Code No: 137SP **RA**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, December - 2019
ALTERNATIVE FUELS FOR AUTOMOBILES
(Automobile Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	Explain the stoichiometric combustion of CNG.	[2]
b)	What are the precautions for CNG storage?	[3]
c)	What are the major engine emissions form LNG?	[2]
d)	List out the standards of LPG.	[3]
e)	Explain the properties of liquefied hydrogen.	[2]
f)	How can you define straight vegetable oil and its properties?	[3]
g)	Compare and contrast EV batteries and EV chargers.	[2]
h)	What is the role of ultra-capacitor in HEV?	[3]
i)	What are the types of fuel cells briefly?	[2]
j)	What is the significance of solar array?	[3]

PART – B

(50 Marks)

2. With the help of neat diagram, explain the storage and piping for CNG. Explain in detail the regulations of CNG and standards. [10]

OR

3. What are the modifications need to be done for CNG operations and explain the safety aspects of fuelling stations. [10]

4. With the help of line diagram, explain the method of storage of LNG and explain the piping standards and methods. [10]

OR

5. Explain with neat sketch the production of LPG, properties and emission details. [10]

6. Explain the difference between Bio hydrogen and liquefied hydrogen. Also explain the hazards with liquid hydrogen. [10]

OR

7. How do you produce bio fuels and explain storage methods? Also compare with conventional fuels. [10]

8. What are the hybrid electric vehicles and explain its working with the help of line diagram. [10]

OR

9. Draw the line diagram and explain the working of EV transmission and also explain the design of EV motor. [10]

10. What is meant by fuel hybrid vehicle and explain how it works with the help of a neat sketch. Also explain fuel cell options. [10]

OR

11. Compare and contrast solar photovoltaic cell and Fuel cell and explain the working of solar car electrical system in detail. [10]

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