Government Science College, Vankal

Short term Course: Advancement in Green Energy Systems

Course Code: STCPHY02

Duration: 30 hours (2 hours per lecture)

Attendance Sheet

Sr. No	Full Name of the Participant	03/01	04/01	05/01	06/01	07/01	08/01	10/01	11/01	12/01	17/01	18/01	19/01	20/01	24/01	22/01
1	CHAUDHARI JINALKUMARI NATHUBHAI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	CHAUDHARI PRATIKKUMAR BABUBHAI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3	CHAUDHARI RAZKUMAR JAGDISHBHAI	P	A	A	A	P	A	A	P	P	P	P	P	P	P	P
4	CHAUDHARI SMRUTI ALKESHBHAI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A
5	GAMIT URVESHKUMAR VISHRAMBHAI	P	P	P	A	P	A	P	P	A	P	A	P	P	P	P
6	PATEL AKSHAYAKUMAR ASHOKBHAI	P	P	P	A	P	A	P	P	P	A	A	A	P	P	P
7	VASAVA AMISHABEN HARISINGBHAI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	VASAVA DIMPALBEN GAMBHIRBHAI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
9	VASAVA KRISHNA SONJIBHAI	P	A	P	A	A	A	P	A	A	P	A	P	A	A	P
10	CHAUDHARI HARSHKUMAR NARUBHAI	P	P	P	A	A	A	P	P	A	A	A	A	P	A	A
11	CHAUDHARI HEMANTKUMAR CHANDRAKANTBHAI	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P
12	CHAUDHARI KAUSHIKKUMAR KAMLESHBHAI	P	P	P	P	P	P	P	A	P	A	P	P	P	P	P
13	CHAUDHARI MADHUSUDAN MOTILAL	P	P	P	P	P	P	P	P	A	P	P	P	P	A	P
14	CHAUDHARI NIRAJBHAI JAGDISHBHAI	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P
15	CHAUDHARI SAGARKUMAR KARASHANBHAI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

16	CHAUDHARI TARUNKUMAR AJITBHAI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
17	GAMIT POOJA DALUBHAI	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P
18	KOSAMIA ZANVIKUMARI KETANSINH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
19	NAIK CHETANBHAI MANESHBHAI	P	P	A	A	A	A	P	A	P	A	A	A	P	A	P	P
20	VASAVA MOTISING MANSING	P	A	A	P	A	P	P	A	P	A	P	P	A	P	P	P
21	CHAUDHARI DIPANSHUKUMAR RASIKBHAI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
22	KESHAVBHAI CHAUDHARI HITESHKUMAR	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P
23	CHAUDHARI PARVATIBEN ARJUNBHAI	P	P	P	A	P	P	P	P	P	P	A	P	P	P	P	P
24	CHAUDHARI UTKARSH BABUBHAI	P	A	P	P	A	P	P	A	A	A	P	P	A	P	A	P
25	GAMIT VANDANA VASVELBHAI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
26	SOLANKI DHARTIKUMARI BALVANTSINH	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P
27	VALVI ATULBHAI LAXMANBHAI	P	P	P	A	P	P	P	P	A	P	P	P	A	P	P	P
28	VASAVA FALGUNI MUKESHBHAI	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P
29	VASAVA FALGUNI MUKESHBHAI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

Head
Physics Department
Govt. Science College, Vanka
Ta Mangrol, Dist. Surat.

