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Reg. No. :

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Question Paper Code: 59710

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

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. Location of the surge tank in a hydro-electric station is near to the CO1- R
(a) Tailrace (b) Turbine (c) Reservoir (d) Draft tube
2. The cheapest plant in operation and maintenance is CO1- R
(a) Hydro-electric power plant (b) Steam power plant
(c) Nuclear power plant (d) Diesel power plant
3. Which conveyor is suitable for large quantities of coal over large CO2- R
distances?
(a) Belt conveyor (b) Screw conveyor (c) Bucket elevator (d) Flight conveyor
4. Equipment used for pulverizing the coal is CO2- R
(a) Hopper (b) Stoker (c) Ball mill (d) None of these
5. The control rods in the control system of nuclear reactors are used CO3 -R
to
(a) Absorb excess neutrons (b) Control fuel consumption
(c) Control temperature (d) All of these
6. In which of the reactors is the steam generated in the reactor itself? CO3 -R
(a) Pressurized water reactor (b) Boiling water reactor
(c) Liquid metal fuelled reactor (d) All the above

7. The diesel plants are mainly used as _____ CO4- R
 (a) Peak load plants (b) Base load plants (c) Standby power plants (d) None of these
8. In a gas turbine power plant, the maximum pressure ratio is limited to CO4 -R
 (a) 5 (b)10 (c) 15 (d) 20
9. Tidal energy utilizes _____ energy of water. CO5 -R
 (a) Kinetic (b) Potential (c) Heat (d) None of these
10. As the load factor of generating plant increases, the generation cost per CO5-R
 unit energy generated
 (a) decreases (b) increases
 (c) may increase or decrease (d) remains the same

PART – B (5 x 2= 10 Marks)

11. List the advantages of load duration curve. CO1- R
12. What are the factors affecting the performance of electrostatic precipitators? CO2 -U
13. Define: Chain reaction. CO3 -R
14. Mention few advantages of two stroke engine when used in diesel power plant. CO4 -R
15. What are the causes and effect of acid rain? CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) Sketch a typical hydroelectric power plant indicating all the CO1- U (16)
 components of power plant and list the factors to be considered for
 the selection of hydro-electric power plant.
 Or
 (b) Discuss about the combined operation of Thermo Electric-steam CO1- U (16)
 power plant.
17. (a) Explain the ball and race mill system used for pulverization of coal CO2- U (16)
 with neat diagram.
 Or
 (b) Briefly explain the ball and race mill system used for pulverization CO2- U (16)
 of coal with neat diagram.
18. (a) Sketch the layout of a Nuclear power plant describing the CO3- U (16)
 components of the power plant.
 Or
 (b) Explain about Pressurized Water Reactor with neat sketch CO3- U (16)

19. (a) Explain about open cycle gas turbine and closed cycle gas turbine with neat sketch CO4- U (16)
- Or
- (b) Briefly explain the construction and working principle of diesel power plant. CO4 -U (16)
20. (a) Explain the working principle of geo thermal energy conservation system with neat sketch. CO5 -U (16)
- Or
- (b) Explain how ocean thermal energy is converted into electrical energy with relevant diagram. CO5- U (16)

