Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026

Sixth Semester

Mechanical Engineering

CME384 – Power Plant Engineering

Regulations - 2021

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Show the difference between water tube and fire tube boilers.	L2	1	2
2.	Classify the various draught system used in steam power plants.	L1	1	2
3.	Outline the p-V diagram of Brayton cycle.	L2	2	2
4.	List any four fuels used in a gas turbine power plant.	L1	2	2
5.	Tell the few differences between nuclear fission and nuclear fusion.	L1	3	2
6.	What is a CANDU reactor?	L1	3	2
7.	Interpret the different energy transformations that occur in a hydro-electric power plant.	L2	4	2
8.	How wind turbines are classified based on the axis.	L1	4	2
9.	Is a high-altitude hill, a suitable site for installing a wind turbine? Justify your answer.	L2	5	2
10.	Summarize the methods by which radioactive wastes can be safely disposed.	L2	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a		Explain the working of a thermal power plant highlighting the functions of different circuits.	L2	1	16
			Or			
	b	i	Sketch the p-V and T-s diagrams of a simple Rankine cycle. List the processes in the cycle.	L2	1	6
		ii	Compare simple Rankine cycle and Rankine cycle with reheating. Also, draw the p-v and T-s diagrams indicating the differences.	L2	1	10
12.	a		Interpret the functions of various components of diesel power plant with neat sketch.	L5	2	16
			Or			
	b		An engine with 200 mm cylinder diameter and 300 mm stroke works on theoretical Diesel cycle. The initial pressure and temperature of air used are 1 bar and 27°C. The cut off is 8% of the stroke. Determine: (a) Pressures and temperatures at all salient points. (b) Theoretical air standard efficiency. (c) Mean effective pressure. (d) Power of the engine if the working cycles per minute are 380. Assume that compression ratio is 15 and working fluid is air. Consider all conditions to be ideal.	L5	2	16

13.	a	i	Explain the construction and working of a boiling water reactor.	L3	3	10
		ii	State the functions of moderator, reflector and control rods in a nuclear reactor.	L3	3	6
			Or			
	b		Explain the construction and working of a Pressurized water reactor with necessary sketch.	L3	3	16
14.	a		Illustrate with neat sketch the operation of tidal power plant.	L2	4	16
			Or			
	b		With a schematic layout, explain the operation of a liquid dominated single flash steam system. Sketch the T-s diagram of the system indicating the different processes.	L2	4	16
15.	a		A central power station has annual load factor, capacity factor and use factor of 60%, 40% and 45% respectively. The maximum demand is 15 MW. Estimate (i) the annual energy production and revenue earned if the cost of energy is Re. 1/kWh, (ii) the reserve capacity over and above the peak load and (iii) the hours per year the station is not in service.	L4	5	16
			Or			
	b	i	Analyze the different types of power tariffs that exist to measure the power consumption.	L4	5	8
		ii	Explain any 4 site selection criteria that needs to be considered while installing a nuclear power plant.	L4	5	8