A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59371

B.E./B.Tech. DEGREE EXAMINATION, NOV 2018

Open elective

Civil Engineering

15UEE971 - NON CONVENTIONAL ENERGY RESOURCES AND APPLICATIONS

(Common to CSE, ECE, MECH, EIE ,IT and Chemical Engineering branches)
(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Fossil fuel and metallic minerals are: CO1- R

   (a) Renewable resource (b) Inexhaustible resources

   (c) Non-renewable resources (d) None of these

2. The major cause for land degradation in our country is CO1- R

   (a) Soil erosion (b) Pollution of soil (c) Water-logging (d) None of the above

3. A liquid flat plate collector is usually held tilted in a fixed position, facing _____ if located in the northern hemisphere. CO2- R

   (a) North (b) South (c) East (d) West

4. A typical insulation material used in a solar collector is CO2- R

   (a) Fibre glass (b) Cotton (c) Glass wool (d) None of the above

5. The installed capacity of wind energy in India is about CO3- R

   (a) 8000 MW (b) 1500 MW (c) 6000 MW (d) 4000 MW

6. Tidal energy utilizes CO3- R

   (a) Kinetic energy of water (b) Potential energy of water

   (c) Both (a) and (b) (d) None of these

7. Common energy source in Indian villages is: CO4- R

(a) Electricity (b) Coal (c) Sun (d) Wood and animal dung

8. Boiling water reactor and pressurised water reactors are: CO4- R

(a) Nuclear reactor (b) Solar reactor (c) OTEC (d) Biogas reactor

9. As wave travels, intensity CO5- R

(a) Increases (b) Remains same (c) Decreases (d) Varies

10. The efficiency of geothermal plant is about CO5-R

(a) 5% (b) 15% (c) 25% (d) 35%

PART – B (5 x 2= 10 Marks)

11. List three non – conventional energy sources of electric energy in India. CO1- U

12. Draw the block diagram for power generation from solar cell array. CO2-U

13. Mention the advantages and disadvantages of wind power. CO3- Ana

14. State the advantages and disadvantages of bio-diesel fuel. CO4- U

15. List the main components of fuel cell systems. CO5- Ana

PART – C (5 x 16= 80 Marks)

16. (a) Briefly explain the Importance of Non-Conventional energy sources. CO1- U (16)

Or

(b) Explain the Environmental aspects of Energy. CO1- U (16)

17. (a) List out the concentrating collectors and explain its working principles with neat sketch. CO2-U (16)

Or

(b) Draw and explain the design principles and construction details of a box –type solar cooker. CO2-U (16)

18. (a) Draw and explain the various parts of wind turbine generator with neat diagram. CO3-Ana (16)

Or

(b) Write a short notes on safety and environmental aspects of wind energy. CO3-Ana (16)

19.	(a)	Explain the procedure for ethanol production from sugarcane with neat layout diagram and mention the chemical equation.	CO4- U	(16)
		Or		
	(b)	(i) Classify the biogas gasifier.	CO4- Ana	(4)
		(ii) Analyse the down draught,Up draught, cross draught biogas gasifier .	CO4- Ana	(12)
20.	(a)	Draw and explain the typical arrangements of small hydro power station.	CO5- U	(16)
		Or		
	(b)	Draw and explain the bulb turbine and generator for small scale hydro –electric generation.	CO5- U	(16)