

SUBJECT CODE : 16VS/VM/ET26

B. Voc. DEGREE EXAMINATION, APRIL 2022  
SUSTAINABLE ENERGY MANAGEMENT  
SECOND SEMESTER

COURSE : MAJOR CORE

PAPER : ENERGY CONVERSION TECHNIQUES (THEORY)

TIME : 6 HOURS

MAX. MARKS : 100

(Theory: 50marks +Practical: 50 marks)

SECTION – A

ANSWER ALL QUESTIONS

(20X1 = 20)

I. CHOOSE THE CORRECT ANSWER

- Pick renewable fuel from the following
  - Coal
  - Palladium
  - Hydrogen
  - Fossil
- A battery is an electrochemical cell that converts \_\_\_\_\_ energy into electrical energy.
  - Thermal
  - Nuclear
  - Mechanical
  - Chemical
- \_\_\_\_\_ is the part of a bioreactor, which is used for the mixing of the contents of the reactor which keeps the cells in the perfect homogenous condition.
  - Baffle
  - Agitator
  - Thermal Jacket
  - Sparger
- In Photo biosynthesis, the demand for \_\_\_\_ nanoparticles has been increased for the agricultural and industrial purposes.
  - Iron
  - Silver
  - Copper
  - Aluminium

II. FILL IN THE BLANKS

- \_\_\_\_\_ dye is used in the DSSC as molecular sensitizers.
- \_\_\_\_\_ is the acceleration of a photoreaction in the presence of a catalyst.
- The \_\_\_\_\_ energy from within the Earth that can be converted to usable energy.
- Solar cell converts light energy into \_\_\_\_\_ energy.
- \_\_\_\_\_ is the anode of silver oxide batteries.
- The energy conversion involved in Steam engine is thermal to \_\_\_\_\_
- Secondary cells are also known as \_\_\_\_\_.

III. EXPAND THE FOLLOWING

- DSSC-
- TiO<sub>2</sub> -
- Ni-MH -
- CAES-

**IV. ANSWER IN A SENTENCE OR TWO:**

16. Define Electrolysis.
17. Write two disadvantages of thermoelectric refrigerator.
18. Define Peltier effect.
19. Give two uses of solar water heater.
20. What is the semiconductor involved in QDSSC?

**SECTION – B****Answer any SIX questions:****(6X3= 18)**

21. Draw the schematic diagram of a Quantum dots sensitized solar cell.
22. Differentiate reversible and irreversible cycles. (3 points each)
23. Define energy conversion with three examples.
24. Draw the circuit of Zener diode.
25. What is bioreactor?
26. Write a short note on Pseudo capacitor.
27. What is photoelectrocatalysis?
28. Write the advantages and disadvantages of thermoelectric refrigerator.
29. Explain the working of a flywheel.
30. Explain the theory behind field effect transistor (FET).

**SECTION – C****Answer any TWO questions:****(2X6 = 12)**

31. Discuss the working of DSSC with its schematic diagram.
32. Describe in detail the types of batteries with examples.
33. Write a brief note on the storage of mechanical energy.
34. Discuss the components and working of a Solar Water Pumping System.

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