CBCS SCHEME

SRI SAIRAM COLLEGE OF ENGINEERING

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(2) BME515D

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Energy Engineering

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Briefly explain the various steps involved in coal handling.	10	L3	CO1
	b.	Explain the working principle of Benson boiler with a neat sketch.	10	L3	CO1
		OR			
Q.2	a.	Draw the layout of a diesel power plant.	10	L3	CO1
	b.	List and explain the different methods of starting a diesel engine.	10	L3	CO1
		Module – 2			
Q.3	a.	Explain the solar radiation incident on the earth's surface.	10	L3	CO2
	b.	With the help of neat sketch, explain the method of extraction of solar energy from solar ponds.	10	L3	CO2
		OR			
Q.4	a.	Explain the working of floating drum biogas plant with a neat sketch.	10	L3	CO3
	b.	Explain the working of down draft gasifier with a neat sketch.	10	L3	CO3
		Module – 3			
Q.5	a.	With a neat sketch, explain the working of Hot dry rock geothermal plant.	10	L3	CO3
	b.	With a neat sketch, explain double basin arrangement of harnessing of tidal energy.	10	L3	CO3
		OR			
Q.6	a.	With a block diagram, explain the basic components of wind energy conversion system.	10	L3	CO3
	b.	With a neat sketch, explain horizontal axis and vertical axis wind machines.	10	L3	CO3
		Module – 4			
Q.7	a.	With a neat sketch, explain pumped storage hydroelectric power plant.	10	L3	CO3
	b.	The runoff data of a river at a particular site is tabulated below :	10	L4	CO3

Month	Mean discharge per month (millions of m^3)
January	40
February	25
March	20
April	10
May	0
June	50
July	75
August	100
September	110
October	60
November	50
December	40

(i) Draw a hydrograph and find the mean flow.
(ii) Also draw the flow duration curve.
(iii) Find the power in MW available at mean flow if the head available is 80 m and overall efficiency of generation is 85%. Take each month of 30 days.

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		OR			
Q.8	a.	With a neat sketch, explain closed Rankine cycle OTEC system.	10	L3	CO2
	b.	List the problems associated with Ocean Thermal Energy Conversion (OTEC).	4	L2	CO2
	c.	Explain the following terms related to hydroelectric power plant: (i) Pen stock (ii) Draft tube	6	L3	CO3
		Module – 5			
Q.9	a.	Explain the principle of release of nuclear energy by fusion and fission reactions.	10	L3	CO3
	b.	Explain with a neat sketch, the general components of a nuclear reactor.	10	L3	CO3
		OR			
Q.10	a.	With a neat sketch, explain the working of Pressurized Water Reactor (PWR).	10	L3	CO3
	b.	Explain the following : (i) Reactor shielding (ii) Radio active waste disposal.	10	L3	CO3

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