Reg. No. : | | | | | | | | | | |

Question Paper Code: 45705

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

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)

1. Which of the following generating stations has the minimum running cost

   (a) hydroelectric (b) nuclear power
   (c) thermal power (d) diesel power

2. In a thermal power plant, cooling towers are used to

   (a) Condense low pressure steam
   (b) Convert water to ice
   (c) Cool water used in condenser for condensing steam
   (d) Cool feed water of boiler

3. Pulverized coal is a

   (a) Coal free from ash (b) Non-smoking coal
   (c) Coal which bums for long time (d) Coal broken into uniform particles

4. In a steam turbine cycle, the lowest pressure occurs in

   (a) Turbine in let (b) Boiler
   (c) Condenser (d) Super heater

5. Which of the following material can be used as a moderator?

   (a) Graphite (b) Heavy water (c) Beryllium (d) none of these

6. In a hydro-electric plant a conduct system for taking water from the intake works to the turbine is known as

(a) Dam (b) Reservoir (c) Penstock (d) Surge tank

7. Gas turbine is widely used in

(a) Pumping stations (b) Aircraft
(c) Locomotives (d) Automobiles

8. The air standard cycle of a gas turbine plant is

(a) Dual cycle (b) Brayton cycle
(c) Rankine cycle (d) Carnot cycle

9. 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

10. A high tide occur

(a) on every new moon day (b) on every full moon day
(c) both on new moon and full moon day (d) any time

PART - B (5 x 2 = 10 Marks)

11. What do you understand by load duration curves?

12. List any four high pressure boilers.

13. Indicate the purpose of control rod in a nuclear power plant.

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) Draw the layout of a steam power plant and explain its principle of working. (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) List the different types of coal-pulverizing mills. Enumerate its significance. Describe ball mill with a sketch. (16)

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

Or

(b) Classify hydraulic turbines. Discuss any two types suitable for hydro-electric power generation. (16)

19. (a) Demonstrate with a layout structure of the diesel power plant. Discuss its advantages and disadvantages over gas turbine power plant. (16)

Or

(b) 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)

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) Enumerate the construction of a solar central receiver system. Explain the function and its types. (16)

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