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

Question Paper Code: 45705

B.E. / B.Tech. DEGREE EXAMINATION, NOV 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. Identify the non-renewable energy resource from the following

   (a) Coal (b) Fuel cells
   (c) Wind power (d) Wave power

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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. _____ has maximum effect on cooling tower performance.

   (a) Drift (b) Louvers (c) Fill media (d) Casing

5. Half-life of radioactive isotope is the time required for half of the _____ to decay.

   (a) electrons (b) protons (c) atom (d) nucleus

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. The property of ignition lag is measured in terms of

(a) Octane number (b) Cetane number
(c) Calorific Value (d) None of these

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

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

9. _____ is the main factor to form tides in the sea.

(a) Sun (b) Moon (c) Star (d) None of these

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. Define load curve.

12. List any four high pressure boilers.

13. List the factors to be considered in selecting turbines.

14. What is intercooling and why it is done?

15. Signify the factors to be considered in site selection for geothermal energy.

PART - C (5 x 16 = 80 Marks)

16. (a) With neat diagram explain the working of gas turbine-steam turbine combined cycle plant and mention its advantages. (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) (i) Explain the operation of an electronic precipitator with a neat sketch. (8)

(ii) Explain the Evaporative Condenser with a neat diagram. (8)

19. (a) How do you select engine for a diesel power plant ? Draw a diesel power plant and explain its major components. (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) Describe the working principle of closed cycle or Anderson OTEC power plant with a schematic diagram. (16)

Or

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

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