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Total Number of Pages: 02

Course: B.Tech
Sub_Code: RME5D001

5th Semester Regular/Back Examination: 2024-25

SUBJECT: Automobile Engineering

BRANCH(S): MECH, MMEAM

Time: 3 Hours

Max Marks: 100

Q.Code: R296

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right-hand margin indicate marks.

Part-I

Q1 Answer the following questions: (2 x 10)

- a) What are the important sub systems in an automobile?
- b) What forces act on a car in motion?
- c) Differentiate between chassis and body of an automobile.
- d) How hydraulic brakes work?
- e) What is overdrive and how is it achieved?
- f) Differentiate between semi and fully automatic transmission.
- g) What is the principle of correct steering?
- h) Which steering mechanism is generally used in passenger cars?
- i) How does the electrical charging system work?
- j) Why are batteries used in car, how it is charged?

Part-II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- a) Show with a neat diagram the main parts of the braking system.
- b) Write about some important points on motor vehicle act.
- c) Differentiate between working of drum and disc brakes.
- d) Explain the Hotchkiss drives.
- e) Differentiate between a two wheel and a four-wheel drive neat diagram.
- f) Explain working of torque converter.
- g) Explain working of differential with a neat sketch.
- h) Draw front wheel geometry of the steering system and explain Camber, castor, and kingpin inclination.
- i) Explain different battery types used in EV.
- j) Differentiate between series and parallel hybrid vehicles.
- k) Explain working of fuel cells vehicles.
- l) Write about important electronic and electrical components used in EV.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 Explain with a neat sketch the working of the electrical system of an electric vehicle (EV). **(16)**

Q4 Draw the Layout of an all-wheel drive transmission system and explain the main function of the different components of the transmission system. **(16)**

Q5 Explain with a neat diagram steering condition for true rolling and explain Ackerman steering geometry working, also find out minimum steering radius. **(16)**

Q6 Compare, with neat diagrams working and selection consideration of suspension system of a car. **(16)**