CBCS SCHEME

USN | | | | | | | | | | |

18AU54

Fifth Semester B.E. Degree Examination, June/July 2023
Automotive Fuels and Combustion

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Explain the following:
i) Tidal power ii) Wind power. **(10 Marks)**

b. Describe the following refining process:
i) Fractional distillation
ii) Thermal cracking
iii) Polymerization
iv) Isomerization. **(10 Marks)**

OR

2 a. Explain the chemical structure of petroleum with example. **(10 Marks)**

b. Describe the following properties:
i) Annealing point
ii) Vapour pressure
iii) Calorific value
iv) Viscosity. **(10 Marks)**

Module-2

3 a. What do you mean by octane rating and cetane rating? Explain its importance. **(10 Marks)**

b. Explain the advantages and disadvantages of LPG and hydrogen as a fuel. **(10 Marks)**

OR

4 a. Sketch and explain ORSAT apparatus for flue gas analysis. **(10 Marks)**

b. With neat sketch, explain gas chromatograph. **(10 Marks)**

Module-3

5 a. Explain the stages of combustion in SI engine, with P-θ diagram. **(10 Marks)**

b. Describe the design principles of SI engine combustion chamber. **(10 Marks)**

OR

6 a. Write a note on following:
i) Vaporization of fuel droplets and spray formation.
ii) Air motion and swirl in diesel engine combustion chamber. **(10 Marks)**

b. What do you mean by diesel knock? Explain its effects. **(10 Marks)**

Module-4

7 a. Explain Willian's line method and motoring test to find friction power. **(10 Marks)**

b. Describe the measurement of air consumption by air box method. **(10 Marks)**

OR

8 a. Define the following engine parameters:
 i) Indicated Thermal Efficiency
 ii) Volumetric efficiency
 iii) Brake specific fuel consumption
 iv) Air-fuel ratio
 v) Compression ratio. **(10 Marks)**
 b. What do you mean by heat balance sheet? Explain in detail. **(10 Marks)**

Module-5

9 a. Describe the various factors affecting combustion in dual fuel engine. **(10 Marks)**
 b. Explain the supercharged Dual-Fuel engine. **(10 Marks)**

OR

10 a. Mention the advantages of Dual-Fuel engines. **(10 Marks)**
 b. Justify the need of modification of fuel system in multi fuel engine. **(10 Marks)**

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