17424

15162

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

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

(2) Answer each Section on separate answer sheet.

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

(4) Figures to the right indicate full marks.

(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

SECTION - I

1. Attempt any NINE of the following: **18**

a) State any two advantages of three phase system over single phase system.

b) State Ohm's law.

c) Define power and energy.

d) State the necessity of starter.

e) List the various parts of dc machine.

f) Write working principle of dc motor.

g) What is ideal transformer? How it differs form practical transformer?

h) State the need of earthing.

i) Give classifications of transformer according to their construction.

Marks

j) List the different types of wire used in electrical wiring.

k) A transformer does not operate on a d.c supply. State reason.

l) Write two safety precautions to be taken while handling an electrical equipments.

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

a) State working principle of MCCB. State its two applications.

b) For 12 kPA, 440 V/220 V, 50 Hz, 1 ϕ transformer, find:

(i) Primary current

(ii) Secondary current

(iii) Turns ratio and

(iv) No. of turns on primary side

c) With neat construction explain working of R-split type of induction motor.

d) Compare squirrel cage and slip ring type three phase induction motor (any four points).

e) State any four parts and their materials used for three phase induction motor.

f) What is the importance of improvement in power factor? State any two methods for power factor improvement.

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

a) A furnace takes a current of 10 Amp from a 220 V, dc supply for eight hours. Calculate the energy consumed in kWh.

b) State the function of no volt coil and overload coil in case of DC shunt motor starter.

c) Describe the operation of mercury vapour lamp with neat connection diagram.

d) Draw neat diagrams explain plate earthing.

e) Differentiate between two winding transformer with auto transformer (any four points).

f) Describe with a circuit diagram, the operation of capacitor start induction run single phase induction motor.

Marks

SECTION - II

4. Attempt any NINE of the following: **18**

a) Define doping.

b) Draw symbol of P-N junction diode and give one application of the same.

c) What is breakdown in diodes? State its types.

d) Draw symbol of following with all indications:

(i) PNP transistor

(ii) NPN transistor

e) Enlist the applications of transistor.

f) Define filter.

g) Enlist the types of filter.

h) Define voltage regulator.

i) State truth table of two input Ex-OR gate.

j) Draw symbol of light emitting diode. State any two applications of LED's.

k) What is mean by positive logic.

l) Give important applications of SCR.

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

a) Describe the operation of zener diode and draw its V-I characteristics.

b) Enlist the applications of following:

(i) Resistor

(ii) Inductor

c) State De-morgon's second theorem and prove it with the help of truth table.

d) Draw and describe input and output characteristics of transistor in common emitter mode.

e) Compare half wave and full wave centre tapped type rectifier.

f) Explain bridge rectifier with the help of diagram.

Marks

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

a) Explain with the help of diagram:

(i) conductors

(ii) semiconductors

b) Describe the working of TRIAC with the help of a neat sketch. Also state its two applications.

c) Compare intrinsic and extrinsic semiconductors.

d) Draw the symbol, logical expression and truth table of AND and NAND gate.

e) Explain block diagram of power supply in detail.

f) Identify the circuit and explain it in detail. (Refer Fig. No. 1)

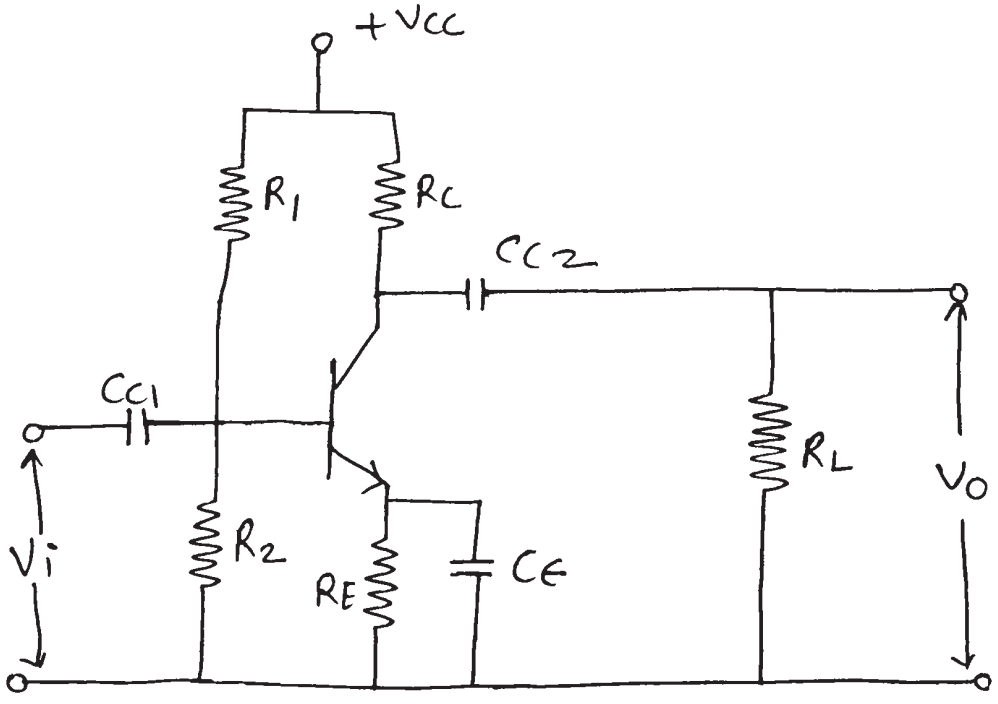

Fig. No. 1