

**B. TECH.**  
**(SEM-III) THEORY EXAMINATION 2019-20**  
**ENERGY SCIENCE & ENGINEERING**

**Time: 3 Hours****Total Marks: 100****Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief. 2 x 10 = 20**

- a) What is energy?
- b) Define entropy.
- c) Define semiconductors.
- d) How holes are produced in semiconductors?
- e) Explain attenuation of solar radiation.
- f) What is the principle of solar cell?
- g) How tides are generated?
- h) Give the sources of geothermal energy.
- i) Why Stirling engines are not used?
- j) Define energy conservation.

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

- a) How internal combustion engines work?
- b) What is nuclear fusion? How does it differ from nuclear fission?
- c) Discuss the application and economic aspect of fuel cells.
- d) Write the difference between geothermal power plant and thermal power plant?
- e) Review the energy scenario in India in brief.

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

- a) Explain the difference between direct radiation and diffuse radiation.
- b) Define refrigeration. State the application of refrigeration.

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

- a) Draw the binding energy curve showing variation of binding energy per nucleon with mass number. With the help of this explain the phenomenon of nuclear fusion and fission.
- b) With a neat sketch, explain pressurized water reactor (PWR), highlighting its merits and demerits.

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

- a) Explain with a neat sketch, working of a solar cell.
- b) What is the difference between intrinsic and extrinsic semiconductor?

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

- a) How tidal power plants are classified and what are the limitations of tidal power plant?
- b) What are conventional and non-conventional energy sources? Write short notes on classification of energy sources.

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

- a) What is green energy? What are the benefits of green energy?
- b) Briefly explain the different types of storage systems.