

Roll No									
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1 *A* What are conventional and non-conventional energy sources? Describe the fossil fuel as a conventional energy source [7M]

B Explain solar radiation on tilted surface. [7M]

OR

2 *A* Explain in brief the need for exploiting renewable energy sources. [7M]

B Explain the working of Pyranometer with the help of neat sketch [7M]

SECTION-II

3 *A* What are the characteristic features of a collector system? [7M]

B Classify different solar energy storage systems and explain them in brief [7M]

OR

4 *A* What is “Solar Pond”? Explain its working principle with a neat diagram [7M]

B Explain the principle of solar photovoltaic power generation. [7M]

SECTION-III

5 *A* State the advantages and disadvantages of wind energy [7M]

B Explain with a neat sketch the construction and working vertical axis wind mill. [7M]

OR

6 *A* Compare and contrast the biomass and biogas [7M]

B Describe the working of floating dome type biogas plant and state its advantages [7M]

SECTION-IV

7 *A* With line diagram, explain the heat extraction from hot dry rocks [7M]

B Draw the line diagram and explain the working of hybrid OTEC cycle [7M]

OR

8 *A* What is the source of tidal energy? What is the minimum tidal range required for a practical tidal plant? [7M]

B Explain the working of single basin tidal power plant. [7M]

SECTION-V

9 *A* Explain the concept of joule Thompson effect and its applications [7M]

B Explain the working details of MHD generator [7M]

OR

10 *A* Explain (i) Seebeck effect [3M]

(ii) Peltier effect [4M]

B Draw the line diagram and explain the working of hydrogen fuel cell. [7M]

Code No: R18A0331

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R18

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech - II Semester Advance Supplementary Examinations, June 2023

Automobile Engineering

(ME)

Roll No									
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1 *A* What is chassis and explain with neat sketch. [7M]
B Explain front engine rear wheel drive's salient features, advantage and disadvantages. [7M]

OR

- 2 *A* Discuss the factors that affect the resistances to vehicle motion. [7M]
B What are the lubricating systems in I.C engines? Explain any one lubricating system with neat sketch. [7M]

SECTION-II

- 3 *A* Explain the functioning of simple carburettor. [7M]
B Briefly explain the fuel supply system of petrol engine. [7M]

OR

- 4 *A* How can turbo-charging improve performance of an engine? [7M]
B Explain the key features and working principle of electronic ignition system. [7M]

SECTION-III

- 5 *A* Explain the semi centrifugal clutch with neat sketch. [7M]
B Explain the working principle of synchromesh gear box with neat sketch. [7M]

OR

- 6 *A* Explain the working of universal joint with neat sketch. [7M]
B Explain the working principle of torque tube drive with neat sketch. [7M]

SECTION-IV

- 7 *A* Sketch and explain Davis steering Mechanism. [7M]
B Explain the working of power steering with neat sketch. [7M]

OR

- 8 *A* Explain the functioning of independent front wheel suspension system with torsion bar in an automobile. [7M]
B Discuss about electronic brake force distribution (EBD). [7M]

SECTION-V

- 9 *A* What are the alternative fuel energy sources for IC engines? [7M]
B What is the major pollution control technique in IC engines? [7M]

OR

- 10 Explain Combustion and Emission Characteristics of SI and CI engines with these alternate fuels. [14M]

Code No: R18A0333

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R18

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech - II Semester Advance Supplementary Examinations, June 2023

Maintenance and Safety Engineering

(ME)

Roll No									
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1 Explain the possible steps and measures to be taken by factory Management and Government with respect to industrial safety. [14M]

OR

2 Explain in detail about Safety committees and structure. [14M]

SECTION-II

3 A What is personal protective equipment? Explain different PPE used for different purposes the accidents in any industry. [7M]

B Explain procedure for accident reporting. [7M]

OR

4 State the type of hazards and explain any three in detail with possible causes and remedial actions. [14M]

SECTION-III

5 Explain in brief
(i) Explosive Act [4M]

(ii) Boiler Act, [5M]

(iii) ESI Act. [5M]

