

**City College**  
**Internal Examination-2020**  
**Physics (Hons & Gen) (CBCS)**  
**Sem-IV: SEC-B**

**Paper: PHS-A-SEC-B-TH (Hons) / PHS-G-SEC-B-TH (Gen)**

**Time: 2 hours**

**Full Marks: 50**

**Group-A**

1. Answer **any five** questions. **5×2=10**
- a) What are the sources of fossil fuels?
  - b) Mention two advantages of renewable energy sources over non-renewable sources.
  - c) What is the difference between wind mill and wind turbine?
  - d) What are the basic components of a solar water heater?
  - e) Which devices are used to capture oceanic mechanical energy?
  - f) What is inverse piezoelectric effect?

**Group-B**

Answer **any eight** questions. Each question carries 5 marks. **8×5=40**

- 2. (a) Explain the working principle and use of a solar green house.  
(b) What amount of energy does earth receive from sun? (3+1)+1
- 3. (a) State the working principle of a solar pond.  
(b) Draw the circuit diagram of a solar cell and write down the current-voltage relationship. 3+2
- 4. What is a wind turbine? What are the different parts of a wind turbine? 3+2

5. (a) Derive an expression to show the dependence of power generated from wind on the diameter of the blade of wind turbine in a wind mill.  
(b) What is a wind farm? 3+2
6. Describe the different ways to collect tidal energy.
7. (a) Briefly explain oceanic thermal energy conversion (OTEC) process.  
(b) How electricity can be generated using osmotic power? 3+2
8. Briefly explain the origin of geothermal energy with a neat diagram. 3+2
9. (a) What are the different types of geothermal energy resources?  
(b) Write down the advantages of geothermal energy over other forms of energy. 3+2
10. Briefly explain how piezoelectricity is generated from mechanical stress.
11. (a) How does a piezoelectric motor work?  
(b) Give an example each of a natural and artificial piezoelectric material. 3+2

---End of Question Paper----

E-mail the scanned copy of answer script to [sem4hcityphysics@gmail.com](mailto:sem4hcityphysics@gmail.com) (Hons, 4<sup>th</sup> sem) or [sem4gcityphysics@gmail.com](mailto:sem4gcityphysics@gmail.com) (General, 4<sup>th</sup> sem) within **15 minutes** after the end of the examination.