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binile. Com & binile android off Reg. No.: Question Paper Code: 20841 B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022. Sixth/Eighth Semester Mechanical Engineering ME 8091 - AUTOMOBILE ENGINEERING (Common to Mechanical Engineering (Sandwich)/ Mechatronics Engineering/Robotics and Automation) (Regulations 2017) Maximum: 100 marks Time: Three hours Answer ALL questions. PhotoPlex. Not & android off PART A — $(10 \times 2 = 20 \text{ marks})$ Draw the sketch of a ladder frame and list the functions of each member. 1. Estimate the gradient resistant, if the weight of the vehicle is 1500 kg, climbing up a gradient of 15°. List any two limitations of turbocharging. 3. Mention any two advantages of petrol injection system over carburetor system. 4. What is the function of torsional spring in clutch plate? 5. How vehicle is kept stationary while using sliding mesh gear box? 6. 7. Define steering ratio. Enlist any four components used in antilock braking system. 8. List any four properties of LPG fuel. 9. What are hybrid vehicles? 10.

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PART B - (5 × 13 = 65 marks)

Explain in detail the layout of an automobile and its subsystem with a 11. (a) neat sketch.

- Elucidate the different types of resistance of vehicle motion.
- (a) Draw the line diagram of electronic fuel injection system and enumerate its various components and mention their function briefly.

Or

- (b) Explain the working principle of turbo charger with a neat layout.
- 13. (a) Discuss in detail the construction and operation of any one type of differential used in an automobile with a neat sketch.

- Explain the construction of a helical spring type single plate clutch with the help of a neat layout.
- (a) Explain the construction and operation of hydraulic braking system with suitable sketches.

Or

- (b) Explain the necessity of power steering in an automobile. Sketch integral power steering system and explain its working.
- Discuss the principle of operation of a fuel cell with a neat sketch. 15.

Or

(b) Elucidate the problems associated with hydrogen as a fuel along with providing appropriate solutions in detail.

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