OR

6 What are methods of controlling industrial noise and protection of employees against it. [14M]

SECTION-IV

7 Explain in detail about Basic Principles of maintenance planning [14M]

OR

8 Describe the Reliability Centred maintenance Benefits and Reasons for its failure. [14M]

SECTION-V

9 What is fault tree analysis and Root cause analysis. Explain in detail. [14M]

OR

10 What is total productive maintenance? Explain its main features and benefits. [14M]

Code No: R18A0335

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R18

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech - II Semester Regular/Supplementary Examinations, April 2023

Renewable Energy Sources

(ME)

Roll No									
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1 A What are the reasons for variation in solar radiation reaching the earth and that received outside the earth atmosphere? [7M]

B Explain the working of Pyranometer with the help of neat sketch [7M]

OR

2 A What is Solar constant and explain terrestrial and extra-terrestrial solar radiation? [7M]

B Explain the working of sunshine recorder with a neat sketch. [7M]

SECTION-II

3 A Discuss how the concentrating collectors are advantages over flat plate collectors [7M]

B Give brief description of a flat-plate collector. [7M]

OR

4 A Classify different solar energy storage systems and explain them in brief [7M]

B With a neat sketch explain the working of solar distillation process. [7M]

SECTION-III

5 A Enumerate the factors which should be given due consideration while selecting the site for WECS [7M]

B Explain with a neat sketch the construction and working horizontal axis wind mill. [7M]

OR

6 A Explain with a schematic diagram the “Anaerobic digestion system”. [7M]

B Explain with a neat sketch the construction and working of fixed dome biogas plant. States also its advantages and disadvantages [7M]

SECTION-IV

7 A Describe the open cycle OTEC power plant and give the status of OTEC plants in India [7M]

B What are the possible sources of geothermal pollution? How to avoid them? [7M]

OR

8 A What are the main hurdles in the development of tidal energy? [7M]

B Explain the closed cycle OTEC plant and list out the major problems associated OTEC [7M]

SECTION-V

9 A What is the principle of MHD power generation and discuss about the main parts of an MHD generator? [7M]

- B** With the help of a diagram explain the operation of closed cycle MHD [7M]
generating system
- OR
- 10 A** What are the advantages, disadvantages and applications of fuel cell? [7M]
B Explain the principle of operation of an alkaline fuel cell with the aid of a [7M]
diagram.

Code No: R18A0331

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R18

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech - II Semester Regular/Supplementary Examinations, April 2023

Automobile Engineering

(ME)

Roll No									
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1 *A* Sketch the layout of four wheels automobile and indicate major components. [7M]
 B Explain with a simple schematic diagram, working of a four wheel drive in automobile. [7M]

OR

- 2 *A* Explain about service details of valves and valve mechanism. [7M]
 B What are the basic requirements of engine servicing? [7M]

SECTION-II

- 3 *A* Explain the working principle of a CRDI with neat sketch [7M]
 B Explain fuel injection pump in CI engines. [7M]

OR

- 4 *A* What are the pollution standards for automobile? [7M]
 B How can turbo-charging improve performance of an engine? [7M]

SECTION-III

- 5 *A* Explain working of a constant mesh gear box with a neat sketch. [7M]
 B Explain the gear shift mechanism of a typical gear box. [7M]

OR

- 6 *A* Explain the working principle of hotch kiss drive with neat sketch. [7M]
 B Explain the construction and working of a torque converter with neat sketch [7M]

SECTION-IV

- 7 *A* Explain the working principles of hydraulic brake with neat sketch. [7M]
 B Write short note on ABS and Traction control. [7M]

OR

- 8 *A* Explain the pneumatic or air brakes with neat sketch. [7M]
 B Explain the construction and working of leaf springs. Why do we require helper springs. [7M]

SECTION-V

- 9 *A* Discuss about Liquefied Petroleum Gas (LPG). [7M]
 B What are the merits and demerits of alternative energy sources for automobile? [7M]

OR

- 10 *A* Write short notes on Bio-diesel and Bio-ethanol. [7M]
 B What are the advantages and disadvantages gasohol used in automobiles. [7M]

Code No: R18A0333

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R18

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech - II Semester Regular/Supplementary Examinations, April 2023

Maintenance and Safety Engineering

(ME)

Roll No									
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1 *A* List the different types of hazards for safety of industrial workers. [7M]
 B Describe the role of safety officer in maintenance work. [7M]

OR

- 2 *A* Explain the guide lines to improve safety in maintenance work? [7M]
 B Discuss the risk associated with industrial work. [7M]

