17506

11920

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Use of Non-programmable Electronic Pocket Calculator is permissible.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any <u>THREE</u> of the following:** **12**

(i) What is the energy conservation? List its benefits.

(ii) State and explain following lighting terms –

(1) CRI

(2) ILER

(3) Luminous flux

(4) Luminaire

(iii) Draw power flow diagram of electrical motor and suggest methods of improving power quality in it.

(iv) State any four advantages of VFDs.

Marks

b) **Attempt any ONE of the following:** **6**

(i) What is the effect of following on induction motors

(1) Voltage unbalance

(2) Harmonic distortion

(ii) Explain with the flow chart energy audit procedures.

2. Attempt any FOUR of the following: **16**

a) State any four energy conservation techniques in lighting systems.

b) State any four places in which luminance level is required.

c) Explain any one energy conservation techniques related to transformer.

d) How parameters of transmission line affects performance of transmission lines?

e) What adequate maintenance program is followed for lighting systems?

f) What is the difference between Energy efficient motors and Standard motors?

3. Attempt any FOUR of the following: **16**

a) Explain the role of motor surveying achieve energy conservation in induction motors.

b) How efficiency of transformer is improved by epoxy resin cast material?

c) Explain how energy conservation can be achieved in induction motors by operating in star mode.

d) Differentiate between epoxy resin cast and encapsulated dry type transformer.

e) How power factor and load factor contributes to technical losses in transmission and distribution system?

Marks

4. a) **Attempt any <u>THREE</u> of the following:** **12**

(i) State the objectives of tariff systems.

(ii) List the advantages of cogeneration.

(iii) List various types of tariff and explain the two part tariff structure.

(iv) State how tariff is useful in reducing energy bills and energy conservations.

b) **Attempt any <u>ONE</u> of the following:** **6**

(i) Explain contribution of following factors in increasing transmission and distribution losses –

(1) Low p.f

(2) Low transmission voltage

(3) Transmission line voltage unbalance

(ii) A consumer has M.D of 1000 KW at load factor 40%. If tariff is Rs. 100/KW of M.D. plus 20 paise/Kwh, find overall cost/Kwh.

5. **Attempt any <u>FOUR</u> of the following:** **16**

a) List the commercial losses in transmission and distribution.

b) State the advantages of soft starters compared to DOL starters.

c) Explain with block diagram gas turbine topping cogeneration systems.

d) How efficiency of electric motor is improved by p.f. controller?

e) Explain KVAR controller for distribution systems.

f) Explain any four advantages of centralized control equipment for conserving energy.

Marks

6. Attempt any FOUR of the following: **16**

a) What is ABC analysis? State its use.

b) State any four advantages of energy audit.

c) Compare steam and gas types of generation.

d) State at least eight industries suitable for cogeneration.

e) "Measurements are an essential part of energy audit". Justify the statement.
