

**2024/FYUG/ODD/SEM/
PHYSEC-201T/060**

FYUG Odd Semester Exam., 2024

**PHYSICS
(3rd Semester)**

Course No. : PHYSEC-201T

(Renewable Energy and Energy Harvesting)

Full Marks : 50

Pass Marks : 20

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

UNIT—I

1. Answer any *three* from the following : $1 \times 3 = 3$

- (a) Define work done.
- (b) What is the unit of energy in MKS system?
- (c) What do you mean by power?
- (d) State the law of conservation of energy.

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(Turn Over)

(2)

2. What is the difference between renewable and non-renewable energy? 2

OR

3. What do you mean by green energy? Give one example of green energy source.

4. (a) Differentiate between commercial and non-commercial energy. 2

- (b) Explain the importance of renewable energy source. 3

OR

5. Write a short note on various types of energy sources with suitable example. 5

UNIT—II

6. Answer any three from the following : 1×3=3

(a) What do you mean by fossil fuel?

(b) What is a nuclear reactor?

(c) State one advantage of nuclear energy.

(d) Mention one application of biogas.

7. What is meant by non-conventional energy source? Is LPG conventional or non-conventional? 2

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(Continued)

(3)

OR

8. Mention one advantage and disadvantage of fossil fuel.

9. Explain the construction and working of a nuclear reactor. 5

OR

10. Write a short note on hydroelectric power.

UNIT—III

11. Answer any three from the following : 1×3=3

(a) What do you mean by solar energy?

(b) What is a solar pond?

(c) Name a device that converts solar energy into electrical energy.

(d) Mention one advantage of solar cooker.

12. Explain in brief the action of flat plate solar collector. 2

OR

13. What do you mean by solar greenhouse? State one application of it.

14. Explain the origin of solar energy with the help of PP-cycle. 5

OR

15. Discuss the need and characteristics of photovoltaic (PV) system.

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(Turn Over)

(4)

UNIT—IV

16. Answer any *three* from the following : 1×3=3

- (a) What do you mean by wind energy harvesting?
- (b) What is the relation between wind speed and power?
- (c) Who invented wave energy?
- (d) "Tide energy is renewable energy." State true or false.

17. Mention two examples of wind energy. 2

OR

18. Briefly explain the basic principle of ocean thermal energy.

19. What is a wind turbine? Explain the different electrical machines in wind turbines. 1+4=5

OR

20. What do you mean by tide? What are different types of tide? Briefly explain tide characteristics. 1+2+2=5

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(Continued)

(5)

UNIT—V

21. Answer any *three* from the following : 1×3=3

- (a) What is meant by geothermal energy?
- (b) Who is the founder of hydropower?
- (c) What do you mean by piezoelectric effect?
- (d) "A gas lighter is a piezoelectric device." State true or false.

22. Mention any two types of geothermal resources. 2

OR

23. What is piezoelectric parameter? Name any piezoelectric parameter.

24. Explain the environmental impact of hydro-power sources. 5

OR

25. Write a short note on piezoelectric energy harvesting applications.

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