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**Question Paper Code: 43304**

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

Third Semester

Electrical and Electronics Engineering

14UEE304 - POWER PLANT ENGINEERING

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- The commercial sources of energy are
  - solar, wind and bio- mass
  - fossil fuels, hydropower and nuclear energy
  - wood, animal wastes and agriculture wastes
  - none of the above
- Ash content in lignite
  - 30-45%
  - 90%
  - 6-12%
  - below 8%
- The temperature of the combustion gas at the gas turbine inlet is about
  - 900°C
  - 1200°C
  - 715°C
  - none of the above
- A gas turbine works on
  - Otto cycle
  - Rankine cycle
  - Brayton cycle
  - Dual cycle
- Control rods used in nuclear reactor are made up of
  - Steel
  - cadmium
  - copper
  - None of these
- India's first nuclear power plant was installed at
  - Tarapur
  - Kota
  - Kalpakkam
  - None of the above

7. Power co-efficient (k) for wind power is given by  
 (a)  $K = P_1/P_2$       (b)  $K = P_2/P_1$       (c)  $K = P_1 \times P_2$       (d) None of the above
8. The main source of production of biogas is  
 (a) Human waste      (b) Wet cow dung  
 (c) Wet livestock waste      (d) All of the above
9. Load factor of a power station is defined as  
 (a) Average load x Maximum demand      (b) Average load/ Maximum demand  
 (c) Maximum demand/Average load      (d) None of the above
10. During which season the load on a power system is minimum?  
 (a) Summer      (b) Winter      (c) Rainy      (d) Autumn

PART - B (5 x 2 = 10 Marks)

11. List out the four important circuits of steam power plant.
12. List the advantages of combined cycle.
13. Distinguish between fission and fusion.
14. Why is surge tank important in hydro power plant?
15. What is known as environmental factor of power plant?

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain with the general layout of modern coal based thermal power plant in detail. (12)
- (ii) What is the function of pulverizer and condenser in steam power plant? (4)

Or

- (b) Draw neat diagram of Lamont boiler and explain its working. (16)
17. (a) Name the essential components of diesel power plant and explain its operation with neat diagram. (16)

Or

- (b) What are the various factors to be considered while selecting the site for gas turbine power plant? What methods are used to improve the efficiency of gas turbine? (16)

18. (a) Describe the site selection and commissioning procedure of Nuclear Power plants in our country. (16)

Or

(b) Explain the working of pressurized water reactor in detail. (16)

19. (a) (i) Draw a schematic diagram of a Hydro power plant and explain its operation. (12)

(ii) Write the merits and demerits of hydro power plant. (4)

Or

(b) Demonstrate the construction of hydro power plant with neat sketch and list the advantages and disadvantages. (16)

20. (a) Discuss the various power tariff types. Also list out its merits and demerits each tariff. (16)

Or

(b) (i) Discuss how the solid nuclear waste materials are disposed safely. (8)

(ii) Summarize the site selection criteria for thermal and nuclear power plant. (8)

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