SECTION-II

- 3 Explain in detail about Role of Safety Education and Training in industry. [14M]

OR

- 4 Discuss in detail “Prevention causes and cost of accident.” [14M]

SECTION-III

- 5 Role of ESI Act for industrial safety-Discuss in detail. [14M]

OR

- 6 Explain in detail methods of controlling chemical hazards [14M]

SECTION-IV

- 7 What is planned maintenance? State objectives and principles of planned maintenance. [14M]

OR

- 8 *A* The definition of Reliability has four key elements, Explain? [7M]
 B Explain maintenance strategy? [7M]

SECTION-V

- 9 Explain lubrication and leakage monitoring in detail. Also enlist the advantages of the same. [14M]

OR

- 10 Mention types of maintenance and explain features and merits-demerits of Preventive Maintenance. [14M]

Code No: R18A0335

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R18

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech- II Semester Advance Supplementary Examinations, July 2022

Renewable Energy Sources

(ME)

Roll No									
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Time: 3 hours

Max. Marks: 70

Answer Any Five Questions
All Questions carries equal marks.

- 1 Explain beam radiation, diffusion radiation and total radiation. [14M]
- 2 By how much has the global mean surface temperature changed over the past 50 years? Indicate some physical effects that explain most of this change, and give supporting evidence for your answer. [14M]
- 3 a) Explain the principle of conversion of solar energy to heat. Explain a flat plate solar collector. [7M]
b) Write a short note on paraboloidal dish collector. [7M]
- 4 a) Explain the working of solar pond electric power plant with neat diagram. [7M]
b) With the help of a neat sketch explain the working of a solar water heater. [7M]
- 5 a) What are the criteria for site selection of a windmill? [7M]
b) Sketch the diagram of a VAWT and explain the function of its main components. [7M]
- 6 a) What are the different forms of biomass available as biofuels? [7M]
b) Explain the process of production of biogas from biomass. What are the main advantages of anaerobic digestion of biomass? [7M]
- 7 a) What are the merits and demerits of geothermal energy? [7M]
b) Describe a hot dry rock geothermal resource power plant. [7M]
- 8 a) Discuss peltier effect, seebeck effect and Thomson effect. [7M]
b) Explain the working of a thermoelectric generator. [7M]

Code No: R18A0331

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)

R18

IV B.Tech- II Semester Advance Supplementary Examinations, July 2022
Automobile Engineering

(ME)

Roll No										
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Time: 3 hours

Max. Marks: 70

Answer Any **Five** Questions
All Questions carries equal marks.

- 1 Explain briefly about construction and working of common rail direct injection system with a neat sketch. And discuss the main limitations of it. [14M]
- 2 What is variable valve timing (VVT)? Explain the valve timing diagram of four stroke diesel engine with suitable diagram? [14M]
- 3 Explain in detailed about the difference between electronically controlled gasoline injection system for SI engines and Electronically controlled diesel injection system. [14M]
- 4 What are the emission norms in an automobile engine? Explain the Euro and BS standards in detailed. [14M]
- 5 a) Explain the construction and working of multi plate clutch. [7M]
b) Enumerate the advantages of fluid flywheel over the other types of clutches. [7M]
- 6 In detailed explain about Hotchkiss Drive and Torque Tube Drive with neat sketch. [14M]
- 7 With a neat sketch explain Steering geometry and types of steering gear box. [14M]
- 8 Explain how the hydrogen is used as a fuel in automobiles? Explain its advantages and limitations. [14M]

Code No: R18A0333

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R18

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech- II Semester Advance Supplementary Examinations, July 2022

Maintenance and Safety Engineering

(ME)

Roll No										
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Time: 3 hours

Max. Marks: 70

Answer Any **Five** Questions
All Questions carries equal marks.

- 1 What shall be the key features of engineering maintenance in the 21st century? [14M]
Discuss in detailed.
- 2 Describe the following maintenance strategies and their applications : [14M]
a)Run-to-failure, b)Time-based Maintenance and c)condition-based Maintenance
- 3 Explain in detailed about Education and training in safety by taking some [14M]
supporting points.
- 4 Give a brief note on Causes, Prevention and Proneness of Accidents in Industries. [14M]
- 5 State the list of Workmen's Compensation amending acts and adaptation orders. [14M]
- 6 Discuss different methods for industrial noise control. [14M]
- 7 What is maintenance planning? Explain the Basic Levels of Planning Process in [14M]
detailed.
- 8 What are the different maintenance methods that are commonly used in several [14M]
industries? Explain them in brief.

