Printed Pages: 02 **Sub Code: EAU061**

Paper Id: | 1 | 4 | 7 | 8 | 0 | 1 | **Roll No.** | | | | | | | | | | |

B.TECH
(SEM VIII) THEORY EXAMINATION 2017-18
COMPUTER SIMULATION OF IC ENGINES

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. Define the constant pressure adiabatic combustion process.
b. What is combustion?
c. What is the heat reaction process of internal combustion engine?
d. Write the types of simulation.
e. Explain the constant volume adiabatic combustion.
f. What are the main pollutants in 2 stroke IC engines?
g. Why the actual cycle of SI engine differ from ideal cycle?
h. What is progressive combustion?
i. Write the condition for maximum and minimum tractive force.
j. What is pressure crank angle?

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. Explain the adiabatic flame and common flame and also write down the temperature calculation equations.
b. Show the effect of spark advance on power output for different combustion model with neat sketch.
c. Discuss simulation of combustion phenomena. Write down the effect of by-products emitting in combustion.
d. Draw the pressure crank angle diagram and other engine performance.
e. Define the computer codes of validation Explain the engine friction model with neat sketch.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss the temperature drop due to fuel vaporization. What is the effect of it on the combustion?
(b) Explain the heat balance sheet of engine and also write the efficiency calculation equations

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Define the multi zone model for combustion with different heat transfer modes also write down heat reaction process.
(b) Discuss the simulation of unbalanced forces in two stroke engine and write down the advantages also.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Write down the IC engine performance simulation process with neat sketch.

(b) Define the full throttle and part throttle simulation of SI engine with sketch.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the various modes of engine computer simulation.

(b) Explain the super charged operation CI engine with neat sketch.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Simulate the P-Ø diagram taking the performance of the engine with neat sketch.

(b) Explain the measurement of URP and HRP.