Government Science College, Vankal

Short term Course: Advancement in Green Energy Systems

Course Code: STCPHY02

Duration: 30 hours (2 hours per lecture)

Syllabus covered

Day 1 (03/01/2022) (2 hours)
Module 1: Introduction to Green Energy Systems (Part 1)
- Overview of green energy and its importance (2 hours)

Day 2 (04/01/2022) (2 hours)
Module 1: Introduction to Green Energy Systems (Part 2)
- History and development of green energy technologies (2 hours)

Day 3 (05/01/2022) (2 hours)
Module 2: Solar Energy (Part 1)
- Principles of solar energy and photovoltaic systems (2 hours)

Day 4 (06/01/2022) (2 hours)
Module 2: Solar Energy (Part 2)
- Solar panels and solar thermal systems (2 hours)

Day 5 (07/01/2022) (2 hours)
Module 2: Solar Energy (Part 3)
- Case study: Designing and evaluating a small-scale solar power system (2 hours)

Day 6 (08/01/2022) (2 hours)
Module 2: Solar Energy (Part 4)
- Case study: Designing and evaluating a small-scale solar power system (continued) (2 hours)

Day 7 (10/01/2022) (2 hours)
Module 3: Wind Energy (Part 1)
- Principles of wind energy and wind turbines (2 hours)

Day 8 (11/01/2022) (2 hours)
Module 3: Wind Energy (Part 2)
- Types of wind turbines and their applications (2 hours)

Day 9 (12/01/2022) (2 hours)
Module 3: Wind Energy (Part 3)
- Case study: Analyzing wind patterns and designing a wind power system (2 hours)

Day 10 (17/01/2022) (2 hours)
Module 4: Bioenergy (Part 1)
- Principles of bioenergy and biomass conversion (2 hours)

Day 11 (18/01/2022) (2 hours)

Module 4: Bioenergy (Part 2)
- Biofuels and biogas production (2 hours)

Day 12 (19/01/2022) (2 hours)
Module 4: Bioenergy (Part 3)
- Case study: Evaluating biofuels from organic waste (2 hours)

Day 13 (20/01/2022) (2 hours)
Module 5: Energy Storage and Grid Integration (Part 1)
- Importance of energy storage in green energy systems (1 hour)
- Types of energy storage technologies (batteries, supercapacitors, etc.) (1 hour)

Day 14 (21/01/2022) (2 hours)
Module 5: Energy Storage and Grid Integration (Part 2)
- Grid integration and smart grids (1 hour)
- Case study: Implementing an energy storage system (1 hour)

Day 15 (22/01/2022) (2 hours)
Module 6: Future Trends in Green Energy
- Emerging technologies in green energy (1 hour)
- Policy and economic aspects of green energy adoption (1 hour)
- Case studies of successful green energy projects (2 hours)

Government Science College, Vankal

Short term Course: Advancement in Green Energy Systems

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Duration: 30 hours (2 hours per lecture)

Time Table

Day 1 (03/01/2022) (2 hours)
Module 1: Introduction to Green Energy Systems (Part 1)
- Overview of green energy and its importance (2 hours)

Day 2 (04/01/2022) (2 hours)
Module 1: Introduction to Green Energy Systems (Part 2)
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- Principles of solar energy and photovoltaic systems (2 hours)

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Day 5 (07/01/2022) (2 hours)
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- Case study: Designing and evaluating a small-scale solar power system (2 hours)

Day 6 (08/01/2022) (2 hours)
Module 2: Solar Energy (Part 4)
- Case study: Designing and evaluating a small-scale solar power system (continued) (2 hours)

Day 7 (10/01/2022) (2 hours)
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- Case studies of successful green energy projects (2 hours)

सत्यमेव जयते
Government of Gujarat

GOVERNMENT SCIENCE COLLEGE, VANKAL

DEPARTMENT OF PHYSICS

Sr. No. STCPHY02/2021-22/04 Date: 24/01/2022

This is to certify that ~~Mr.~~ / Ms. **CHAUDHARI SMRUTI ALKESHBHAI** has successfully completed the Short Term Certificate Course on **STCPHY02: Advancement in Green Energy Systems** offered by **Department of PHYSICS** from **03/01/2022 to 22/01/2022** and secured **A** grade during performance evaluation.

