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Question Paper Code : 53304

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

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. Power plants using coal work closely on known which of the following cycle CO1- R
(a) Otto cycle (b) Binary vapor cycle (c) Brayton cycle (d) Rankine cycle
2. The equipment installed in power plants to reduce air pollution due to smoke is CO1- R
(a) Induced draft fans (b) De-super heaters
(c) Electrostatic precipitators (d) Re-heaters
3. A gas turbine works on CO2- R
(a) Carnot cycle (b) Brayton cycle (c) Dual cycle (d) Rankine cycle
4. The diesel and gas turbine units are more suited for CO2- R
(a) Peak loads (b) Intermediate loads
(c) Base loads (d) Both peak and base loads
5. The function of moderator in a nuclear reactor is to CO3- R
(a) Stop chain reaction (b) Absorb neutrons
(c) Reduce the speed of neutrons (d) Reduce temperature
6. Which of the following material act as coolant in a nuclear power plant CO3- R
(a) Liquid sodium (b) Graphite (c) Beryllium (d) All of the above

7. In a hydro power plants CO4 R
- (a) Initial cost is high and operating cost is low
- (b) Initial cost as well as operating costs are high
- (c) Initial cost is low and operating cost is high
- (d) Initial cost as well as operating cost is low
8. The power developed by a wind stream is proportional to CO4- R
- (a) Velocity of stream (b) (Velocity of stream)²
- (c) (Velocity of stream)³ (d) 1/(Velocity of stream)
9. A load curve is a plot of CO5- R
- (a) Load versus generation capacity (b) Load versus current
- (c) Load versus time (d) Load versus cost of power
10. The sum of individual maximum demand of the plant to the sum of individual maximum demand of various equipments is _____ CO5- R
- (a) Load factor (b) Diversity factor
- (c) Demand factor (d) Maximum demand factor

PART – B (5 x 2= 10 Marks)

11. What is the use of condensers in thermal power plant? CO1- R
12. Name the various gas power cycles. CO2- R
13. What is nuclear fission? CO3- R
14. Give examples for non-conventional energy sources. CO4- R
15. How are capital and operating costs differ from each other? CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) Draw a general layout of steam power plant with neat diagram and discuss the working of different circuits. CO1- U (16)
- Or
- (b) Write short notes on CO1- U (8)
- (i) Ash handling system
- (ii) Different draught systems CO1- U (8)

17. (a) (i) Bring out the advantages and disadvantages of gas turbine power plant. CO1- U (8)
- (ii) Discuss the working of combined cycle power plant. CO1- U (8)
- Or
- (b) (i) Discuss the essential components of the diesel power plant. CO1- U (8)
- (ii) Derive an expression for the work ratio using Brayton cycle. CO1- U (8)
18. (a) With a neat diagram discuss the construction and working of CANDU type reactor. CO3- Ana (16)
- Or
- (b) Discuss the various factors to be considered while selecting the site for nuclear power plants. CO3- Ana (16)
19. (a) With a neat diagram discuss the various components of wind power plant. CO4- Ana (16)
- Or
- (b) Discuss the construction and working of fuel cell. Also mention its merits and demerits. CO4- Ana (16)
20. (a) (i) What is tariff? Discuss any one tariff scheme used in practice. CO5- U (8)
- (ii) The maximum demand of a power plant is 40 MW. The capacity factor is 0.5 and utilization factor is 0.8. Find the load factor and plant capacity. CO5- U (8)
- Or
- (b) (i) Discuss the site selection criterion of hydro power plant. CO5- U (8)
- (ii) Write short notes on nuclear waste disposal. CO5- U (8)

