

R18

Code No: 157AQ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, December-2023/January-2024

AUTOMOBILE ENGINEERING

(Common to ME, MCT)

Time: 3 Hours

Max.Marks:75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- 1.a) Lubrication is essential in the moving parts of automobile. Justify. [2]
- b) What is the function of nozzle in the fuel injection system? [3]
- c) How does thermostat function in cooling system? [2]
- d) Describe the importance of voltage regulator in automobile? [3]
- e) What are different types of material used for manufacture of tyres? [2]
- f) Why shock absorbers are required for automobiles? Explain. [3]
- g) Explain the important characteristics required for good brake fluid. [2]
- h) What is combined angle toein? Explain its function. [3]
- i) How to make use of the solar energy for automobiles? [2]
- j) What are the merits of hydrogen to be used as alternate fuel? [3]

PART – B

(50 Marks)

- 2.a) What are the different activities done during engine servicing of an automobile? Explain their standards.
- b) Differentiate between CRDI Engine and TDI engine based on their operating principles. [5+5]

OR

- 3.a) How does the MPFI engine function? Draw the schematic diagram and explain.
- b) Explain the major differences between indirect injection system and direct injection system. [5+5]

- 4.a) Describe the principle of operation of evaporative cooling system used in automobile engines.
- b) Draw the schematic layout of magneto coil ignition system and explain the principle along with its demerits. [5+5]

OR

- 5.a) Explain the bendix drive mechanism solenoid switch and describe the importance.
- b) Draw the circuit diagram for the electric operations of horn, wiper and other components. [5+5]

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6.a) What are different types of gear boxed used for automobile transmission? Explain any one type of mechanism.

b) Differentiate between centrifugal clutches and magnetic clutches along with their limitations. [5+5]

OR

7.a) Describe the rigid axle suspension system used for the automobile engine by drawing the suitable line diagram.

b) Explain the independent suspension system used in automobile for all the wheels separately. [5+5]

8.a) How does the pneumatic and hydraulic brake system work? Describe them with suitable circuit diagrams.

b) Describe the Davis steering gear mechanism used for the operation of steering system and explain its advantages. [5+5]

OR

9.a) What are different steering linkages required for making the steering gear mechanism? Explain them.

b) What is the role of master cylinder in the braking system of an automobile? Explain. [5+5]

10.a) What are different techniques to be adopted to control the pollution generated by the automobiles? Explain.

b) Describe different alternate fuels used for automobile engines along with their advantages and limitations. [5+5]

OR

11.a) What are different standards suggested by the Indian Government in order to minimize the pollution level in environment? Explain.

b) Describe the standard vehicle maintenance practice step by step with suitable examples. [5+5]

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