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**B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019**

Seventh Semester

**AE16007 – NEW GENERATION AND HYBRID VEHICLES***(Automobile Engineering)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

**PART A - (10 X 2 = 20 Marks)**

	CO	RBT
1. Differentiate the Electric and hybrid vehicles.	1	AP
2. List out the types of fuel cells and its application.	1	R
3. How are hydrogen engines better than conventional IC engines?	2	U
4. What is surface ignition engine?	2	U
5. Name the different actuators used in vehicles.	3	R
6. Categorize the sensors based on principle of its operation.	3	U
7. What do you know about GLONASS and NAVIC?	4	U
8. What is meant by 3-D Trilateration technique?	4	U
9. Commercial and heavy duty vehicles are employed with air suspensions but it is not fitted with passenger cars and sports utility vehicle. Justify.	5	U
10. Illustrate different aerodynamics shapes with their drag coefficients.	5	AP

**PART B - (5 X16 = 80 Marks)**

11. (a) Discuss the different types of hybrid vehicles with neat sketches. (16) 1 U
- (OR)**
- (b) Explain in detail about the concept of solar powered vehicle with a neat sketch. (16) 1 U
12. (a) Explain the construction and working of a lean burn engine with a neat sketch. (16) 2 U

**(OR)**

- (b) Explain the construction and working of a variable compression ratio engine with a neat sketch. (16) 2 U
13. (a) Briefly explain about the computer control techniques for pollution control and fuel economy. (16) 3 U
- (OR)**
- (b) Explain any two types of passive transducers that are used in vehicles with neat sketches. (16) 3 U
14. (a) Discuss in detail about the preparation and maintenance of proper road networks. (16) 4 U
- (OR)**
- (b) Explain the functional details of components used in global positioning system and also explain the errors involved with it. (16) 4 U
15. (a) What do you understand about anti-skid braking system? Explain in detail with neat sketch. (16) 5 U
- (OR)**
- (b) Discuss in detail about the various aerodynamics forces acting on a vehicle. (16) 5 U