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Question Paper Code: 45075

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

Fifth Semester

Mechanical Engineering

14UME505 - POWER PLANT TECHNOLOGY

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Efficiency of thermal cycle increases by
 - regeneration
 - heating
 - cooling of steam
 - none of the these
- In a thermal power plant, cooling towers are used to
 - Condense low pressure steam
 - Convert water to ice
 - Cool water used in condenser for condensing steam
 - Cool feed water of boiler
- Compounding of steam turbine is done for
 - reducing the work done
 - increasing the rotor speed
 - reducing the rotor speed
 - balancing the turbine
- Pulverized coal is a
 - Coal free from ash
 - Non-smoking coal
 - Coal which bums for long time
 - Coal broken into uniform particles

5. _____ is a channel which leads water to a turbine.
(a) Tailrace (b) Head Race (c) Side Channel (d) Spillway
6. Which of the following material can be used as a moderator?
(a) Graphite (b) Heavy water (c) Beryllium (d) None of these
7. The air standard cycle of a gas turbine plant is
(a) Dual cycle (b) Brayton cycle
(c) Rankine cycle (d) Carnot cycle
8. Gas turbine is widely used in
(a) Pumping stations (b) Aircraft
(c) Locomotives (d) Automobiles
9. Efficiency of the solar panel decreases with
(a) Decrease in temperature (b) Increase in temperature
(c) Decreases with pressure (d) None of these
10. In pumped storage, the
(a) Power is produced by means of pumps
(b) Water is stored by pumping
(c) Water is re circulated through turbine
(d) Downstream water is pumped up-stream during off load periods

PART - B (5 x 2 = 10 Marks)

11. What do you understand by load duration curves?
12. List any four high pressure boilers.
13. List the factors to be considered in selecting turbines.
14. Enumerate the functions of intercooler in gas turbine power plant.
15. Signify the factors to be considered in site selection for geothermal energy.

PART - C (5 x 16 = 80 Marks)

16. (a) Summarize the factors to be considered for power plant selection. Interpret the importance of load duration curve in power generation. (16)

Or

- (b) Explain the working principle of Fluidized Bed Boiler with a neat sketch. (16)

17. (a) Elaborate the following (i) Chain grate stoker (ii) Spreader stoker. (iii) Multi retort stoker and (iv) under grate stoker. (16)

Or

- (b) With neat sketch explain the various steps involved in coal handling system on a steam power plant. (16)

18. (a) Illustrate with a sketch the working of a nuclear power plant and explain the various components in detail. (16)

Or

- (b) Draw the Layout of Hydro Power Plant and also explain the components and working of Hydro power plant. (16)

19. (a) Explain the constructional details and operation of a gas turbine power plant. List the advantages and limitations of open and closed cycle gas turbine power plant. (16)

Or

- (b) How do you select engine for a diesel power plant ? Draw a diesel power plant and explain its major components. (16)

20. (a) (i) Explain the power generation from geothermal energy. (8)

- (ii) Explain the construction and working principle of Tidal power plants. (8)

Or

- (b) Describe the working principle of closed cycle or Anderson OTEC power plant with a schematic diagram. (16)

