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Question Paper Code: 59073

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Elective

Mechanical Engineering

15UME910 - POWER PLANT TECHNOLOGY

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. An ideal working fluid for a Rankine cycle should have
(a) lower latent heat at low pressure (b) higher latent heat at high pressure
(c) lower latent heat at high pressure (d) higher latent heat at low pressure
2. The increase in the demand on a power plant
(a) increases the use factor (b) increases the reserve factor
(c) decreases the load factor (d) increases the diversity factor
3. A thermal power plant working between the temperatures of 800 K and 300 K has the maximum thermal efficiency of
(a) 62.5 % (b) less than 62.5 % (c) 45 % (d) 37.5 %
4. Handling of ash in thermal power plant is difficult in case of
(a) forced draft system (b) induced draft system
(c) under feed stoker (d) over feed stoker
5. In a nuclear power plant, the objective of reducing the speed of fast moving neutrons is
(a) to continue the nuclear reaction
(b) to increase the thermal efficiency
(c) to reduce the emission of harmful α rays
(d) to avoid the explosion of nuclear

6. Control rods used in a nuclear reactor are made up of
 (a) Steel (b) cadmium (c) copper (d) platinum
7. For a constant fuel supply, the supercharging of Diesel power plant
 (a) decreases the thermal efficiency (b) has no effect of power output
 (c) increases the power output (d) decreases the power output
8. Regenerators used in a gas turbine have an efficiency of about
 (a) 45% (b) 75% (c) 95% (d) 100%
9. OTEC power plant has the thermal efficiency in the order of
 (a) 1 – 1.5 % (b) 2 – 5 % (c) 10 % (d) 15 %
10. It is generally seen that load factor of domestic load is
 (a) 10 to 15% (b) 60 to 70% (c) 30 to 40% (d) 100%

PART - B (5 x 2 = 10 Marks)

11. Mention the factors that should be considered while selecting a site for a diesel power plant.
12. State the advantages of steam power plant cycles.
13. Define: Chain reaction.
14. List the types of Diesel plants.
15. List out the advantages of tidal power plants over the conventional hydel power plants.

PART - C (5 x 16 = 80 Marks)

16. (a) Describe Hydel power plant layout with their salient features. (16)
- Or
- (b) Discuss about load duration curves and factors related to this. (16)
17. (a) With neat layout, explain Steam power plant operation and also state their advantages and disadvantages. (16)

Or

- (b) Explain any one type of Electrostatic precipitator with neat sketch. (16)

18. (a) Discuss any two types of reactors with their advantages and disadvantages. (16)

Or

(b) With a neat sketch, explain working of Nuclear power plant and also state their merits and demerits. (16)

19. (a) Explain the components of diesel power plant with neat sketch and list their advantages and disadvantages. (16)

Or

(b) Describe about Open cycle and Closed cycle gas turbine with sketch and discuss about their merits and demerits. (16)

20. (a) Explain any two types of solar collectors and list their advantages and disadvantages. (16)

Or

(b) Describe the construction and working principle of Geo thermal power plant with neat sketch and state their advantages and disadvantages. (16)
