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BIEE-029

DIPLOMA IN ELECTRICAL ENGINEERING (DELVI) / ADVANCED LEVEL CERTIFICATE COURSE IN ELECTRICAL ENGINEERING (ACELVI)

Term-End Examination

December, 2015

BIEE-029 : POWER GENERATION SYSTEM

Time : 2 hours *Maximum Marks : 70*

Note : *Question no. **1** is **compulsory**. Attempt any **four** questions from Q. no. 2 to 8. All questions carry equal marks.*

1. (a) Power plant using coal works closely on which of the following cycles ? *7×2=14*

(i) Otto cycle

(ii) Binary vapour cycle

(iii) Brayton cycle

(iv) Rankine cycle

(b) Which power plant normally operates at high speeds ?

(c) Electrostatic precipitator is installed between _____ and _____ .

(d) The voltage of a single solar cell is

(i) 0·5 V

(ii) 1 V

(iii) 1·1 V

(iv) 2·1 V

(e) The total power of a wind stream is proportional to

(i) Velocity of stream

(ii) $(\text{Velocity of stream})^2$

(iii) $(\text{Velocity of stream})^3$

(iv) $\frac{1}{\text{Velocity of stream}}$

(f) What is Diversity factor ?

(g) Which of the following power plants can generate power at unpredictable or uncontrollable times ?

(i) Wind power plants

(ii) Tidal power plants

(iii) Solar power plants

(iv) Any of the above

2. (a) Draw a neat labelled sketch of a water tube boiler and also state its two advantages over a fire tube boiler. 7

(b) State why nuclear power plants are used as base load plants and diesel power plants as peak load plants. 7

3. (a) Draw a neat labelled diagram of nuclear reactor used in nuclear power station. 7

(b) State the effect of water hammering in penstock in hydroelectric power station and the methods to reduce it. 7

4. (a) State the functions of fuel system and exhaust system of a diesel power station. 7

(b) Define state grid and national grid. 7

5. (a) State the advantages of interconnection of power stations. 7

(b) State the reasons for low overall efficiency of a thermal power station. Also state the methods to improve it. 7

6. (a) Which water turbine should be selected for a water head of 300 m ? Draw its labelled sketch. 7

(b) Describe the working principle of solar water heaters with a neat diagram. 7

7. (a) Explain the method of power generation by using gassifiers. 7

(b) Explain the open and closed cycles of ocean thermal electric conversion. 7

8. (a) Write short notes on the present scenario and future prospects of non-conventional sources of energy. 7

(b) Explain the working of MHD power generation with a neat sketch. 7