Duration: **3 hours** Max Marks: **80**

Note: Attempt **any 4** questions
Figures to the right indicate full marks
Assume data wherever required and mention it clearly

Q1	(i)	List out steam turbine Components and Explain with neat sketches of casing and rotor of steam turbines.	10
	(ii)	List out gas turbine Components and tabulate the gas turbines classification with components brief description	10
Q2	(i)	What are the various factors those affect the combustion chamber performance? And Technically explain the factors role in the gas turbine performance	10
	(ii)	Derive an expression of work done on impulse turbine blades and blading efficiency, power developed of components by the impulse turbine, gross or stage efficiency.	10
	(ii)	Explain with detailed diagram of Fuel system and controls of Gas Turbine	10
Q3	(i)	Explain the sequence of operations of steam turbine with steam turbine start up curve	10
	(ii)	Explain various materials are using in Gas turbine blades and the various factors to be considered in the selection of blade materials.	10
Q4	(i)	In a closed cycle gas turbine the working fluid at 40 ^{0}C is compressed with an adiabatic efficiency of 0.82. It is then heated at constant pressure to 1000K. The fluid then expands down to initial pressure in a turbine with an adiabatic efficiency of 0.85. After expansion the fluid is cooled to 40 ^{0}C. The pressure ratio is such that work done per kg of air is maximum. The working fluid is air having C_{pa} = 1.01 KJ / Kg K and γ_a =1.38. Calculate the pressure ratio and cycle thermal efficiency	10
	(ii)	Significance of Gland systems in steam turbine. List out Main components of Gland Systems and explain any one of Gland system with diagrams.	10
Q5	(i)	Explain significance and construction of Oil pump of steam turbine with neat sketches.	10
	(ii)	Explain different heat energy losses (internal losses and external losses in steam turbines?	10
Q6		Write short notes and derivation of **(Any Two)**	
	(i)	Derive an expression for enhancement of thermal efficiency and effectiveness of simple open cycle constant pressure gas turbine plant by using reheating	10
	(ii)	Explain ram jet propulsion system principles with diagram	10
	(iii)	Requirements for efficient blade cooling in Gas turbine. Power plant	10