

**DIPLOMA – VIEP – MECHANICAL
ENGINEERING (DMEVI)**

Term-End Examination

June, 2016

00506

BIMEE-029 : POWER PLANT ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : Answer *five* questions in all. Question no. 1 is *compulsory*. All questions carry equal marks.

1. Choose the correct answer from the given four alternatives.

7×2=14

- (a) The commercial sources of energy are
- (i) solar, wind and biomass
 - (ii) fossil fuels, hydropower and nuclear energy
 - (iii) wood, animal wastes and agriculture wastes
 - (iv) None of the above
- (b) The overall efficiency of a thermal power plant is equal to
- (i) Rankine cycle efficiency
 - (ii) Carnot cycle efficiency
 - (iii) Regenerative cycle efficiency
 - (iv) Boiler efficiency × turbine efficiency × generator efficiency

- (c) The modern steam turbines are
 - (i) impulse turbines
 - (ii) reaction turbines
 - (iii) impulse-reaction turbines
 - (iv) None of the above
- (d) Combustible elements in the fuel are
 - (i) carbon and hydrogen
 - (ii) carbon, hydrogen and sulphur
 - (iii) carbon, hydrogen and nitrogen
 - (iv) carbon, hydrogen and ash
- (e) In a coal preparation plant, the magnetic separators are used to remove
 - (i) dust
 - (ii) clinkers
 - (iii) iron particles
 - (iv) sand
- (f) Fission chain reaction is possible when
 - (i) fission produces the same number of neutrons which are absorbed
 - (ii) fission produces more neutrons than are absorbed
 - (iii) fission produces less neutrons than are absorbed
 - (iv) None of the above

- (g) India's first nuclear power plant was started at
- (i) Narora (UP)
 - (ii) Tarapur (Mumbai)
 - (iii) Kota (Rajasthan)
 - (iv) Kalpakkam (Chennai)
2. (a) What are the advantages of gaseous fuels ?
- (b) What is the necessity of using excess air for burning of fuels ? 7+7
3. (a) Why are the accessories used in a boiler ?
- (b) Why is a condenser used in a steam power plant ? Discuss the working of different parts of a surface condenser. 7+7
4. (a) What is a cooling tower ? How are cooling towers classified ? Explain any one of them with a neat sketch.
- (b) What are the advantages and disadvantages of diesel power plants ? 7+7
5. (a) Define nozzle. Describe different types of nozzles with the help of neat diagrams.
- (b) Enumerate the advantages and disadvantages of hydro power plants. 7+7

6. (a) Explain briefly the factors which should be considered while selecting the site for a hydroelectric power plant.
- (b) What safety measures need to be taken for the safe operation of a hydroelectric power plant ? 7+7
7. (a) With the help of a sketch, show all the important parts of a nuclear reactor. Also describe briefly the functions of each part.
- (b) "The source of future power generation will be only nuclear fuel." Comment on this statement. 7+7
8. (a) What are the various types of coals ? Discuss the important properties of a good coal.
- (b) What are the functions of a superheater in a thermal power plant ? 7+7
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