TECHNO INDIA-BATANAGAR

(DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING)

QUESTION BANK-2018

Question Paper Details					
Course	Stream	Semester	Subject	Paper Code	Chapter
B.TECH	ECE	8th	Renewable Energy	EC-802C	1. Classification of Energy Source.

Paper Setter Details			
Name	Designation	Mobile No.	Email ID
SUMAN KUMAR LAHA	Assistant Professor	9674766145	sumanlaha88@gmail.com

MCQ (Type-1): [Maximum marks to be allotted=1]

1. Which of the following is a non-renewable resource?

(a) Coal (b) Forests (c) Water (d) Wildlife

2. Which among the following is not a renewable source of energy?

(a) Solar energy (b) Biomass energy (c) Hydro-power (d) Geothermal energy

3. Identify the non-renewable energy resource from the following.

(a) Coal (b) Fuel cells (c) Wind power (d) Wave power

4. Which of the following is a disadvantage of most of the renewable energy sources?

(a) Highly polluting (b) High waste disposal cost (c) Unreliable supply

(d) High running cost

5. Photovoltaic energy is the conversion of sunlight into.

(a) Chemical energy (b) Biogas (c) Electricity (d) Geothermal energy

6. Horizontal axis and vertical axis are the types of.

(a) Nuclear reactor (b) Wind mills (c) Biogas reactor (d) Solar cell

7. Which among the following is not an adverse environmental impact of Tidal power generation?

(a) Interference with spawing and migration of fish

(b) Pollution and health hazard in the estuary due to blockage of Flow of polluted water into the sea

(c) Navigational hazard

(d) None of the above

8. Steam reforming is currently the least expensive method of producing.

(a) Coal (b) Biogas (c) Hydrogen (d) Natural gas

9. Both power and manure is provided by.

(a) Nuclear plants (b) Thermal plants (c) Biogas plants (d) Hydroelectric plant

10. Common energy source in Indian villages is.

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

12. The one thing that is common to all fossil fuels is that they.

(a) Were originally formed in marine environment (b) Contain carbon

(c) Have undergone the same set of geological processes during their formation

(d) Represent the remains of one living organisms

13. The process that converts solid coal into liquid hydrocarbon fuel is called.

(a) Liquefaction (b) Carbonation (c) Catalytic conversion (d) Cracking

14. Crude oil is.

(a) Colourless (b) Odourless (c) Smelly yellow to black liquid

(d) Odourless yellow to black liquid

15. Boiling water reactor and pressurized water reactors are.

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

Short Question (Type-2): [Maximum marks to be allotted=2]

1. What is Greenhouse effect?
2. What are the conventional and nonconventional energy sources?
3. Write the advantages of use of renewable sources of energy.
4. Define list and drag.

Subjective question (Type-3): [Maximum marks to be allotted=3]

1. Distinguish between flat plate and concentrating collectors.
2. Write principle of operation of wave power generation.

Broad Question (Type-4): [Maximum marks to be allotted=5]

1. Write the advantages and disadvantages of fuel cells.
2. Write the five general categories of geothermal sources.

Question Paper Details					
Course	Stream	Semester	Subject	Paper Code	Chapter
B.TECH	ECE	8^{th}	Renewable Energy	EC-802C	2.Solar Energy

Paper Setter Details			
Name	Designation	Mobile No.	Email ID
SUMAN KUMAR LAHA	Assistant Professor	9674766145	sumanlaha88@gmail.com

MCQ (Type-1): [Maximum marks to be allotted=1]

1. For obtaining solar energy during sunlight, energy is stored in batteries of.

(a) Nickel cadmium (b) zinc cadmium (c) Nickel zinc (d) hydrogen

2. Direct Solar energy is used for

(a) Water heating (b) Distillation (c) Drying (d) All of the above

3. The power from the sun intercepted by the earth is approximately

(a) 1.8×10^8 MW (b) 1.8×10^{11} MW (c) 1.8×10^{14} MW (d) 1.8×10^{17} MW

4. The collection efficiency of Flat plate collector can be improved by

(a) Putting a selective coating on the plate
(b) Evacuating the space above the absorber plate
(c) Both (A) and (B)
(d) None of the above

