3 Yr. Degree/4 Yr. Honours 1st Semester Examination, 2024 (CCFUP)

Subject : Physics

Course : PHYS1051 (SEC-1)

(Renewable Energy and Energy Harvesting)

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

Answer *any five* questions. 2×5=10

1. (a) Why do we need renewable energy?

(b) What is ocean biomass?

(c) Explain solar distillation.

(d) Explain piezoelectric effect.

(e) What is hydroelectricity?

(f) What is nuclear energy?

(g) Mention applications of electromagnetic energy harvesting.

(h) What is solar cooker?

Group-B

Answer *any two* questions: 5×2=10

2. (a) What are the major components of biogas? Mention its use.

(b) How biogas is generated from organic waste? 2+3

3. (a) What is solar pond?

(b) How salt gradient is created in solar pond? 2+3

4. (a) On which factor does the power output of a wind turbine depend?

(b) Explain the merits of vertical axis wind turbine over horizontal axis wind turbine. 3+2

5. (a) Explain how energy is generated using ocean waves.

(b) What are the disadvantages of ocean energy harvesting? 4+1

Group-C

Answer *any two* questions: 10×2=20

6. (a) Define geothermal energy.

(b) Mention the different types of geothermal resources.

(c) Describe a method of generating electricity from geothermal energy. 2+3+5

7. (a) Define photovoltaic effect. What is solar cell?

(b) Why is it necessary to store solar energy?

(c) Discuss the principle of solar water heater. (2+2)+2+4

8. (a) Explain the principle of hydroelectric power plant. What is cusec?

(b) Mention the impact of hydroelectric power plant on environment.

(c) Describe a model of a hydropower plant with diagram. (2+2)+2+4

9. (a) What is piezoelectric generator? Define piezoelectric parameter.

(b) Explain carbon captured technology.

(c) What do you mean by non-renewable energy? Discuss the demerits of its use. (2+2)+2+(2+2)
