D 110238 **(Pages : 2)** **Name.....**

Reg. No.....

FIFTH SEMESTER (CBCSS–UG) DEGREE EXAMINATION, NOVEMBER 2024

Physics/Applied Physics

PHY 5D 01(1)/APH 5D 01 (1)—NON CONVENTIONAL ENERGY SOURCES

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

The symbols used in the question paper have their usual meanings

Section A - Short Answer type.

Answer **all** *questions in two or three sentences, each correct answer carries a maximum of 2 marks.*

1. What is the range of wavelength of EM waves of solar energy?
2. What is wind?
3. What is the use of Pyrheliometer
4. What are the advantageous of solar cooker?
5. Write a note on electrochemical cell?
6. Explain solar green house?
7. What is bio mass?
8. What are the Problems in operating large wind power generators.
9. Write down the advantages and disadvantages of geothermal energy over other energy forms
10. What is Biomass resource?
11. What is moderator ?
12. Define thermo electric effect.

(Ceiling 20)

Turn over

Section B -Paragraph / Problem type

Answer **all** *questions in a paragraph of about half a page to one page, each correct answer carries a maximum of 5 marks.*

13. Draw the figure of electro magnetic spectrum of radiant energy of sun
14. Illustrate the essential parts of a photovoltaic system? What are the basic processes involves in a solar cell.
15. Briefly explain the limitations of tidal power generation.
16. Explain briefly what is liquid and gaseous biofuels.
17. Explain solar distillation with figure
18. Explain the term biomass conversion. Discuss the different biomass conversion technologies.
19. Discuss the different hydrothermal sources.

(Ceiling 30)

Section C - Essay type

Essays - Answer in about two pages, any **one** *question. question carries 10 marks.*

20. Explain any four different ways through which solar energy can be utilized?
21. Discuss the principle of ocean thermal energy conversion (OTEC). Discuss the open cycle and closed cycle methods of ocean thermal electric power conversion.

(1 × 10 = 10 marks)

D 50694 **(Pages : 2)** **Name.....**

Reg. No.....

FIFTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2023

Physics/Applied Physics

PHY 5D 01 (1)/APH 5D 01 (1)—NON CONVENTIONAL ENERGY SOURCES

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

The symbols used in question paper have their usual meanings.

Section A (Short Answer Type)

Answer **all** *questions in two* **or** *three sentences.*
Each correct answer carries a maximum of 2 *marks.*

1. List the conventional energy sources.
2. What do you mean by solar constant ?
3. What are the advantages of solar distilling ?
4. What is photovoltaic effect ? Write any *two* solar cell materials.
5. What are the basic characteristics of wind ?
6. List any *four* characteristics of a good wind power site.
7. List any *four* problems in operating large wind power generators.
8. What are the methods of extraction of geothermal energy ?
9. What are the raw materials used in a biogas plant ?
10. Discuss the major ocean energy sources.
11. List any *four* advantages of fuel cells.
12. What are the major problems in using hydrogen as an energy source ?

(Ceiling-20)

Turn over

Section B (Paragraph/Problem Type)

Answer **all** *questions in* **a paragraph** *of about* **half a page to one page**.
Each correct answer carries a maximum of 5 *marks.*

13. Using a suitable schematic, explain the working principle of a solar indirect crop dryer.
14. Using a suitable figure, list the essential parts of a wind-electric generating power plant.
15. List any *four* advantages and disadvantages of wind energy conversion system.
16. Explain the binary cycle hydro-geothermal energy resource.
17. List any *four* advantages and disadvantages of geothermal energy.
18. Explain Seebeck and Peltier effects.
19. What do you mean by a nuclear reactor ? Give its classification.

(Ceiling-30)

Section C (Essay Type)

Essays.
Answer in about **two pages**, *any* **one** *question.*
Correct answer carries 10 *marks.*

20. Using a suitable figure, discuss the working principle of a solar furnace. What are the advantages and uses of a solar furnace ?
21. Explain the processes involved in a biomass conversion process.

