

SH-III/PHSH/SEC-1/24

(2)

B.Sc. 3rd Semester (Honours) Examination, 2023 (CBCS)

Subject : Physics

Course : SEC-1 (OR)

(Renewable Energy)

Time: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Group-A

1. Answer *any five* questions:

- (a) Why is it necessary to capture carbon from environment? 2×5=10
(b) What is solar greenhouse? Mention its uses.
(c) State the disadvantages of using atomic energy.
(d) What do you mean by ocean thermal energy conversion (OTEC)?
(e) What is tip speed ratio (TSR) of a wind turbine?
(f) What is tailrace in a hydro power plant?
(g) What are the causes that make interior of the earth hot?
(h) Define piezo electric effect. Name one material that exhibits piezo electric property.

Group-B

Answer *any two* questions.

2. (a) What is meant by wind power? 5×2=10
(b) On which factors does the power output of a wind turbine depend?
(c) What are the advantages of vertical axis wind turbine over horizontal axis turbines? 1+2+2
3. (a) Which energy of water is used to generate hydroelectricity?
(b) Name two turbines used in hydro power plant.
(c) Discuss the impact of hydro power plant on environment.
(d) State the function of sluice gate in a hydro power plant. 1+1+2+1
4. (a) Can we harvest energy from electromagnetic waves? Discuss.
(b) Write down the basic principles of electromagnetic energy harvester.
(c) What are the applications of electromagnetic energy harvesting device? 2+2+1
5. (a) What is thermonuclear reaction?
(b) Briefly describe different parts of a nuclear reactor. 1+4

Answer any two questions.

10×2=20

6. (a) Discuss the difference between conventional and non-conventional energy.
(b) What is biomass? How can we get energy from biomass?
(c) What is energy plantation?
(d) What is landfill project?
3+(1+3)+1½+1½
7. (a) Discuss briefly the importance of solar energy.
(b) What are the three types of solar power plant?
(c) How electricity is generated from solar cell?
(d) What is solar pond? Why is it called a non-convective pond?
2+2+3+(1+2)
8. (a) Define geothermal energy.
(b) Is geothermal power a natural resource?
(c) Classify geothermal resources.
(d) Why heat extraction from geothermal sources is called heat mining?
(e) With a schematic diagram describe a method of generating electricity from geothermal energy.
1+1+2+2+4
9. (a) What are the different technologies used to harvest ocean energy?
(b) With a diagram, describe the principle of generating energy using Oscillating Water Column (OWC) device from ocean waves.
(c) Define ocean biomass.
(d) What are the advantages and disadvantages of ocean energy harvesting?
2+4+2+2
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