GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

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B.TECH 5th SEMESTER EXAMINATIONS, NOV/DEC 2019

BELOE5052 ENERGY MANAGEMENT AND AUDITTING

Common to EE/EEE Branches

Time : 3 Hours Maximum : 100 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) 10 x 2=20 Mark

Q.1. Answer *All* Questions

a Inexhaustible energy sources are known as---------- [CO1]
(a) commercial Energy (b) renewable Energy [PO3,4]
(c) primary energy (d) secondary energy

b Which of the following is commercial energy source? [CO1]
(a) Electricity (b) Coal (c) Oil d) All the above [PO3,4]

c The energy management function is generally vested in---------- [CO2]
(a) Senior Management (b) One energy manager or co-ordinator [PO3,4]
(c) Distributed among number of middle manager (d) (b) & (c) together

d The objective of energy management includes ---------- [CO2]
(a) Minimising energy costs (b) Minimising waste [PO3,4]
(c) Minimising environmental degradation (d) All the above

e A synchronous motor takes the leading current when it is---------- [CO3]
(a). Overexcited(b). Under excited [PO3,4]
(c). Not excited(d). Either (a) or (b)(e). All of these

f In order to improve the power factor of equipment operating at lagging power factor, a capacitor is connected---------- [CO3] [PO3,4]
(a). In series with the equipment(b). In parallel with the equipment
(c). In series-parallel with the equipment(d). Either (a) or (b)

g The basic function of electronic ballast is---------- [CO5]
(a). To ignite the lamp(b). To stabilize the gas discharge [PO3,4]
(c). To supply the power to the lamp(d). Only a and c(e). All of these

h Maximum demand controller is used to---------- [CO5] [PO3,4]
a)Switch off essential loads in a logical sequence
c) Switch off non-essential loads in a logical sequence
(b) Exceed the demand of the plant
(d) Controls the power factor of the plant

i Energy efficient transformer core is made up of---------- [CO5]
(a) Silicon alloyed iron (grain oriented) (b) Copper [PO3,4]
(c) Amorphous core - metallic glass alloy (d) none of the above

j The characteristic of conventional ballast in lighting application is one among the following: [CO5] [PO3,4]
(a) They have low operational losses than electronic ballasts.
(b) They have tuned circuit to deliver power at 25 Hz
(c) They do not require a mechanical switch (starter)
(d) They have high operational losses and high temperature rise

PART – B: (Short Answer Questions) 10X2=20 Marks

Q.2. Answer *ALL* questions

a	Explain the barriers in Energy Audit and how it can be overcome.	[CO1] [PO3,4]
b	How do you define 'Final Energy Consumption'?	[CO1] [PO3,4]
c	Explain in brief about energy pricing in energy conversion systems.	[CO1] [PO3,4]
d	Discuss in brief about energy conservation and importance.	[CO1] [PO3,4]
e	Explain the concept of energy management approach understanding energy costs.	[CO2] [PO3,4]
f	List the different types of methods for preparing process flow in energy conversion system.	[CO2] [PO3,4]
g	What are the technical aspects of energy efficient motors?	[CO3] [PO3,4]
h	Write a short note on motor replacement issues in energy conversion systems.	[CO3] [PO3,4]
i	What is the role of maximum demand controllers?	[CO4] [PO3,4]
j	What is the need of electric ballast in energy conversion systems?	[CO4] [PO3,4]

PART – C: (Long Answer Questions) 4X15=60 Marks

Answer *ALL* questions

Q.3

a	Write short notes on: i). air pollution ii) climate change.	8	[CO1] [PO3,4]
b	Illustrate in detail about primary energy resources available and how effectively utilize for energy conversion.	7	[CO1] [PO3,4]
	OR		
c	Explain the different types of representations in Energy consumption.	8	[CO1] [PO3,4]
d	Discuss in detail information about energy conservation and its importance in controlling the environmental pollution.	7	[CO1] [PO3,4]

Q.4

a	List and enumerate the Goals of Energy Audit and where they can be applied.	8	[CO2] [PO3,4]
b	Explain clearly about principles of energy management.	7	[CO2] [PO3,4]
	OR		
c	What is energy audit? What are the different types of audit?	8	[CO2] [PO3,4]
d	Discuss the controlling aspects of energy management.	7	[CO2] [PO3,4]

Q.5

a	What are the types of electrical motors used for energy conversion? Explain about any one type of electrical Motor used for the energy conversion.	8	[CO3,4][PO3,4]
b	What are the types of losses occurring in electrical Induction Motor? What are the factors affecting motor performance in energy conversion?	7	[CO3,4] [PO3,4]
	OR		
c	Discuss in detail about the role of Power Factor in energy conversion. What are the methods you recommend to improve it?	8	[CO3,4] [PO3,4]
d	What is the role of a capacitor in energy conversion systems? What is the selection and location of these capacitors in power factor management systems?	7	[CO3,4] [PO3,4]

Q.6

a	Discuss in detail about automatic power factor controllers in energy conversion systems.	8	[CO5,6] [PO3,4]
b	What is the need of starter? What are the types of soft starters? How soft starters are helpful in energy saver mechanism.	7	[CO5,6] [PO3,4]
	OR		
c	What is the role of Transformer in energy conversion systems? How transformers are energy efficient in energy conversion systems.	8	[CO5,6] [PO3,4]
d	Explain in detail about energy saving potential of each technology.	7	[CO5,6] [PO3,4]