

**300809(19)**

**B. E. (Eighth Semester) Examination, 2020**

APR-MAY  
X

**(New Scheme)**

**(AEI, Bio-Tech., Chem., Civil, CSE, Elect., EEE, EI,  
ET&T, IT, Mech., Mining & Metallurgy, Mechatronics  
Prod., Automobile, Plasti Engg. Branch)**

**NON-CONVENTIONAL ENERGY SOURCES**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Attempt all the questions. Part (a) of each question is compulsory, carry 2 marks and attempt any two parts from (b), (c) and (d) of each question carry 7 marks each.***

**Unit-I**

1. (a) What are limitations of solar energy? 2

- (b) What are the main components of a flat plate solar collector, explain the function of each? 7
- (c) How does the collection of solar energy is affected by tilting a flat plate collector with respect to ground? 7
- (d) What is the status of non-conventional energy sources in India, and what are their future prospect? 7

### Unit-II

- 2. (a) What are major advantages of solar PV system? 2
- (b) What is the principle of solar photovoltaic power generation? What are the main elements of a PV system? 7
- (c) With the help of a schematic diagram, explain the working of solar water heating. 7
- (d) With the help of schematic diagram, explain the working of solar thermal water pump. 7

### Unit-III

- 3. (a) What is the Indian name of bio-gas? 2

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- (b) Explain the process of commercial production of ethanol from bio-mass? 7
- (c) What is the main advantage and disadvantage of biogas, what is the main constituents and heating value? In which countries these plants are most popular? 7
- (d) What are bio-mass energy resources and what is energy yield from each of them? 7

#### Unit-IV

4. (a) What range of wind speed is considered favourable for wind power generation? 2
- (b) What is the source of tidal energy? Which is the minimum tidal range required for a practical tidal plant? How much is the potential in tides? 7
- (c) What are the main advantages and disadvantages of ocean wave energy? 7
- (d) With a neat diagram, explain how wind energy can be converted into electrical energy? 7

#### Unit-V

5. (a) What are potential applications of fuel cell? 2
- (b) Describe the classification of the fuel cell. 7
- (c) Draw a conceptual block diagram of a fuel cell power plant and explain the detail of each block. 7
- (d) Comment on environment effect of fuel cell. 7