

UNIT-IV STEAM CONDENSERS

S.No.	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	Explain the deviation of actual Brayton cycle to the theoretical one.	L2	CO4	PO1,PO2,PO4
2	Draw line diagram and explain the working of Evaporative Condenser.	L2	CO4	PO1,PO2,PO4
3	What are the different types of combustion chambers in gas turbines?	L2	CO4	PO1,PO2,PO4
4	Discuss the merits and demerits of surface condensers over jet condensers.	L2	CO4	PO1,PO2,PO4
5	Write briefly about the usage of gas turbines.	L2	CO4	PO1,PO2,PO4
6	Distinguish between an ideal gas turbine plant and an actual gas turbine plant	L2	CO4	PO1,PO2,PO4
7	What are the types of Condensers? Classify.	L3	CO4	PO1,PO2,PO4
8	Is it always useful to have a regenerator in a gas turbine power cycle? Why?	L3	CO4	PO1,PO2,PO4
9	Derive the expression for thermal efficiency of the simple gas turbine cycle	L2	CO4	PO1,PO2,PO4
10	Sketch and describe the operation of central flow surface condenser.	L2	CO4	PO1,PO2,PO4
11	a) Explain the deviation of actual gas turbine cycle from ideal Brayton cycle.	L2	CO4	PO1,PO2,PO4

11	A gas turbine takes in air at 27 °C and 1 bar. The pressure ratio is 4. The maximum temperature of the cycle is 560 °C. The efficiency of the compressor and turbine is 0.83 and 0.85 respectively. Find the overall efficiency, if the regenerator effectiveness is 0.75.	L2	CO4	PO1,PO2,PO4
12	a) Explain the effect of regeneration; inter cooling, and reheating on the performance of Gas turbine plant.	L2	CO4	PO1,PO2,PO4
	b) A gas turbine unit receives air at 100kPa and 300K and compresses it adiabatically to 620kPa with efficiency of the compressor 88%. The fuel has a heating value of 44,180kJ/kg and the fuel/air ratio is 0.017kg fuel/kg air. The turbine internal efficiency is 90%. Calculate the compressor work, turbine work and thermal efficiency.	L3	CO4	PO1,PO2,PO4
13	The following data refers to a test of the surface condenser of a steam turbine Absolute pressure of the steam entering the condenser =5.628 kPa Temperature of condensate leaving the condenser =32°C Inlet temperature of cooling water=15°C Outlet temperature of cooling water=30°C Mass of cooling water per kg of steam=32 kg Assuming that all the heat lost by the exhaust steam is taken up by the circulating water; determine the dryness fraction of the steam as it enters the condenser.	L3	CO4	PO1,PO2,PO4
14	A gas turbine unit has a pressure ratio of 6 and maximum cycle temperature of 610°C. The isentropic efficiency of the turbine and compressor are 0.82 and 0.8 respectively. Calculate the power output in kW of an electric generator, geared to the turbine, when air enters the compressors at 15°C at a rate of 16 kg/s. Take $C_p = 1.005 \text{ kJ/kg.K}$ and $\gamma = 1.4$ for compression process and $C_p = 1.11 \text{ kJ/kg.K}$ and $\gamma = 1.333$ for expansion process.	L3	CO4	PO1,PO2,PO4
15	Why boiler mountings are installed. Explain the operation of fusible plug with the help of simple diagram.	L3	CO4	PO1,PO2,PO4
16	Explain the stages of combustion in a gas turbine combustion chamber with a neat sketch.			