5. Maximum efficiency is obtained in
(a) Flat plate collector
(b) Evacuated tube collector
(c) Line focusing collector
(d) Paraboloid dish collector

6. The value of Solar Constant is
(a) 1347 W/m^2
(b) 1357 W/m^2
(c) 1367 W/m^2
(d) 1377 $W/m^{2.}$

7. Absorption of Solar radiations at earth's surface occur due to presence of
(A) Ozone (B) Water vapors (C) Carbon di-oxide (D) All of the above

8. Solar radiation flux is usually measured with the help of a
(a) Anemometer
(b) Pyranometer
(c) Sunshine recorder
(d) All of the above

9. A module in a solar panel refers to
(a) Series arrangement of solar cells.
(b) Parallel arrangement of solar cells.
(c) Series and parallel arrangement of solar cells.
(d) None of the above.

10. The efficiency of the solar cell is about
(a) 25 %
(b) 15 %
(c) 40 %
(d) 60 %
11. The output of the solar cell is of the order
(a) 0.5 W
(b) 1.0 W
(c) 5.0 W
(d) 10.25 W
12. What is the maximum possible output of a solar array?
(a) 300 W/m^2
(b) 100 W/m^2
(c) 250 W/m^2
(d) 500 W/m^2
13. The current density of a photo voltaic cell ranges from
(a) 10 – 20 mA/cm^2
(b) 40 – 50 mA/cm^2
(c) 20 – 40 mA/cm^2
(d) 60 – 100 mA/cm^2

Short Question (Type-2): [Maximum marks to be allotted=2]

1. How do a Photovoltaic works?
2. How long will PV modules last?
3. Do solar panel still work in shade?
4. What is a solar panel?

Subjective question (Type-3): [Maximum marks to be allotted=3]

1. What is meaning of Solar panel efficiency? How it is calculated?
2. State two limitations of solar energy.
3. Explain the principle underlying the working of a solar cell.

Broad Question (Type-4): [Maximum marks to be allotted=5]

1. How Does A Residential Solar Electric System Work?
2. What do you mean by monocrystalline solar panel & polycrystalline solar panel?
3. Show the I-V & PV characteristics under different parameters of a

one diode model.

4. Show the I-V & PV characteristics under different parameters of a two diode model.

Question Paper Details					
Course	Stream	Semester	Subject	Paper Code	Chapter
B.TECH	ECE	8th	Renewable Energy	EC-802C	3.Wind Energy

Paper Setter Details			
Name	Designation	Mobile No.	Email ID
SUMAN KUMAR LAHA	Assistant Professor	9674766145	sumanlaha88@gmail.com

MCQ (Type-1): [Maximum marks to be allotted=1]

1. The amount of energy available in the wind at any instant is Proportional to ___ of the wind speed.

(a) Square root power of two

(b) Square root power of three

(c) Square power

(d) Cube power

2. Wind energy is harnessed as _____ energy with the help of windmill or turbine.

(a) Mechanical

(b) Solar

(c) Electrical

(d) Heat

3. Winds having following speed are suitable to operate wind turbines.

(a) 5 – 25m/s

(b) 10 – 35m/s

(c) 20 – 45m/s

(d) 30 – 55m/s

4. The following is (are) the classification of winds

(a) Global wind

(b) Local wind

(c) Both (A) and (B)

