

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q.1 Solve Any Two of the following.

- A) What are the limitations of the supercharging in an IC engine? 06
- B) Briefly explain the following: (i) time loss factor (ii) heat loss factor (iii) exhaust blowdown factor. 06
- C) Explain the loop scavenging process in two-stroke engine with neat schematic diagram. 06

Q.2 Solve Any Two the following.

- A) Explain the stages of combustion in CI engine? 06
- B) Briefly discuss the air-fuel ratio of a petrol engine from no load to full load. 06
- C) Explain the exhaust gas recirculation (EGR) method for controlling the emissions from the engine. 06

Q.3 Solve Any Two of the following.

- A) Explain the engine power-torque vs speed characteristics for actual internal combustion engine with suitable performance curve. 06
- B) Explain the working of clutch in automotive with suitable layout. 06
- C) Describe the working of multi speed gear box 06

Q.4 Solve the following.

- A) Explain the hydraulic braking system. 06
- B) What is antilock braking system? Explain with suitable diagram. 06

Q.5 Solve Any Two of the following.

- A) Explain the hydraulic power steering system with suitable schematic diagram. 06
- B) Describe the various types of front suspension systems. 06
- C) What are the causes of tyre heat and how can it be reduced? 06

Course: B. Tech.

Regular End Semester Examination - Summer 2022

Semester : VIII

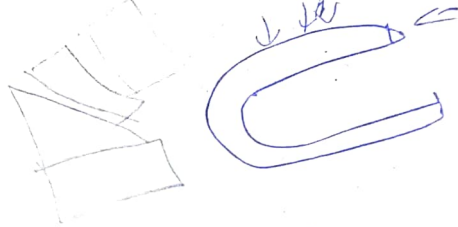
Branch: Automobile/ Production Mechanical Engineering
 Subject Code: BTME6001
 Subject Name: Non-Conventional Energy Resources
 Date: 07/07/2022
 Duration: 3.45 Hr.

Max Marks: 60

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	(Level/CO)	Marks
Q. 1 Solve Any Two of the following.		
A) What is fossil fuel? What are different alternatives for fossil fuel?		6
B) Explain national energy strategies and National energy plan		6
C) Explain energy consumption as a measure of prosperity and world energy future.		6
Q.2 Solve Any Two of the following.		
A) Explain solar energy as alternative energy source.		6
B) Explain solar energy conversion systems and their applications.		6
C) Explain with neat sketch solar flat plate collector as solar air heater.		6
Q. 3 Solve Any Two of the following.		
A) Explain the following terms 1. Solar constant. 2. Solar spectrum. 3. Clarity Index. 4. Declination angle. 5. Zenith angle. 6. Day length hours.		6
B) Explain principle of working of a solar cell.		6
C) Explain various types of commercial solar cells.		6
Q.4 Solve Any Two of the following.		
A) What is wind data and energy estimation in wind energy? —		6
B) What are various types of rotors in wind mill? Draw a neat labelled sketch of propeller type of wind machine.		6
C) What is principle of OTEC? Draw neat labelled sketch of open cycle OTEC power plant.		6
Q. 5 Solve Any Two of the following.		
A) Explain principle of MHD power generation.		6
B) Write design and principle of operation of a fuel cell.		6
C) Explain with neat sketch working of Lithium ion Batteries.		6



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