

**2024/TDC (CBCS)/EVEN/SEM/  
PHSSEC-601T/099**

**TDC (CBCS) Even Semester Exam., 2024**

**PHYSICS**

**( 6th Semester )**

**Course No. : PHSSEC-601T**

**( Renewable Energy and Energy of Harvesting )**

Full Marks : 50

Pass Marks : 20

**Time : 3 hours**

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

**UNIT—I**

**1. Answer any three of the following questions :**

**1×3=3**

- (a) State the relationship between fossil fuels and nuclear power.**
- (b) In which State in India do we have tidal power plants?**
- (c) Is biogas generation a method of waste disposal?**

QUESTION ( 29 )

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(d) What are the three main uses of geothermal energy?

2. Answer any *one* of the following questions : 2

(a) What is tidal energy? How is tidal energy made?

(b) Give two advantages of nuclear power over fossil fuels.

3. Answer any *one* of the following questions : 5

(a) State some of the advantages of biochemical conversion. Give an example of biochemical process. Where is biogas generally used?

(b) What is a renewable energy? Is nuclear power a renewable energy? How is geothermal energy made?

#### UNIT—II

4. Answer any *three* of the following questions :

1×3=3

(a) What is a solar pond in non-conventional sources of energy?

(b) What is the maximum power of a solar plate?

(c) How does a flat plate solar geyser work?

(d) Give definition of a solar cell and its principle of work.

5. Answer any *one* of the following questions : 2

(a) What is solar energy? State some important uses of solar energy.

(b) State what is the difference between convective and non-convective solar ponds.

6. Answer any *one* of the following questions : 5

(a) State the construction and working principle of a solar distillation. What is the efficiency of solar distillation? How much water does solar distillation produce?

(b) What is absorption air conditioner? How does absorption cooling work? What are the advantages of absorption air cooling?

#### UNIT—III

7. Answer any *three* of the following questions :

1×3=3

(a) Which country is first in wind energy?

(b) What is inter-connected grid system?

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- (c) Which network topology is used by some smart grid networks?
- (d) Can you have solar and wind together?

8. Answer any *one* of the following questions : 2

- (a) What is wave energy device? How is wave energy stored?
- (b) Explain in brief, what are the characteristics of latest web application development.

9. Answer any *one* of the following questions : 5

- (a) How is wind energy harvested? What are the technologies used in wind energy harvesting? What is wind energy for farming?
- (b) What is ocean energy? How is ocean energy stored? Explain in brief, how ocean energy is transported.

## UNIT—IV

10. Answer any *three* of the following questions :

1×3=3

- (a) Is hydropower a renewable natural resource?
- (b) What is the difference between hydroenergy and hydroelectricity?

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( Continued )

( 5 )

(c) How does hydroelectric power work?

(d) Is piezoelectric AC or DC?

11. Answer any *one* of the following questions : 2

- (a) What is geothermal energy? Where is geothermal energy used?
- (b) How is piezoelectric energy harvested?

12. Answer any *one* of the following questions : 5

- (a) What is the impact of hydropower sources? What are the negative effects of hydropower on the environment? Explain briefly.
- (b) What are the different types of hydropower? Explain, in brief, various advantages and disadvantages of hydropower on environment.

## UNIT—V

13. Answer any *three* of the following questions :

1×3=3

- (a) On which principle does a linear generator work?
- (b) Are renewable energy sources sustainable?

24J/730

( Turn Over )

(c) How many kWh does a house consume per day?

(d) What is the role of renewable energy in sustainable development?

14. Answer any *one* of the following questions : 2

(a) Why is mathematical modelling important in practical life situations?

(b) What are the environmental benefits of sustainable energy?

15. Answer any *one* of the following questions : 5

(a) What are the environmental issues with renewable energy? How do renewable energy sources impact environmental sustainability? Explain briefly. 2+3=5

(b) (i) How can you calculate the kWh consumed by domestic appliances? 2

(ii) Explain briefly, what are the factors that affect a household's electricity consumption. 3

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