

--	--	--	--	--	--	--	--	--	--



## GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, December – 2020

(Fifth Semester)

BMEPC 5010 – INTERNAL COMBUSTION ENGINES

(Mechanical Engineering)

Time: 2hrs

Maximum:50 Marks

**The figures in the right hand margin indicate marks.****PART – A: (Multiple Choice Questions)****(1 x 10= 10 Marks)**Q.1. Answer *ALL* questions

- a. Thermal efficiency of CI engine is higher than that of SI engine due to  
 (i) fuel used (ii) higher compression ratio  
 (iii) constant pressure heat addition (iv) none of the above
- b. If N is the rpm, number of power strokes/min in a four-stroke engine is  
 (i) 2N (ii) N/2  
 (iii) N (iv) 4N
- c. Compression ratio in diesel engines is of the order of  
 (i) 5–7 (ii) 7–10  
 (iii) 10–12 (iv) 14–20
- d. Brake specific fuel consumption is defined as  
 (i) fuel consumption per hour (ii) fuel consumption per km  
 (iii) fuel consumption per bp (iv) fuel consumption per brake power hour
- e. For SI engines fuels most preferred are  
 (i) aromatics (ii) paraffins  
 (iii) olefins (iv) naphthenes
- f. Octane number of iso-octane is  
 (i) 0 (ii) 30  
 (iii) 60 (iv) 100
- g. A simple carburettor supplies rich mixture during  
 (i) starting (ii) idling  
 (iii) cruising (iv) accelerating
- h. Injection system in which the pump and the injector nozzle is combined in one housing is known as  
 (i) common rail system (ii) distributor system  
 (iii) unit injector system (iv) individual pump and nozzle system
- i. Ignition timing is adjusted by  
 (i) tachometer (ii) stroboscopic light  
 (iii) stop watch (iv) accurate clock
- j. Additives are added in lubricant to have  
 (i) detergent-dispersant characteristics (ii) pour point depression  
 (iii) antifoam characteristics (iv) all of the above

**PART – B: (Short Answer Questions) (2 x 5=10 Marks)**

Q.2. Answer ALL questions

- a. Why compression ratio of petrol engine is low while diesel engines have high compression ratio?
- b. What is mean effective pressure and stoichiometric air fuel ratio?
- c. What do you mean by Dwell angle?
- d. What is the chemical composition of Liquefied Petroleum Gas?
- e. How pollution controlled in SI engine?

**PART – C: (Long Answer Questions) (6 x 5=30 Marks)**

Answer ANY FIVE questions

Marks

3. Discuss the relative advantages and disadvantages of S.I and C.I engines. (6)
4. With neat sketches explain the working principle of four stroke spark ignition engine. (6)
5. What do you mean by ignition delay and abnormal combustion? Explain the phenomena of knock in CI engine and compare it with SI engine knock. (6)
6. What are the functions of a nozzle? With neat sketch explain various types of nozzle. (6)
7. What is supercharging? What is the effect of supercharging on power output, Mechanical efficiency and fuel consumption. (6)
8. What is hyperbar turbocharging? Explain with its advantages and disadvantages. (6)
9. Explain battery ignition system and magneto ignition system and their differences. (6)
10. Explain the two types of cooling systems used to cool IC engines and compare them by elaborating their advantages and limitations. (6)

--- End of Paper ---