A **Reg. No. :** | | | | | | | | | | |

Question Paper Code : 53304

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

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) $(\text{Velocity of stream})^2$

(c) $(\text{Velocity of stream})^3$ (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)

53304