISO : 9000 standard registration. 15

SECTION – D

8. Give various definition of TQM and explain Juran's ten steps to quality improvement. 15

9. Discuss and explain the concept of Parameter Design and Robust Design according to Taguchi philosophy. 15