Principal

Course Coordinator

सत्यमेव जयते
Government of Gujarat

GOVERNMENT SCIENCE COLLEGE, VANKAL

DEPARTMENT OF PHYSICS

Sr. No. STCPHY02/2021-22/01 Date: 24/01/2022

This is to certify that Mr. / ~~Ms~~. **CHAUDHARI JINALKUMARI NATHUBHAI** has successfully completed Short Term Certificate Course on **STCPHY02: Advancement in Green Energy Systems** offered by **Department of PHYSICS** from **03/01/2022 to 22/01/2022** and secured **A** grade during performance evaluation.

Principal

Course Coordinator

सत्यमेव जयते
Government of Gujarat

GOVERNMENT SCIENCE COLLEGE, VANKAL

DEPARTMENT OF PHYSICS

Sr. No. STCPHY02/2021-22/07 Date: 24/01/2022

This is to certify that Mr. / ~~Ms.~~ **VASAVA AMISHABEN HARISINGBHAI** has successfully completed Short Term Certificate Course on **STCPHY02: Advancement in Green Energy Systems** offered by **Department of PHYSICS** from **03/01/2022 to 22/01/2022** and secured **A** grade during performance evaluation.

Principal

Course Coordinator

सत्यमेव जयते
Government of Gujarat

GOVERNMENT SCIENCE COLLEGE, VANKAL

DEPARTMENT OF PHYSICS

Sr. No. STCPHY02/2021-22/18 Date: 24/01/2022

This is to certify that Mr. / ~~Ms.~~ **KOSAMIA ZANVIKUMARI KETANSINH** has successfully completed Short Term Certificate Course on **STCPHY02: Advancement in Green Energy Systems** offered by **Department of PHYSICS** from **03/01/2022 to 22/01/2022** and secured **A** grade during performance evaluation.

Principal

Course Coordinator

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Government of Gujarat

GOVERNMENT SCIENCE COLLEGE, VANKAL

DEPARTMENT OF PHYSICS

Sr. No. STCPHY02/2021-22/16 Date: 24/01/2022

This is to certify that Mr. / ~~Ms.~~ **CHAUDHARI TARUNKUMAR AJITBHAI** has successfully completed Short Term Certificate Course on **STCPHY02: Advancement in Green Energy Systems** offered by **Department of PHYSICS** from **03/01/2022 to 22/01/2022** and secured **A** grade during performance evaluation.

Principal

Course Coordinator

Government Science College, Vankal

Short term Course: Advancement in Green Energy Systems

Course Code: STCPHY02

Examination

Date: 22/01/2022 Time: 30 minutes

Marks: 50

Multiple Choice Questions (MCQs) (2 marks each)

1. Which of the following best defines green energy?
   - a) Energy derived from fossil fuels
   - b) Energy produced without harming the environment
   - c) Energy with the highest efficiency
   - d) Energy that is expensive to produce

2. Which of the following was an early form of green energy technology?
   - a) Nuclear power
   - b) Hydropower
   - c) Coal power plants
   - d) Natural gas turbines

3. Photovoltaic (PV) systems convert sunlight directly into:
   - a) Mechanical energy
   - b) Chemical energy
   - c) Electrical energy
   - d) Thermal energy

4. What material is most commonly used in the production of solar panels?
   - a) Copper
   - b) Silicon
   - c) Aluminium
   - d) Gold

5. Which type of solar energy system uses mirrors or lenses to concentrate sunlight?
   - a) Photovoltaic systems
   - b) Solar thermal systems
   - c) Wind energy systems
   - d) Bioenergy systems

6. Which of the following is NOT a component of a small-scale solar power system?
   - a) Solar panels
   - b) Wind turbine
   - c) Inverter
   - d) Battery storage

7. What is a key factor in evaluating the efficiency of a solar power system?
   - a) Size of the solar panels
   - b) Distance from the sun
   - c) Angle of installation
   - d) Length of the power cables

8. The main disadvantage of solar energy is:
   - a) High maintenance cost
   - b) High pollution levels
   - c) Intermittency due to weather conditions
   - d) Incompatibility with other energy sources

