Total number of printed pages:02 **D/5th/DEE511**

2024

GENERATION, TRANSMISSION AND DISTRIBUTION OF POWER

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1.	a)	**'Hydropower plants are clean power generating plants with low running cost'** – explain briefly.	5
	b)	Mention five disadvantages of hydro-electric power generation systems.	5
	c)	Draw a top view of hydro-electric plant.	2
	d)	What is the function of water turbines used in hydro power plants ?	3
	e)	What are the principle types of water turbines used ?	2
	f)	A 80MW hydro-electric station is supplying full-load for 8 hours a day. Calculate the volume of water which has been used. Assume effective head of station as 180 meter and overall efficiency of the station is 80%.	3
2.	a)	Write about some major equipment used in thermal power stations.	5
	b)	Show that – **1 kWh = 860 Kcal**	4
	c)	Write briefly- how electrical power is generated in thermal power stations ?	5
	d)	Mention some advantages and disadvantages of thermal power generation.	3+3=6
3.	a)	Draw a general layout of diesel engine power plant.	3
	b)	Which machine is used as prime mover in diesel engine power plant ?	2
	c)	Write some important applications of diesel engine power plant.	5
	d)	A diesel power station has the following data- Fuel consumption/day = 1000 kg	10

		Units generated/day = 4000 kWh Calorific value of fuel = 10,000 Kcal/kg Alternator efficiency = 96% Engine mech. Efficiency = 95% Estimate, (i) specific fuel consumption, (ii) overall efficiency and (iii) thermal efficiency of engine.	
4.	a)	What are the main components of overhead transmission line ?	5
	b)	What is the full form of ACSR ?	2
	c)	How electric power distribution systems are classified ?	5
	d)	Write about the following- (i) Primary AC distribution system (ii) Secondary AC distribution system	4+4=8
5.	a)	Details of load connected in a premise through a supply meter is given below – 10 lamps of 12W each, working for 7 hours/day. 5 fans of 60W each, working for 9 hours/day A domestic pump-set of 0.5 HP, works for 0.5 hours/day One 1.5 kW geyser, works for 0.5 hours/day If the cost of electrical energy per unit is Rs.5, calculate the energy bill for the month of January.	10
	b)	Draw a schematic diagram of gas turbine power plant and write about the main components of the plant.	2+8=10
6.		Write short notes- *(any four)*	5×4=20
	a)	Site selection of thermal power plant	
	b)	Nuclear power station	
	c)	Dam in hydro-electric power station	
	d)	Pump-storage plant	
	e)	Importance of electrical energy in our daily life	
	f)	Advantages and disadvantages of diesel engine power plants	