Enrolment No/Seat No.: _____

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT

(An Autonomous College U/s UGC Act 1956)

B. Voc. SEMESTER-I, SEMESTER END EXAMINATION - WINTER 2024

Subject Code: 1SRE104 **Date: 20-12-2024**

Subject Name: INTRODUCTION TO RENEWABLE ENERGY SOURCES

Time: 11:00 AM to 01:00 PM **Total Marks: 50**

Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Attempt all questions in the question paper.
3. The figures to the right of each question indicate full marks. Make suitable assumptions with proper justification wherever required.
4. Simple, non-programmable scientific calculators are permitted.
5. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A-Application, N-Analyze, E-Evaluate, C-Create), CO - Course Outcomes.

		Marks	BL	CO
Q.1	**Objective-Type Questions**	**[05]**		
(a)	Which of the following is NOT a renewable energy source?	**1**	**U**	**2**
	(i) Solar energy **(ii)** Wind energy			
	(iii) Coal **(iv)** Geothermal energy			
(b)	Which instrument is used to measure solar radiation?	**1**	**R**	**3**
	(i) Pyranometer **(ii)** Barometer			
	(iii) Anemometer **(iv)** Thermometer			
(c)	What is the primary function of rotor blades in a wind turbine?	**1**	**R**	**4**
	(i) To generate electricity directly			
	(ii) To convert mechanical energy into electrical energy			
	(iii) To capture wind energy and convert it into rotational energy			
	(iv) To support the nacelle at a height where wind speeds are optimal			
(d)	Which of the following components is responsible for controlling water flow to the turbines?	**1**	**U**	**4**
	(i) Dam **(ii)** Generator			
	(iii) Transformer **(iv)** Penstock			

(e) What is biomass energy primarily derived from?	**1**	**U**	**1**

(i) Fossil fuels **(ii)** Organic materials

(iii) Solar radiation **(iv)** Nuclear energy

Q.2 Attempt Any Three **[15]**

(a) Differentiate between renewable energy and non-renewable energy.	**5**	**N**	**1**
(b) What is renewable energy? Explain different types of renewable energy.	**5**	**R**	**1**
(c) Explain solar power generation with neat diagram.	**5**	**U**	**2**
(d) Describe construction and working of Pyranometer.	**5**	**U**	**2**

Q.3 Attempt Any Three **[15]**

(a) What is solar PV system? Write the advantages and disadvantages of solar PV System.	**5**	**R**	**3**
(b) Explain Basic components of wind energy conversion system (WECS) with its block diagram.	**5**	**U**	**3**
(c) Calculate the power generated by a wind turbine with a wind speed of 15 m/s and a blade length of 40 m.	**5**	**A**	**4**
(d) Define following terms: (i) Efficiency of wind mill (ii) Swept area (iii) Cut in speed (iv) Cut out speed (v) Wind velocity	**5**	**R**	**4**

Q.4 Attempt Any Three **[15]**

(a) Explain the following terms: (i) Catchment area (ii) Reservoir (iii) Surge tank (iv) Penstock	**5**	**R**	**4**
(b) Draw the block diagram and explain the key components of a geothermal power plant and their functions.	**5**	**U**	**3**
(c) Explain the emerging trend in solar thermal energy.	**5**	**U**	**1**
(d) Write a short note on emerging trend in tidal energy.	**5**	**U**	**1**

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