9. Wind energy is primarily converted into electricity using:
   - a) Windmills
   - b) Wind turbines
   - c) Wind farms
   - d) Wind towers

10. Which of the following types of wind turbines is commonly used in offshore wind farms?
   - a) Horizontal-axis wind turbines
   - b) Vertical-axis wind turbines
   - c) Helix wind turbines
   - d) Darrieus wind turbines

11. What is the most critical factor for the efficiency of a wind turbine?
   - a) Blade length
   - b) Tower height
   - c) Wind speed
   - d) Foundation type

12. The Betz limit states that the maximum efficiency of a wind turbine is:
   - a) 50%
   - b) 59.3%
   - c) 70%
   - d) 90%

13. Wind energy is considered sustainable because:
   - a) It relies on fossil fuels
   - b) Wind is a renewable resource
   - c) It produces large amounts of waste
   - d) It requires large land areas

14. What is a key consideration in the design of a wind power system?
   - a) Sunlight intensity
   - b) Wind pattern analysis
   - c) Soil quality
   - d) Air pollution levels

15. Biomass is converted into energy primarily through:
   - a) Combustion
   - b) Photosynthesis
   - c) Condensation
   - d) Fission

16. Which of the following is an example of a biofuel?
   - a) Diesel

- b) Ethanol
- c) Natural gas
- d) Coal

17. Biogas production primarily involves:
- a) Aerobic digestion of organic matter
- b) Anaerobic digestion of organic matter
- c) Combustion of fossil fuels
- d) Electrolysis of water

18. Which of the following is a potential source of biomass?
- a) Plastic waste
- b) Organic waste
- c) Metal scrap
- d) Glass

19. Evaluating biofuels from organic waste involves considering:
- a) Water content
- b) Energy content
- c) Temperature variations
- d) None of the above

20. Energy storage is crucial in green energy systems because:
- a) It reduces the need for energy production
- b) It allows energy to be stored for later use
- c) It increases energy consumption
- d) It eliminates the need for renewable energy sources

21. Which of the following is NOT a type of energy storage technology?
- a) Batteries
- b) Supercapacitors
- c) Steam engines
- d) Flywheels

22. A smart grid primarily helps in:
- a) Producing more energy
- b) Reducing energy losses
- c) Integrating renewable energy sources
- d) Decreasing energy storage needs

23. The main challenge in grid integration of renewable energy is:
- a) High energy production costs
- b) Variability and intermittency of energy supply
- c) High levels of pollution
- d) Limited availability of renewable resources

24. Which of the following is an emerging technology in green energy?
- a) Coal power
- b) Solar hydrogen production
- c) Oil drilling
- d) Nuclear fusion

25. Policy and economic aspects of green energy adoption include:
- a) Carbon pricing
- b) Fossil fuel subsidies
- c) Water conservation
- d) Mining regulations

Government Science College, Vankal

Short term Course: Advancement in Green Energy

Course Code: STCPHY02

OMR Sheet

Name of the Student: Chaudhari Smruti Alkeshbhai

Roll no.: 4

Date: 22/01/2022

Signature of the Invigilator:	Marks:
Hemal.G.	44/50

1.	a	**b**	c	d	6.	a	**b**	c	d	11.	a	b	**c**	d	16.	a	**b**	c	d	21.	a	b	**c**	d
2.	a	**b**	c	d	7.	a	b	**c**	d	12.	a	**b**	c	d	17.	a	**b**	c	d	22.	a	b	**c**	d
3.	a	b	**c**	d	8.	a	b	**c**	d	13.	a	**b**	c	d	18.	a	b	c	**d**	23.	a	**b**	c	d
4.	a	b	**c**	d	9.	a	**b**	c	d	14.	**a**	b	c	d	19.	a	**b**	c	d	24.	a	**b**	c	d
5.	a	**b**	c	d	10.	**b**	c	d		15.	**a**	b	c	d	20.	a	**b**	c	d	25.	**a**	b	c	d

