Q. Code: 578428

B.E./B.TECH. Degree Examination, December 2020

Seventh Semester

AE16007 – NEW GENERATION AND HYBRID VEHICLES

(Regulation 2016)

Time: Three hours Maximum : 80 Marks

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. The most common type of hybrid car combines the following:
   a) Diesel and electric power
   b) Gas and electric power
   c) Biodiesel and electric power
   d) Hydroelectric power
2. Strain gauge is a
   a) Active device and converts mechanical displacement into a change of resistance
   b) Passive device and converts electrical displacement into a change of resistance
   c) Passive device and converts mechanical displacement into a change of resistance
   d) Active device and converts electrical displacement into a change of resistance
3. Mapmakers use global positioning system to verify the
   a) Boundaries
   b) Roads
   c) Towns
   d) Places
4. Anti-lock brakes are at their most effective when you
   a) Using the handbrake to reduce the stopping distance
   b) Apply constant and firm pressure to the foot brake until you have stopped
   c) Brake normally, but grip the steering wheel tightly
   d) Continuously pump the foot brake to prevent skidding
5. Differentiate electric and hybrid vehicles.
6. Compare the lean-burn engine with a conventional IC engine.
7. Categorize the vehicle sensors based on the principle of its operation.
8. Compare open and closed-loop systems with simple diagrams.

PART B - (4 X16 = 64 marks)

09. (a) Discuss different types of architecture involved in hybrid vehicles with relevant sketches. **(16)**

(OR)

(b) Discuss in detail magnetic track vehicle with a neat sketch. **(16)**

10. (a) Enumerate the different stratified charge engine concepts and designs. Explain any two with neat sketches. **(16)**

(OR)

(b) Discuss any two types of high energy and power density batteries with relevant sketches and choose the best one that is used in automobiles. **(16)**

11. (a) Discuss in detail the Computer Control for fuel economy with various Transducers and compare with their pros and cons. **(16)**

(OR)

(b) Enumerate the different types of actuators. Explain any two with neat sketches. **(16)**

12. (a) Discuss in details components used in global positioning system and also explain the errors involved with it. **(16)**

(OR)

(b) Choose the best technology used to reduce the stopping distance of the vehicle at high speed. Explain its working and construction with a neat sketch. **(16)**