

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

**Term-End Examination**

**December, 2016**

00493

**BIMEE-029 : POWER PLANT ENGINEERING**

*Time : 2 hours*

*Maximum Marks : 70*

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

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1. Choose the correct answer from the given four alternatives. 7×2=14
- (a) The primary sources of energy are
- (i) coal, oil and uranium
  - (ii) hydrogen, oxygen and water
  - (iii) wind, biomass and geothermal
  - (iv) None of the above
- (b) Rankine efficiency of a steam power plant
- (i) improves in summer as compared to that in winter
  - (ii) improves in winter as compared to that in summer
  - (iii) is unaffected by climatic conditions
  - (iv) None of the above

- (c) Evaporative type of condenser has
- (i) steam in pipes surrounded by water
  - (ii) water in pipes surrounded by steam
  - (iii) Either (i) or (ii)
  - (iv) None of the above
- (d) Belt conveyor can be used to transport coal at inclination up to
- (i)  $30^\circ$
  - (ii)  $60^\circ$
  - (iii)  $80^\circ$
  - (iv)  $90^\circ$
- (e) Thermal efficiency of the steam power plant is of the order of
- (i) 30%
  - (ii) 50%
  - (iii) 60%
  - (iv) 80%
- (f) Fuel injector is used in
- (i) SI engine
  - (ii) gas engine
  - (iii) CI engine
  - (iv) None of the above
- (g) The function of the moderator in a nuclear reactor is to
- (i) stop chain reaction
  - (ii) absorb neutrons
  - (iii) reduce the speed of neutrons
  - (iv) reduce temperature

2. (a) What factors should be taken into consideration while selecting the site for a steam power plant ?
- (b) What do you understand by the term "Boiler draught" ? 7+7
3. (a) Explain briefly any *two* of the following boiler accessories :
- (i) Economiser
  - (ii) Air preheater
  - (iii) Superheater
- (b) What is an evaporator ? How are evaporators classified ? 7+7
4. (a) Describe the functions of diffusers.
- (b) Under what conditions are diesel generating plants preferred ? 7+7
5. (a) Make a neat layout line diagram of a diesel power plant showing in particular the fuel system and the water cooling system.
- (b) Define nozzle efficiency. Also explain the choking of nozzle. 7+7

6. (a) What is the function of a hydraulic turbine ? How are the turbines classified ?
- (b) Explain the functions of an impulse turbine. 7+7
7. (a) What are the principal parts of a nuclear reactor ? Explain each part in brief.
- (b) Why is shielding of a reactor necessary ? What do you understand by thermal shielding ? 7+7
8. (a) Discuss the special characteristics which enable water tube boilers to be best suited for modern thermal power plants.
- (b) What are the different types of cooling towers ? Explain the working of a forced draft cooling tower with a neat sketch. 7+7
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