(d) None of the above

5. The wind speed is measured using an instrument called

(a) Pyranometer

(b) Manometer

(c) Anemometer

(d) Wind vane

6. The rate of change of wind speed with height is called

(a) Wind shear

(b) Wind rose

(c) Wind solidity

(d) None of the above

7. The atmosphere with uniform wind speed is called the ____ atmosphere

(a) Plain

(b) Surface

(c) Free

(d) Shear

8. Turbines blades have ____ type cross section to extract energy from wind.

(a) Aero foil

(b) Elliptical

(c) Rectangular

(d) All of the above

9. The Nacelle of windmill houses

(a) Gearbox

(b) Brakes

(c) Generator

(d) All of the above

10. What is the earliest recorded use of windmills?

(a) Generating Electricity

(b) Pumping water

(c)Jousting

(d)Grinding Grain

11. Who invented the first electricity generating wind turbine?

(a) French engineer Georges J.M.Darrieous

(b)Scottish engineer James Blyth

(c)American inventor Benjamin Franklin

(d)American inventor Charles F.Brush

12. How many blades modern wind turbines have?

(a)3 (b 2 (c) 4 (d) there is no such standard numbers of blade.

13. Which is not a part of modern wind turbine?

(a) Compressor

(b)Gear box

(c)Nacelle

(d)Yaw drive

Short Question (Type-2):[Maximum marks to be allotted=2]

1. What causes wind to produce Electricity?

2. How much electricity can a turbine produce?

3. What is the typical rate of return investment in wind turbine?

4. What are the variables of wind production?

Subjective question (Type-3): [Maximum marks to be allotted=3]

1. Are wind turbine noisy? If it is then why?

2. How is a wind turbine rated?

3. How deep does a wind turbine have to be planted?

4. What are the different causes of Local winds?

5. Give the relationship between wind speed and height.

6. What are the factors determine the output from a wind energy converter?

7. What is the conversion losses available wind energy conversion system?

Broad Question (Type-4): [Maximum marks to be allotted=5]

1. Give the expression for available wind power and Draw the curve a shows The combined effects of wind Speed and Rotor Diameter on wind power generation.

2. Define Power Co-efficient and explain what the advantage of selecting sites is with annual mean wind speeds and building larger rather than smaller wind generator?

3. Write the general Energy Equation for Steady State Flow and Write the energy flow equation in terms of wind energy conversion.

4. Write down the condition for maximum power generation in wind Conversion system.

5. Write down the expression or maximum power generated from an ideal wind turbine with horizontal axis and the expression for Circumferential and Axial Thrust Force.

6. What are the mechanisms for producing forces from wind? Define Airfoil.

Question Paper Details					
Course	Stream	Semester	Subject	Paper Code	Chapter
B.TECH	ECE	8th	Renewable Energy	EC-802C	4.Hydel Energy & Bio Energy

Paper Setter Details			
Name	Designation	Mobile No.	Email ID
SUMAN KUMAR LAHA	Assistant Professor	9674766145	sumanlaha88@gmail.com

MCQ (Type-1): [Maximum marks to be allotted=1]

1. How does hydroelectric energy work?

(a) It uses the power of the sun to turn work

(b) Water turns a piece similar to a propeller to power

(c) The water heats up and it turns into water vaper to power

(d) Water freezes and then is thrown to power it

2. Where is hydroelectric energy used the most?

(a) United states (b)Japan (c) Greenland (d) China

3. Why is it so easy for hydroelectric energy to make energy?

(a) It was made that way

(b) Water is everywhere so you can use it everywhere

(c) It doesn't cost that much to make one

(d) It rains all the time.

4. What is a main power plant for hydroelectric energy?

(a) Rivers (b) Oceans (c) Dams (d) Sunflowers

Short Question (Type-2): [Maximum marks to be allotted=2]

1. How does Hydropower work?
2. How is the power generated in Hydropower?
3. How much energy can anyone gain from a given amount of water falling at a certain height?
4. What is required setup to form a small hydropower installation?

Subjective question (Type-3): [Maximum marks to be allotted=3]

1. What are the advantages and disadvantages of hydroelectric power system?
2. How much hydropower could be built at undeveloped site?

