CBCS SCHEME

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

17AU44

Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Automotive Engines

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. With a neat sketch, explain the working principle of four stroke spark Ignition Engine. **(08 Marks)**

b. Compare Four stroke and two stroke cycle Engine. **(06 Marks)**

c. Compare spark Ignition engine and compression ignition Engine. **(06 Marks)**

OR

2 a. Define the following efficiencies.
i) Indicated Thermal efficiency
ii) Brake Thermal efficiency
iii) Mechanical efficiency
iv) Relative efficiency
v) Volumetric efficiency. **(10 Marks)**

b. Draw the PV and TS diagram of Ottocycle. Derive an expression for the efficiency for Ottocycle. Comment on the effect of compression ratio and ratio of specific heat on the efficiency of Ottocycle. **(10 Marks)**

Module-2

3 a. Define Carburation, with a neat sketch, explain the working principle of Simple Venturi Carburettor. **(10 Marks)**

b. Explain with a neat sketch unit Injector and common rail Injection systems. **(10 Marks)**

OR

4 a. Define the following :
i) Stoichiometric
ii) Rich mixture
iii) Lean mixture. **(03 Marks)**

b. With a neat sketch, explain Distributor pump. **(07 Marks)**

c. With a neat sketch, explain different types of Nozzles used in CI engine. **(10 Marks)**

Module-3

5 a. Explain with a neat figure, different stages of combustion in SI engines. **(10 Marks)**

b. Explain the various factors influencing the flame speed (or) flame propagation in S.I engine. **(10 Marks)**

OR

6 a. What is meat by Abnormal combustion? Explain the phenomenon of knock in SI engines. **(10 Marks)**

b. Explain briefly following factors affecting the Delay period in C.I engine.
   i) Compression ratio
   ii) Engine speed
   iii) Atomization and Duration of Injection
   iv) Ignition timing
   v) Quality of fuel. **(10 Marks)**

Module-4

7 a. Define supercharging and explain the effect of supercharging on mechanical efficiency, fuel consumption and power output of the engine. **(08 Marks)**

b. Describe with a neat sketches, the different methods of Turbocharging. **(12 Marks)**

OR

8 a. Explain briefly two types of cooling system. **(06 Marks)**

b. Explain with a neat sketch the Thermosyphon Cooling system. **(06 Marks)**

c. Explain with a neat sketch pressure cooling system. **(08 Marks)**

Module-5

9 a. Briefly explain different types of fuels used in an IC engine. **(04 Marks)**

b. Explain Mist Lubrication System. What are the disadvantages of Mist Lubrication System? **(06 Marks)**

c. With a neat sketch, explain splash Lubrication system. **(10 Marks)**

OR

10 a. Explain with a neat sketch Drysump Lubrication system. **(10 Marks)**

b. Discuss the functions of lubricants in an engine. **(04 Marks)**

c. Explain tne different properties of Lubricants. **(06 Marks)**

* * * * *