



III SEMESTER B.TECH. (AUTOMOBILE ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2019

SUBJECT: AUTOMOTIVE ENGINES [AAE 2172]

REVISED CREDIT SYSTEM (19/11/2019)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitably assumed.

- 1A. Briefly discuss the key components such as cylinder block, cylinder, piston, inlet & exhaust valves, and connecting rod in the spark ignition engine. (04)
- 1B. Classify IC engines based on cycle of operation, method of ignition, cylinder arrangement. (03)
- 1C. List the advantages of internal combustion engine over external combustion engine. (03)
- 2A. Following observations were recorded during a test on a single cylinder oil engine: Bore = 300 mm; stroke = 450 mm, speed = 300 rpm, i .m. e. $p = 6$ bar, net brake load = 1.5 kN, brake drum diameter = 1.8 m, brake rope diameter = 2 cm. Calculate i) Indicated power ii) Brake power iii) Mechanical efficiency. (04)
- 2B. Explain uniflow scavenging in 2 Stroke engines with a sketch. (03)
- 2C. What is 'ram effect' with respect to valve timing? (03)
- 3A. List the functions of a piston. Using a neat sketch, show all the parts in the piston assembly, also mention the materials used for the parts. (04)
- 3B. Using a neat sketch, show the working of double row side valve actuating mechanism. (03)
- 3C. What is the function of a muffler? With a neat sketch explain the working of combined resonance and absorber type muffler. (03)
- 4A. With a neat sketch, explain the idling system in carburettor. (04)
- 4B. Explain the stages of combustion in spark ignition engines. (03)

- 4C.** How does the arrangement of exhaust manifolds influence the turbocharging of engine? **(03)**
- 5A.** List the 5 main differences between battery ignition system and magneto ignition system. **(04)**
- 5B.** Summarize the advantages and disadvantages of air cooled engine. **(03)**
- 5C.** Briefly explain any 3 dynamometers used in an engine testing. **(03)**