Government Science College, Vankal

Short term Course: Advancement in Green Energy

Course Code: STCPHY02

OMR Sheet

Name of the Student: CHAUDHARI JINALKUMARI NATHUBHAI

Roll no.: 1

Date: 22/01/2202

Signature of the Invigilator:	Marks:
Jamal.P.	40/50

1.	a	**c**	d	6.	a	**c**	d	11.	a	b	**d**	16.	a	**c**	d	21.	a	b	**d**
2.	**b**	c	d	7.	a	b	**d**	12.	a	**c**	d	17.	a	**c**	d	22.	**b**	c	d
3.	a	b	**d**	8.	a	b	**d**	13.	a	**c**	d	18.	a	b	**d**	23.	a	**c**	d
4.	a	**c**	d	9.	**b**	c	d	14.	a	**c**	d	19.	a	b	**c**	24.	a	**c**	d
5.	a	**c**	d	10.	**b**	c	d	15.	**b**	c	d	20.	a	**c**	d	25.	**b**	c	d

Government Science College, Vankal

Short term Course: Advancement in Green Energy

Course Code: STCPHY02

OMR Sheet

Name of the Student: Vasava Amishaben Harisinghbhai

Roll no.: 7

Date: 22-01-2022

Signature of the Invigilator:	Marks: 40/50
Jeevan.P.	

1. a ● c d	6. a ● c d	11. a b ● d	16. a b ● d	21. a b ● d
2. a ● c d	7. a b ● d	12. a b c ●	17. a ● c d	22. a b ● d
3. a b ● d	8. a b ● d	13. a ● c d	18. a ● c d	23. a ● c d
4. a b c ●	9. a ● c d	14. a b ● d	19. a ● c d	24. a ● c d
5. a ● c d	10. ● b c d	15. ● b c d	20. a ● c d	25. a b c ●

Government Science College, Vankal

Short term Course: Advancement in Green Energy

Course Code: STCPHY02

OMR Sheet

Name of the Student: Kosamia Zanvikumari Ketansinh

Roll no.: 18

Date: 22-01-2022

Signature of the Invigilator:	Marks:
Hemal.P	38/50

1. a ● c d	6. a ● c d	11. a b ● d	16. a ● c d	21. a b c ●
2. a b ● d	7. a b c ●	12. a ● c d	17. a ● c d	22. a b ● d
3. a b ● d	8. a b ● d	13. a ● c d	18. a b ● d	23. a ● c d
4. a ● c d	9. a ● c d	14. a ● c d	19. ● b c d	24. a ● c d
5. ● b c d	10. ● b c d	15. ● b c d	20. a ● c d	25. ● b c d

Government Science College, Vankal

Short term Course: Advancement in Green Energy

Course Code: STCPHY02

OMR Sheet

Name of the Student: Chaudhari Tarunkumar Ajitbhai

Roll no.: 16

Date: 22-01-2022

Signature of the Invigilator:	Marks:
Hemalip	36/50

1.	a	**b**	c	d	6.	a	**b**	c	d	11.	a	b	**c**	d	16.	a	**b**	c	d	21.	a	**b**	c	d
2.	a	**b**	c	d	7.	a	**b**	c	d	12.	a	**b**	c	d	17.	a	b	**c**	d	22.	a	b	**c**	d
3.	a	b	**c**	d	8.	a	b	**c**	d	13.	a	**b**	c	d	18.	a	b	c	**d**	23.	a	**b**	c	d
4.	a	**b**	c	d	9.	a	**b**	c	d	14.	a	**b**	c	d	19.	a	b	c	**d**	24.	a	**b**	c	d
5.	a	b	**c**	d	10.	a	b	c	d	15.	a	b	c	d	20.	a	**b**	c	d	25.	a	b	**c**	d