Broad Question (Type-4): [Maximum marks to be allotted=5]

1. What is the difference between small scale hydro power projects and large scale hydro power projects?
2. How much hydropower is produced by small scale hydro power projects in the world?
3. What is the difference between CO_2 emission from bioenergy and fossils fuels?
4. How do trees and forests acts as carbon sink?
5. Does tree harvesting cancel outs the carbon sink?
6. What land area is needed to supply bioenergy to power station?
7. What types of trees and crops are best as carbon sink or for bioenergy and wood production?

Question Paper Details					
Course	Stream	Semester	Subject	Paper Code	Chapter
B.TECH	ECE	8^{th}	Renewable Energy	EC-802C	5.Tidal Energy & Wave Energy

Paper Setter Details			
Name	Designation	Mobile No.	Email ID
SUMAN KUMAR LAHA	Assistant Professor	9674766145	sumanlaha88@gmail.com

MCQ (Type-1): [Maximum marks to be allotted=1]

1. Tidal energy utilizes
(a) Kinetic energy of water
(b) Potential energy of water.
(c) Both (a) and (b)
(d)None of these.

2. In a fuel cell, electrical energy is produced by
(a) Reaction of hydrogen with oxygen
(b) Thermionic action
(c) Combustion of fuel in the absence of oxygen.
(d) None of the above.

3. Thermal gradient in a geo thermal plant is given by
(a) Heat flux * thermal conductivity
(b) Heat flux / thermal conductivity
(c) Thermal conductivity / heat flux
(d) None of these

4. Tidal energy development needs
(a) Huge capacity and long construction time.
(b)Huge capacity and low construction time.
(c) Low capacity and long construction time.
(d) Low capacity and low construction time

5. The potential of developing tidal power in India is in
(a) Kutch
(b) Ran
(c) San joe
(d) Severn

6. An increased tide range twice a month is the

(a) tidal average (b)tidal range (c)neap tide (d)spring tide

7. Minimum range of tide which occurs during first and third quarters

of moon is called

(a) tidal average (b)tidal range (c)neap tide (d)spring tide

8. Tidal energy utilizes

(a) Kinetic energy of water
(b) Potential energy of water.
(c) Both (a) and (b)
(d) None of these.

9. Tidal energy development needs

(a) Huge capacity and long construction time.
(b) Huge capacity and low construction time.
(c) Low capacity and long construction time.
(d) Low capacity and low construction time

Short Question (Type-2): [Maximum marks to be allotted=2]

1. What is tidal energy? Explain its working with a schematic diagram.
2. Maintain the name of the Wave power devices.

Subjective question (Type-3): [Maximum marks to be allotted=3]

1. What is a nuclear reactor? How is electrical energy generated from such a power plant?

Broad Question (Type-4): [Maximum marks to be allotted=5]

1. What is geothermal energy? How can we generate electricity from this non-conventional source of energy?
2. What is a nuclear reactor? How is electrical energy generated from such a power plant?

3. Question Paper Details 4.					
Course	Stream	Semester	Subject	Paper Code	Chapter
B.TECH	ECE	8^{th}	Renewable Energy	EC-802C	6.Geo thermal Energy

Paper Setter Details			
Name	Designation	Mobile No.	Email ID
SUMAN KUMAR LAHA	Assistant Professor	9674766145	sumanlaha88@gmail.com

MCQ (Type-1): [Maximum marks to be allotted=1]

1. Geothermal energy is the thermal energy present
   (a) On the surface of the earth
   (b) In the interior of the earth
   (c) On the surface of the ocean
   (d) None of the above

2. The following is (are) the visible sign(s) of the large amount of heat lying in the earth's interior.
   (a) Volcanoes

