Reg. No. :

Question Paper Code : X 20847

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
AND APRIL/MAY 2021
Sixth/Seventh/Eighth/Tenth Semester
Mechanical Engineering
ME6602 – AUTOMOBILE ENGINEERING
(Common to Mechanical Engineering (Sandwich) Mechatronics Engineering, Robotics and Automation Engineering)
(Regulations 2013)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. State any four important loads acting on the chassis frame.
2. State any two advantages of variable valve timing engine.
3. Write any two main advantages of electronic fuel injection system in SI engine.
4. Differentiate between turbo charging and supercharging in engine.
5. What is meant by overdrive in transmission system ?
6. What is the necessity of universal joint in transmission system ?
7. List the various types of steering gear box.
8. What is meant by traction control ?
9. Write down the important properties of Natural gas.
10. How the electric vehicle works ?

PART – B **(5×13=65 Marks)**

11. a) i) Draw and explain the construction of automobile chassis layout and its main components. **(8)**

    ii) List the material selection properties during construction of automobile body. **(5)**

(OR)

    b) i) Explain briefly about the functions of 1C engine components and materials used. **(10)**

    ii) Explain about the aerodynamic design of vehicle and list its advantages. **(3)**

12. a) i) Draw and explain briefly about the MPFI system in SI engines. **(8)**

ii) What is the necessity of three catalytic convertor in petrol engine ? Explain the materials used and its properties. **(5)**

(OR)

b) i) Draw and explain briefly about the capacitive discharge type electronic injection systems. **(9)**

ii) Mention the BS VI Emission norms for four wheeler petrol engine. **(4)**

13. a) i) Explain the working of sliding mesh gear box with neat sketch. **(7)**

ii) What is the necessity of differential ? Explain briefly about the differential unit with neat diagrammatic representation. **(6)**

(OR)

b) i) Explain the working of fluid flywheel with its neat sketch, also write its advantages. **(7)**

ii) Explain the working of Hotchkiss drive and mention its advantages. **(6)**

14. a) i) Explain any one type of suspension system with neat sketch. **(7)**

ii) Draw and explain any one type the steering gear. **(6)**

(OR)

b) i) Explain the working of Antilock Braking system with sketch. **(6)**

ii) Explain the working of EBD system with diagram and state its advantages. **(7)**

15. a) i) Explain with its equation in the production of Natural gas for automotives application. **(6)**

ii) Write the composition of LPG. Also explain the LPG operated SI engine with neat sketch including the engine setup modification. **(7)**

(OR)

b) i) Write the advantages and disadvantages of using hydrogen in gasoline engines. **(5)**

ii) Explain the any one type of fuels cells with neat sketch and state its advantages. **(8)**

PART – C **(1×15=15 Marks)**

16. a) Explain on your own way to produce the bio-diesel from the vegetable oil mentioning all procedures involved in detail also explain what is meant by double transesterification ? **(15)**

(OR)

b) Briefly explain about how much successfully we can implement the battery vehicle in developing countries like India including advantages, implementing sectors etc. **(15)**

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