(1 × 10 = 10 marks)

D 30588 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2022

Physics/Applied physics

PHY 5D 01 (1)/APH 5D01 (1)—NON-CONVENTIONAL ENERGY SOURCES

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

The symbols used in question paper have their usual meanings.

Section A (Short Answer Type)

Answer all questions in two **or** *three sentences, each correct answer carries a maximum of* 2 *marks*).

1. List any *four* demerits of non-conventional energy sources.
2. Distinguish between extraterrestrial and terrestrial solar radiation.
3. What are the advantages of a solar green house?
4. Draw the schematic of a solar cooker indicating the basic parts.
5. Discuss the sources of wind.
6. What is geothermal energy ? Why is it considered renewable ?
7. Explain the structure of earth's interior.
8. What do you mean by biomass ? Give the classification of biomass resources.
9. What are the main components of a biogas plant ?
10. Explain Joule effect.
11. List any *four* advantages of a fuel cell.
12. What is the use of a moderator in a nuclear reactor ? List any two types of moderators.

(Ceiling 20 marks)

Section B (Paragraph/Problem Type)

(Answer **all** *questions in a paragraph of about* **half a page** *to one page, each correct answer carries a maximum of* 5 *marks*).

13. Using a suitable schematic, explain the working principle of a solar still.
14. Discuss the problems in operating large wind power generators.

Turn over

15. Using a suitable figure, explain the hot spring structure.
16. Explain the dry steam open hydro-geothermal energy resource.
17. Write short note on the biomass conversion processes.
18. Discuss the components of a tidal power plant.
19. Discuss the advantages and disadvantages of ocean thermal energy conversion.

(Ceiling 30 marks)

Section C (Essay Type)

(*Essays-Answer in about two pages, any one question correct. Answer carries* 10 *marks*)

20. Using suitable figures, discuss the working principle of solar power plants.
21. With the help of a suitable block diagram, discuss the basic components of a wind energy conversion system. List the advantages and disadvantages of a wind energy conversion system.

(1 × 10 = 10 marks)

D 10685 **(Pages : 2)** **Name.....**

Reg. No.....

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Physics/Applied Physics

PHY 5D 01 (1)/APH 5D 01 (1)—NON-CONVENTIONAL ENERGY SOURCES

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

The symbols used in question paper have their usual meanings.

Section A (Short Answer Type)

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. List any *four* advantages of renewable energy sources.
2. What is the working principle of a pyrheliometer ?
3. Give the advantages of a solar furnace.
4. What do you mean by global warming ? Write the names of any *two* green-house gases.
5. List any *four* environmental impacts of wind energy.
6. What are the basic components of a wind energy conversion system ?
7. Discuss briefly the wind electricity economics.
8. What is the form of geothermal energy ?
9. What are the limitations of utilizing biomass ?
10. Explain the basic biochemical conversion processes.
11. Explain Thomson effect.
12. List any *four* disadvantages of nuclear power plants.

(8 × 3 = 24 marks)

Turn over

Section B (Paragraph/Problem Type)

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Using a suitable figure, discuss the working of a low temperature solar power plant.
14. List any *four* advantages and disadvantages of a wind energy conversion system.
15. Discuss the principle of wind energy conversion.
16. Explain the structure of earth's interior.
17. Using a suitable figure, explain the flash steam open hydro-geothermal energy resource.
18. Discuss the main components of a biogas plant.
19. Explain the working principle of a typical fuel cell.

(5 × 5 = 25 marks)

Section C (Essay)

Answer any **one** *question.*
The question carries 11 *marks.*

20. Explain the working principle of a solar cooker. Explain the different types of solar cookers.
21. What is the working principle of Ocean Thermal Energy Conversion (OTEC) ? Discuss the closed cycle system.

