

22514

11920

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

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| 1. Attempt any FIVE of the following : | 10 |
| (a) Write names of parts of wind turbine (any four). | |
| (b) Write any four advantages of wind power. | |
| (c) List any two features of wind solar hybrid system. | |
| (d) Write names of any four sources of biomass. | |
| (e) Name the gases present in biogas. | |
| (f) Write any four merits of bio energy. | |
| (g) List any two types of micro hydro power plants. | |
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| 2. Attempt any THREE : | 12 |
| (a) List the types of wind turbines and explain HAWT. | |
| (b) Draw neat sketch of wind turbine and name various parts in it. | |
| (c) Write the functions of : | |
| (i) blades (ii) nacelle (iii) shaft (iv) gear box | |
| (d) Differentiate between horizontal axis and vertical axis wind turbine. | |

- 3. Attempt any THREE :** **12**
- (a) Explain solar distillation.
 - (b) Draw neat sketch of solar cell and explain its working.
 - (c) Explain working of solar water heater.
 - (d) Describe uses of solar thermal energy in industry.
- 4. Attempt any THREE :** **12**
- (a) Draw neat sketch of biogas plant.
 - (b) Explain the concept of biomass power plant.
 - (c) Describe working of wood gasifier.
 - (d) Write the problems for converting municipal solid waste into power.
 - (e) Write advantages and disadvantages of biomass power generation (any four).
- 5. Attempt any TWO :** **12**
- (a) Explain production of biodiesel from Jatropha seeds.
 - (b) Describe the production of fuel from waste plastic.
 - (c) List environmental benefits of bioenergy. Explain how it is renewable.
- 6. Attempt any TWO :** **12**
- (a) Write concept & principle used in micro hydro power plant.
 - (b) Describe construction and working of high head micro hydro plant.
 - (c) Explain necessity of routine maintenance of micro hydro power plant. Write its procedure.
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