Code No: R18A0335

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R18

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech- II Semester Regular Examinations, May 2022

Renewable Energy Sources

(ME)

Roll No									
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1 Define solar constant. What are the reasons for variations in solar radiation reaching the earth and that received outside the earth atmosphere. [14M]

OR

2 a) What do you understand by solar radiation data? What is the need of solar radiation data? [7M]

b) What do you understand by latitude and longitude? [7M]

SECTION-II

3 a) How are solar collectors classified? What are the important features of a solar collector? [7M]

b) With the help of schematic diagram explain compound parabolic concentrator. [7M]

OR

4 a) What do you understand by solar distillation? Explain. [7M]

b) What is the principle of solar photovoltaic? Explain. [7M]

SECTION-III

5 What is wind energy? How are wind mills classified? Explain. What are the advantages and disadvantages of wind energy [14M]

OR

6 Explain the operation of IC engine with biogas and discuss their performance characteristics. [14M]

SECTION-IV

7 a) Discuss the various types of geothermal resources. [7M]

b) Explain the working of geothermal power plants. Discuss the various technical developments. [7M]

OR

8 a) Explain the closed cycle OTEC plant and list out the major problems associated OTEC. [7M]

b) Describe the construction and working of any one type of wave energy conversion machine. [7M]

SECTION-V

9 Explain Seebeck, Peltier and Thomson effects in relation to thermoelectric conversion. [14M]

OR

10 a) Explain the operation of an MHD generating system. [7M]

b) What are the requirements of materials used in an MHD generator? [7M]

Code No: R18A0331

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R18

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech- II Semester Regular Examinations, May 2022

Automobile Engineering

(ME)

Roll No										
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1 Explain the construction and working of a diaphragm type mechanical fuel pump with a neat schematic diagram? [14M]

OR

2 What is the importance of carburetor? Explain the working principle of carburetor in petrol engine with neat sketch? [14M]

SECTION-II

3 Explain in detailed about electronically controlled gasoline injection system for SI engines. Mention its advantages and disadvantages. [14M]

OR

4 How to control the air pollution of automobiles? Explain the difference between the Euro and BS standards. [14M]

SECTION-III

5 Explain the working principle of a device which is used to function as clutch and change in the torque by providing variable gear ratio? [14M]

OR

6 What is the need of using differential? Explain different types of differentials with suitable diagrams? [14M]

SECTION-IV

7 Why the Suspension System is important to an automobile? Explain any two advanced types of Suspension Systems neat diagram. [14M]

OR

8 Explain the working principle of a hydraulic braking system with a neat diagram. [14M]

SECTION-V

9 What are the advantages and disadvantages of natural gas and liquefied petroleum Gas? [14M]

OR

10 Explain the Combustion and Emission Characteristics of SI engines natural gas is used as a fuel. [14M]

Code No: R18A0333

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R18

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech- II Semester Regular Examinations, May 2022

Maintenance and Safety Engineering

(ME)

Roll No									
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1 In detailed explain the history of Industrial Safety and Management. [14M]

OR

2 Write a short note one the following: a) Safety committees and structure, b) Role of management and c) role of Govt. in Industrial safety. [14M]

SECTION-II

3 Why personal protective equipment (PPE) is provided to employees? Explain different types of PPE's available. [14M]

OR

4 Explain briefly about any seven Firefighting equipments. [14M]

SECTION-III

5 Discuss few points that how to control the risk of hazardous chemicals? [14M]

OR

6 What do you understand by occupational safety? How occupational safety creates new opportunities? And also explain how occupational safety affects company reputation and productivity? [14M]

SECTION-IV

7 Define maintenance. What is the Purpose of maintenance? And explain principle objectives in maintenance. [14M]

OR

8 Why an industry requires the maintenance manager? Explain the roles and responsibilities of maintenance manager in an industry. [14M]

SECTION-V

9 Write a note on : [14M]
a) Preventive Maintenance, b) Predictive Maintenance, c) Corrective Maintenance, d) Breakdown Maintenance.

OR

10 Explain how to implement total productive maintenance (tpm)? [14M]
