

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
End Semester Examination – Winter 2018

Course: B. Tech

Subject Name: Renewable Energy Sources

Max Marks:60

Date: 12/12/2018

Sem: III

Subject Code: BTCHE306B

Duration: 3 Hr.

Instructions to the Students:

1. Solve ANY FIVE Questions out of the following.
2. Figures to the right indicate full marks.
3. Draw neat diagrams wherever necessary.

Q.1 Each of the following questions comprises four alternate answers. Choose the correct answer for each. [12M]

1. The following is (are) the visible sign(s) of large amount of heat lying in the earth's interior.
 - a) Volcanoes
 - b) Geysers
 - c) Hot springs
 - d) All of the above
2. What do fuel cells emit?
 - a) Oxygen
 - b) Hydrogen
 - c) Nothing
 - d) Water
3. The Ocean thermal energy conversion (OTEC) is uses
 - a) Energy difference
 - b) Potential difference
 - c) Temperature difference
 - d) Kinetic difference
4. The collection efficiency of flat plat collector can be improved by,
 - a) Putting a selective coating on the plate.
 - b) Evacuating the space above the absorber plate.
 - c) Both (A) & (B)
 - d) None of these.
5. Wind energy is harnessed as _____ energy with the help of windmill or turbine.
 - a) Mechanical
 - b) Solar
 - c) Electrical
 - d) Heat
6. The process that converts solid coal into liquid hydrocarbon fuel is called,
 - a) Liquification
 - b) Carbonation
 - c) Catalytic conversion
 - d) Cracking

Q. 2 Explain the following. (Attempt any Three)

[12M]

- A. Non-conventional Energy sources
- B. Solar pond electric power plant
- C. Fluidized bed gasifier
- D. Float wave power machine

Q. 3 A. Derived the expression for maximum power obtained by turbine in extraction of wind energy.

[12M]

- B. Explain briefly with neat diagram floating drum-type biogas plant.

Q.4 A. Explain briefly with neat diagrams types of tidal power plant.

[12M]

- B. Explain briefly the construction and working of a 'solar distillation' with neat diagram.

Q.5 A. Derive the expression for power and energy in single basin single effect cycle scheme.

[12M]

- B. A tidal power plant of a single-basin type has a basin area of 24 km^2 . The tide has a range of 10 m. The turbine stops operation when the head on it falls below 3m. Calculate the average power generated during one filling/emptying process in MW if the turbine generator efficiency is 75%. Density of sea water = 1025 kg/m^3 ; $g = 9.8 \text{ m/s}^2$.

OR

Describe hydrogen-oxygen fuel cell in detail with neat sketch.

Q.6 A. Write down the properties, advantages and application of hydrogen as fuel.

[12M]

- B. List out the resources of geothermal energy. Explain any one in detail.

*****END*****