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Roll No. .....

E-252

B. E. VIII Semester (Main & Re-Exam.) Examination - May, 2016

NON-CONVENTIONAL ENERGY SOURCES

Paper : Mech. Engg

Time : Three Hours] *[Maximum Marks : 75*

[Min. Marks : 30

Note : Attempt *all* questions from *Section – A* (Objective type questions), *four* questions from *Section – B* (Short answer type questions) and *three* questions from *Section – C* (Long/Essay type questions).

SECTION – A [Marks : 5 × 3 = 15

Note : Attempt *all* questions.

1. Write the limitation of solar power.
2. What do you understand by 'Geothermal energy' explain.
3. Write the principle of MHD.
4. Write the application of renewable energy sources.
5. Explain working of Phosphoric Acid Fuel Cell (PAFC).

SECTION – B [Marks : 6 × 4 = 24

Note : Attempt any *'four'* questions.

1. What is a chemical fuel ? How does it differ from nuclear fuel ?
2. Which type of non-conventional energy source is the best suitable for rural and agriculture application and why ? Explain in detail.
3. What are the source of heat for hot springs ? Also explain high flow hot springs.
4. What are the different types of solar cells ? explain working and principle of any two of them.

P. T. O.

5. Explain the momentum theory in wind power generation. Give the classification of rotor used for wind generation.

6. Explain the factors, which affecting generation of biogas.

SECTION – C

[Marks : 12 × 3 = 36

Note : Attempt any ***three*** questions.

1. What do you understand by thermionic effect ? Derive the expression for power and efficiency of a thermionic generator.

2. Draw schematic diagram to an MHD power generating system having heat recovery steam generator. Explain the functioning of the system.

3. What is a fuel cell ? Describe the principle of working of $H_2 - O_2$ cell. Give also advantage and limitation of fuel cell.

4. Describe with the help of heat sketch the construction and working of Wind energy Conversion system (WECS) ?

5. Write short notes on any ***four*** :

   (a) Hour length

   (b) V-I characteristics of solar cell

   (c) Aerofoils

   (d) Conventional energy sources

   (e) Anaerobic digestion

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E-463

B.E. VIII Semester (Main & Re-Exam) Examination, May 2017

Non-conventional Energy Sources

(M E)

Time : Three Hours] *[Maximum Marks : 75*

[Minimum Marks : 30

Note : Attempt **all** the questions of Section-A, **four** from Section-B and **three** questions from Section-C.

Section-A

(Objective Type Questions)

Note : This Section will contain **ten** objective type questions. They may be fill in the blanks, True/False or Multiple Choice Type. 5×3=15

1. Explain "Geo thermal energy".
2. Explain "Bio-gas energy".
3. Explain "Wind energy".
4. Write the application of renewable energy sources.
5. Discuss the working of PAFC (Phosphoric acid fuel cell)

Section-B

(Short Answer Type Questions)

Note : This section will contain **six** questions. Students will ask to attempt any **four** questions out of **six** questions. 6×4=24

1. What are the different types of solar cells? Explain working and Principle of any two of terms.

P.T.O.

2. Delt type of nuclear fuel. Explain it.

3. Explain the momentum theory in wind energy generators give the classification of reform used for wind energy generation.

4. Explain V-I characteristics of Solar Cell with fip.

5. Explain Anaerobic digestion.

6. Explain in Solar collection's with fip.

Section-C

(Long Answer Type Questions)

Note : This section will contain **five** questions. Students will ask to attempt any **three** questions out of **five** questions. $12 \times 3 = 36$

1. Discuss with the help of neat sketch the construction and working of wind energy conversion system (WECS).

2. Draw the schematic diagram to an MHD Power generating system having heat recovery steam generator. Explain the function of the system.

3. Explain it:

   (a) Energy exploited

   (b) Energy demand

   (c) Energy Planning

4. What is a fuel cell? Describe the principle of working of H_2–O_2 cell. Given also advantage, disadvantage and limitation of fuel cell.

5. Write short notes on any **four** :

   (i) Thermionic generators

   (ii) Explain chemical fuel

   (iii) Nuclear fuel

   (iv) Ocean energy

   (v) Global Energy Sources.

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E-953

B. E. VIII Semester (Main & Re-Exam) Examination, May – 2019

NON-CONVENTIONAL ENERGY SOURCES

Branch : ME

Time : Three Hours] *[Maximum Marks : 75*

[Minimum Marks : 30

Note : Attempt *all* questions from Section-A, *four* questions from **Section-B** and *three* questions from Section-C.

SECTION – A [Marks : 10 × 1.5 = 15

1. Energy from gravitational field is energy obtained from :

   (a) Wind (b) biomass

   (c) coal (d) tides

2. Identify the non-renewable energy resource from the following :

   (a) Coal (b) Fuel cells

   (c) Wind power (d) Wave power

3. 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

4. Photovoltaic energy is the conversion of sunlight into :

   (a) Chemical energy (b) Biogas

   (c) Electricity (d) Geothermal energy

5. Horizontal axis and vertical axis are the types of :

   (a) Nuclear reactor (b) Wind mills

   (c) Biogas reactor (d) Solar cell

P. T. O.

6. 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
7. Steam reforming is currently the least expensive method of producing :
   (a) Coal (b) Biogas
   (c) Hydrogen (d) Natural gas
8. Fuel cells are :
   (a) Carbon cell (b) Hydrogen battery
   (c) Nuclear cell (d) Chromium cell

SECTION – B

[Marks : 6 × 4 = 24

1. What is the need for alternate energy sources ? Explain by considering solar energy.
2. Define the following :
   (i) Latitude
   (ii) Declination angle
   (iii) Surface azimuth angle
   (iv) Hour angle
   (v) Zenith angle.
3. Write short notes on spectral distribution of extra terrestrial radiation.
4. Describe solar pond for solar energy collection and storage.
5. Describe solar pond for solar energy collection and storage.
6. With a neat sketch, explain the horizontal axis wind machine.

SECTION – C

[Marks : 3 × 12 = 36

1. Sketch and explain the working of floating gas holder type biogas plant used in India (K VIC plant).
2. Describe the main considerations in selecting the site for wind generators.
3. What are the main types of OTEC power plants ? Describe their working in brief.
4. Enumerate the different types of concentrating type collectors.