(1 × 11 = 11 marks)

D 10247 **(Pages : 2)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS–UG)

Physics/Applied Physics

PHY 5D 01 (1)—NON CONVENTIONAL ENERGY SOURCES

Time : Two Hours Maximum : 40 Marks

Section A (One Word Answer)

Answer **all** *questions.*
Each question carries 1 *mark.*

1. Which cycle is the most economical one is generating ocean thermal electric power ?
2. What is the major drawback for the extensive use of solar energy ?
3. Which country has second largest green house ?
4. Write any advantage of solar energy.
5. Which is the major component of extra-terrestrial radiation ?
6. Which solar cooker design provides the highest temperature for cooking ?

(6 × 1 = 6 marks)

Section B (Short Answer)

Answer **all** *questions in one or two sentences.*
Each question 2 *carries marks.*

7. Give the working principle of a pyranometer.
8. Mention any to application of fuel cell.
9. What are the major solar radiation measuring instruments ?
10. What are the causes of local winds ?
11. Write down the problems associated with storage of hydrogen fuel in motor vehicles.

(5 × 2 = 10 marks)

Section C (Paragraph Answer)

Answer any **four** *questions.*
Each question carries 4 *marks.*

12. Draw the schematic of a horizontal axis wind mill indicating the essential parts.
13. List three advantages and disadvantages of a photovoltaic energy.
14. Briefly describe any two types of solar houses.

Turn over

15. Discuss the applications of wind energy.

16. Discuss the problems associated with storage of hydrogen fuel in motor vehicles.

17. Explain the source of energy in waves. Discuss a method for converting wave energy to mechanical energy.

(4 × 4 = 16 marks)

Section D (Essays)

Answer any **one** *question.*
The question carries 8 marks.

18. Give an account on the fundamental process used in conversion of solar radiation to heat. Explain the essential part of a flat plate oscillator using a suitable schematic diagram.

19. Classify the geothermal fields of earth? Write short notes on the different geothermal sources. Discuss the different applications of geothermal energy.

20. Explain the working principle of ocean thermal energy conversion system. Also discuss the open and closed cycle methods of ocean thermal electric power generation.

(1 × 8 = 8 marks)

C 50316 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER B.A./B.Sc./B.Com./B.B.A. DEGREE EXAMINATION
NOVEMBER 2017

(CUCBCSS—UG)

Open Course

PHY 5D 01 (1)—NON-CONVENTIONAL ENERGY SOURCES

Time : Two Hours Maximum : 40 Marks

Section A (One Word Answer)

Answer **all** *questions.*
Each question carries 1 *mark.*

1. In the extra-terrestrial radiation, the UV radiation content is about ——— percent.
2. The fundamental effect that is used in the conversion of solar energy to heat energy is ———.
3. ——— convert energy of the windstream to energy of rotation.
4. Which is the best resource for geothermal energy ?
5. The organic matter produced by terrestrial and aquatic plants and their derivatives is called ———.
6. ——— is a periodic rise and fall of the water level of the sea, which is carried by the action of the sun and the moon on the water of the earth.

(6 × 1 = 6 marks)

Section B (Short Answer)

In one **or** *two sentences.*
Answer **all** *questions.*
Each question carries 2 *marks.*

7. What do you mean by solar constant ?
8. What is the working principle of a solar cooker ?
9. What are the factors that determine the output from a wind energy converter ?
10. List any *two* advantages of geothermal energy.
11. Give an example each for a primary and a secondary battery.

(5 × 2 = 10 marks)

Section C (Paragraph Answer)

Answer any **four** *questions.*
Each question carries 4 *marks.*

12. Discuss the essential parts of a flat plate collector.
13. List the advantages and disadvantages of a solar cell over other conventional options.
14. Draw the schematic of a horizontal axis type wind mill and explain the parts.
15. Write short note on gaseous biofuels.
16. Discuss the wave energy conversion mechanism by floats.
17. Explain briefly the open cycle ocean thermal electric power generation.

(4 × 4 = 16 marks)

Section D (Essays)

Answer any **one** *questions.*
The question carries 8 *marks.*

18. Using a neat diagram explain the working principle of a solar distillation system. Discuss the applications of solar distillation systems.
19. Explain briefly the different geothermal sources of energy.
20. Discuss the basic principles of tidal power generation.

(1 × 8 = 8 marks)