   (b) Geysers

   (c) Hot springs

   (d) All of the above

3. The center of earth is estimated to have a high temperature of about
   (a) 1,000 K

   (b) 4,000 K

   (c) 6,000 K

   (d) 10,000 K

4. The molten rock within the earth is
   (a) Igneous

   (b) Magma

   (c) Sedimentary

   (d) Metamorphic

5. The following is (are) type(s) of Geothermal resource
   (a) Hydrothermal

   (b) Hot dry rock

   (c) Geopressurised

   (d) All of the above

6. When the water is ejected from earth's interior in the form of hot water, it is called
   (a) Geyser

   (b) Hot springs

(c) Both (A) and (B)

(d) None of the above

Short Question (Type-2): [Maximum marks to be allotted=2]

1. What is Geothermal Energy?
2. How does geothermal heat get up to the earth's surface?
3. Why is geothermal energy "environmentally friendly"?

Subjective question (Type-3): [Maximum marks to be allotted=3]

1. Why is geothermal considered a renewable energy resource?
2. Does technology exist to extend reservoir life?
3. Why has there not been greater development of U.S. geothermal capacity?

Broad Question (Type-4): [Maximum marks to be allotted=5]

1. Does an open-loop system cause environmental damage? Are there any laws that apply to open-loop installation?
2. How are the pipe sections of the loop joined?
   What types of Geothermal Heat Pumps are available?
3. How do geothermal heat pumps compare to conventional systems?
   What is ECONAR's warranty?

Question Paper Details					
Course	Stream	Semester	Subject	Paper Code	Chapter
B.TECH	ECE	8^{th}	Renewable Energy	EC-802C	6. Fuel Cells

Paper Setter Details			
Name	Designation	Mobile No.	Email ID
SUMAN KUMAR LAHA	Assistant Professor	9674766145	sumanlaha88@gmail.com

MCQ (Type-1): [Maximum marks to be allotted=1]

1. A fuel cell is used to convert chemical energy into
   (a) Mechanical energy
   (b) Solar energy
   (c) Electrical energy
   (d) Potential energy

2. Select the incorrect statement from the following option.
   (a) Fuel cells have high efficiency
   (b) The emission levels of fuel cells are far below the permissible limits
   (c) Fuel cells are modular
   (d) The noise levels of fuel cells are high
3. _____ and suitable catalyst are required to promote high rate of electrode processes.
   (a) Lower temperature
   (b) Higher temperature
   (c) Moderate temperature
   (d) Very low temperature
4. A stable interface between solid _____ liquid _____ and gaseous _____ promotes high rate of electrode processes.
   (a) Fuel, electrolyte, electrode
   (b) Electrode, fuel, electrolyte
   (c) Electrode, electrolyte, fuel
   (d) Fuel, electrode, electrolyte
5. Which of the following is not an example of fuel cell?
   (a) Hydrogen-oxygen cell
   (b) Methyl-oxygen-alcohol cell
   (c) Propane-oxygen cell
   (d) Hexanone-oxygen cell
6. The electrolytic solution used in hydrogen-oxygen fuel cell is
   (a) 75% KOH solution
   (b) 25% KOH solution
   (c) 75% NaOH solution
   (d) 25% NaOH solution
7. The standard emf of the hydrogen-oxygen fuel cell is
   (a) 1.23 V
   (b) 2.54 V
   (c) 3.96 V
   (d) 0.58 V

Short Question (Type-2): [Maximum marks to be allotted=2]

1. What is a fuel cell?
2. Why use a fuel cell?
3. What are the uses for fuel cells?

Subjective question (Type-3): [Maximum marks to be allotted=3]

1. What are the main benefits of hydrogen fuel cells?

2. How much is a hydrogen fuel cell vehicle and when can I expect to buy one from my local dealership?
3. How does a hydrogen fuel cell vehicle compare to an electric vehicle?

Broad Question (Type-4): [Maximum marks to be allotted=5]

1. What is the principle of fuel cell? How many types of fuel cells is present?
2. Explain the advantages and limitation of fuel cells.
3. What is the meaning of Magneto hydrodynamics energy conversion.