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

Question Paper Code: 50334

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

Third Semester

Electrical and Electronics Engineering

15UEE304 - POWER SYSTEM GENERATION

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The function of a condenser in a steam power plant is to

   (a) Condense the large volume of steam to water to be used as boiler feed water
   (b) Receive the large volume of steam exhausted from the steam turbine
   (c) Maintain pressure below atmospheric so that maximum heat energy can be extracted from steam
   (d) All the above

2. The effect of considering friction in steam nozzles for the same pressure ratio leads to

   (a) Increase in dryness fraction of exit steam
   (b) Decrease in exit velocity from the nozzle
   (c) No change in exit velocity from the nozzle and quality of exit steam
   (d) Both (a) and (b)

3. Out of the following diesel engines, the minimum air consumption per BHP will be in

   (a) 4 stroke, mechanical injection (b) 4 stroke, air injection
   (c) 2 stroke, air injection (d) All the above

4. Thermal efficiency of a gas turbine improves because of

   (a) Reheating of gas after partial expansion
   (b) Removing the heat from compressed air between the stages of compression
   (c) Utilizing the heat of exhaust gases to heat the compressed air before it is sent to combustion chamber
   (d) All the above

5. Which one of the following fuels is used by the slow thermal nuclear reactors for power generation?

(a) U^{235} (b) U^{238} (c) Th^{232} (d) Pu^{239}

6. In an interconnected system consisting of a nuclear power stations, steam station and diesel generating station, which plant can be used as base load plant?

(a) steam station (b) diesel generation plant
(c) nuclear power station (d) all the above

7. Gross head of a hydroelectric power station is

(a) The difference of water level between the level in the storage and tail race
(b) The height of water level in the river where the tail race is provide
(c) The height of water level in the river where the storage is provided
(d) All the above

8. Which of the following power plants can generate power at unpredictable or uncontrollable time?

(a) Tidal power plant (b) Wind power plant
(c) Solar power plant (d) Any of the above

9. In a system if the base load is the same as the maximum demand, the load factor will be

(a) 1 (b) load Zero (c) Infinity (d) None of these

10. A consumer has to pay lesser fixed charges in

(a) Flat rate tariff (b) Two-part tariff
(c) Maximum demand tariff (d) Any of the above

PART - B (5 x 2 = 10 Marks)

11. Why the heating of water is necessary before it is supplied to the boiler?

12. Mention the various process of the Brayton cycle.

13. How does a nuclear power plant differ from a conventional thermal power plant?

14. Enumerate the main factors taken into consideration in site selection for a wind plant.

15. What informations can be supplied by load curves?

PART - C (5 x 16 = 80 Marks)

16. (a) Explain with a neat sketch the working of a thermal electric power plant station and discuss the functions of major components in it. Also mention the advantages and limitations of thermal power plant. (16)

Or

(b) Describe briefly with flow sheet the pulverized coal preparation systems and the method of firing pulverized fuel. Discuss briefly the advantages and disadvantages of pulverized coal firing. (16)

17. (a) Explain the working of combined-cycle power plant with neat sketch. (16)

Or

(b) Draw a layout of diesel power plant, showing the various systems, including cooling, lubrication, starting, intake and exhaust systems. (16)

18. (a) Draw a neat line diagram of a nuclear power plant showing basic components and describe the operation in a detailed manner. Discuss in brief the merits and problems associated with nuclear power stations. (16)

Or

(b) Explain the construction and working of Boiling Water Reactor (BWR) in nuclear power plant. (16)

19. (a) How are hydroelectric power plants classified? Discuss with neat sketch the working of hydroelectric power plant station and explain the function of each component in it. (16)

Or

(b) Explain the construction and working of tidal power plant with its advantages and disadvantages. (16)

20. (a) What do you understand by tariff? Discuss the different types of tariffs used for charging the consumers electrical energy. (16)

Or

(b) How disposal of nuclear waste is done? Analyze the methods used for disposal of nuclear waste material with a neat sketch. (16)

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