Reg. No.



VII SEMESTER B.TECH (ELECTRICAL & ELECTRONICS ENGINEERING)

MAKEUP EXAMINATIONS, DEC 2016 - JAN 2017

SUBJECT: ENERGY AUDITING AND MANAGEMENT [ELE 423]

REVISED CREDIT SYSTEM

Tim	ne: 3 ⊦	lours	Date: 2	28 December 2016	Max. Marks:	50
Inst	tructio	ns to Candidate	s:			
	*	Answer ANY FI	VE FULL questions.			
	*	Missing data ma	y be suitably assum	ned.		
1A.	What	are the key elem	ents of energy mon	itoring & targeting? Explain e	ach element. (03)
1B.	Explain, in details, the three class		three classification	sifications of energy, citing examples for each classif		04)
1C .	What any oi	is Demand Side ne method for DS	Management (DSM) SM.	nt (DSM)? Why is it important for a country like India? Expl		
2A.	What	is the aim of the	Electricity Act, 200	3? List any six important feat	ures of this act. (05)
2B.	List the six step audit methodology for energy conservation study of lighting system the different energy savings measures used in air conditioning systems.				ghting systems & discuss . (03)
2C.	Define (i) Energy Management and			ergy Auditing as per EC, 2001	. (02)
3A.	Explai steps	in the detailed er of the audit.	nergy audit method	ology, clearly outline the diffe	rent phases & associated	05)
3B.	What is an energy efficient motor? Explain the different losses & methods to reduce th in Induction motors & drives.				ds to reduce these losses (05)
4A.	Durin factor indep in eac	g May-2012, a p of 0.8 lag is obse endent utility su h month.	ant has recorded a erved. The minimun pplier & every dip o	maximum demand of 900 kW n average power to be mainta of 1% in power factor attracts	'A and an average power ined is 0.95 lag as per the a penalty of Rs 10,000/-	
	•	Calculate the capacitors.	improvement in p	ower factor for June 2012	by installing 150 kVAR	
	•	Calculate pena	lty to be paid, if any	r, for the month of JUNE 2012	(04)
4B.	What is state designated agency? of state designated agency.		ed agency? List, sep ency.	List, separately, any three duties and any three res		03)
4C.	What are Standards & Labels? Wh		Labels? Why are its	ıy are its benefits?		03)
5A.	 What is the mission of Bureau of Energy Efficiency? What is a designat of its responsibilities. 			d consumer? List any two (03)	
5B.	Potatoes are dried from 14% total each 1000 kg of raw potatoes assu peeling?		m 14% total solids otatoes assuming th	to 93% total solids. What is th nat 8% by weight of the origin	e product yield from al potatoes is lost in (03)

5C. An autoclave contains 1000 cans of pea soup. It is heated to an overall temperature of 100 °C.

If the cans are to be cooled to 40 °C before leaving the autoclave, how much cooling water is required if it enters at 15 °C and leaves at 35 °C? The specific heats of the pea soup and the can metal are respectively 4.1 kJ/ kg °C and 0.50 kJ/ kg °C. The weight of each can is 60g and it contains 0.45 kg of pea soup. Assume that the heat content of the autoclave walls above 40 °C is 1.6 x 104 kJ and that there is no heat loss through the walls.

(04)

(04)

- **6A.** What is simple payback period? What are its benefits and drawbacks? Calculate the simple payback period for a project which requires the installation of a cogeneration system, which will reduce the annual energy bill of the company by Rs 23,00,000/-. The capital cost of the new cogeneration system is Rs 90, 00,000/- and the annual operating & maintenance costs are Rs 5, 00,000/-.
- **6B.** What does "time value of money" mean? Explain the Net Present Value technique for financial analysis. (03)
- **6C.** List, separately, any three duties and any three responsibilities of an energy manager. **(03)**