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**Question Paper Code: 59703**

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Mechanical Engineering

15UME903 - AUTOMOBILE ENGINEERING

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

1. Abbreviation HEVs stands for CO1- R
  - (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 CO1 -R
  - (a) 1-2-3-4
  - (b) 1-3-4-2
  - (c) 1-2-4-3
  - (d) 1-3-2-4
3. One among the following stores the electrical energy supplied by the alternator after converting the same into the chemical energy CO2- R
  - (a) Energy
  - (b) Airpanel
  - (c) Injector
  - (d) Panel
4. The turbo chargers uses CO2- R
  - (a) Engine energy
  - (b) energy of exhaust gases
  - (c) steam energy
  - (d) water energy from radiator
5. Clutch works on the principle of CO3- R
  - (a) Friction
  - (b) Ignition
  - (c) Sensors
  - (d) Traction

6. The function of a universal joint is to allow the propeller shaft to CO3- R
- (a) Change length (b) Bend sideways
- (c) Transfer torque at an angle (d) Change inclination
7. The other name for pitman arm is CO4- R
- (a) Turn arm (b) Pit arm (c) Drop arm (d) Joint arm
8. Dead axles are CO4- R
- (a) beams which supports the vehicle weight
- (b) usually the rear axles
- (c) contain differential
- (d) Leaf springs
9. A vehicle is said to be hybrid if CO5- R
- (a) It runs on electricity
- (b) It uses two (or more) distinct power sources to propel the vehicle
- (c) It generates electricity when it brakes
- (d) It run on gas
10. In Compression Ignition (CI) engine, the compression ratio is CO5- R
- (a) Cylinder volume / Swept volume
- (b) Swept Volume / Cylinder Volume
- (c) Clearance volume / Cylinder volume
- (d) Cylinder volume / Clearance volume

PART – B (5 x 2= 10Marks)

11. Name any two materials used for chassis frames and body. CO1- R
12. Define the term battery self-discharge. CO2 -R
13. What is the function of differential unit? CO3- R
14. Define brake efficiency. CO4 -R
15. What is a hybrid vehicle? CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Discuss the various components of engine and their functions with sketch. CO1- U (16)
- Or
- (b) Explain in details about Vehicle Aerodynamics. CO1 -U (16)
17. (a) Explain the principle of operation of a carburetor used in Honda CB Unicorn two wheelers with a sketch. CO2 -U (16)
- Or
- (b) Draw the layout of a Ignition system used in Alto 800 and mention the function of each component. CO2 -U (16)
18. (a) Explain the necessary of a differential in an automobile. Discuss in detail the construction and operation of the differential CO3- Ana (16)
- Or
- (b) Explain the working of multi plate clutch with a neat sketch. What are the features of good quality clutch? CO3 -Ana (16)
19. (a) Explain briefly Ackermann steering mechanism with a neat sketch. CO4- U (16)
- Or
- (b) Explain the Anti-lock braking system with a neat sketch. CO4 -U (16)
20. (a) Discuss the concept of electric and hybrid vehicle with neat sketch. CO5- U (16)
- Or
- (b) Briefly explain the stages involved in biodiesel production. CO5 -U (16)

