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Question Paper Code: 59071

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Elective

Mechanical Engineering

15UME903 - AUTOMOBILE ENGINEERING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Abbreviation HEVs stands for

   (a) Highly Efficient Vehicles (b) Hybrid Electric Vehicles
   (c) Highly Economic Vehicles (d) Highly Engineered Vehicles

2. The firing order for an in-line four cylinder I.C. engine is

   (a) 1-2-3-4 (b) 1-3-4-2 (c) 1-2-4-3 (d) 1-3-2-4

3. The main function of intake manifold is that it

   (a) promotes the mixture of air and fuel
   (b) reduces intake noise
   (c) cools the intake air to a suitable temperature
   (d) distributes intake air equally to the cylinders

4. The battery is an electrochemical device, which means battery.

   (a) makes chemicals by mechanical means
   (b) uses chemical action to provide electricity
   (c) has curved plates instead of flat plates
   (d) does not use an electrolyte

5. A clutch is usually designed to transmit maximum torque which is

   (a) equal to the maximum engine torque
   (b) 80 per cent of the maximum engine torque
   (c) 150 per cent of the maximum engine torque
   (d) 300 per cent of the maximum engine torque

6. The function of a universal joint is to allow the propeller shaft to

   (a) Change length (b) Bend sideways
   (c) Transfer torque at an angle (d) Change inclination

7. The condition that causes vapour locking in a brake system is

   (a) overheating of the fluid due to frequent brake application
   (b) overcooling of the brakes during high speed driving
   (c) keeping the vehicle without use for an extended period
   (d) an excessively high engine speed on a downhill road

8. The tilting of the front wheels away from the vertical, when viewed from the front of the car, is called

   (a) Caster (b) Camber (c) toe-in (d) toe-out

9. In Compression Ignition (CI) engine, the compression ratio is

   (a) Cylinder volume / Swept volume (b) Swept Volume / Cylinder Volume
   (c) Clearance volume / Cylinder volume (d) Cylinder volume / Clearance volume

10. The calorific value of alcohol is

    (a) Less than that of gasoline (b) Equals to that of gasoline
    (c) More than that of gasoline (d) Depends upon type of the engine where used

PART - B (5 x 2 = 10 Marks)

11. Name any two materials used for chassis frames and body.

12. Define the term battery self-discharge.

13. Distinguish fluid flywheel and torque converter.

14. Define brake efficiency.

15. Explain the importance of fuel additives.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Classify automobiles. Explain in detail. (8)

(ii) Outline with a neat sketch of the engine chassis and indicate the parts. (8)

Or

(b) (i) Illustrate any four IC engine components and its functions with a sketch. (8)

(ii) Explain any two type of sensors used in IC engines. (8)

17. (a) (i) Explain the construction and working of S.U. Carburetor. (8)

(ii) Explain the multiple point injection system with a neat sketch. (8)

Or

(b) (i) Determine the importance of starting drives used in automotive system. (8)

(ii) Explain the construction details of lead acid battery with a neat sketch. (8)

18. (a) (i) Elaborate the working principle of single plate clutch. (8)

(ii) Discuss the working principle of constant mesh gear box with simple sketch. (8)

Or

(b) (i) Discuss the construction of the differential with a neat sketch. (8)

(ii) Elaborate the significance of hotch-kiss drive. (8)

19. (a) (i) Explain the function of the re-circulating ball type steering gear. (8)

(ii) Justify the importance of suspension system? (8)

Or

(b) (i) Determine the working principle of a hydraulic brake system. (8)

(ii) Evaluate the advantages and disadvantages of ABS. (8)

20. (a) (i) Inference the importance of alternative fuels in detail. (8)

(ii) Classify biofuels. Explain the stages involved in biodiesel production. (8)

Or

(b) (i) Analyze the parallel type hybrid system with block diagram. (8)

(ii) Distinguish the advantages and disadvantages of hybrid vehicle. (8)