ITI- ELECTRICIAN

Time: 03Hours **Maximum Marks: 60**

Instruction to Candidates:

1) Section-A is Compulsory.

2) Attempt any five questions-from section B&C.

3) Select at least Two questions from section B&C

(Section- A)

Q1)

1. Discuss the behavior of p-n junction diode under forward and reversebiased conditions.
2. Draw circuit diagram for CC & CE configuration of transistor. Which is having higher gain and why.
3. State advantages of JFET over BJT.
4. What is operating point? Why is it necessary to stabilize operating point of a transistor amplifier?
5. What do you understand by class A, Band C power amplifiers.
6. Draw the block diagram of a multistage amplifier having n-stages. Write expression for its gain (A).
7. State advantages of -ve feedback in amplifiers.
8. What is an oscillator? What are the essential components of feedback LC oscillator.
9. Differentiate between photo diodes & photo-transistor.
10. Define term junction capacitance. Name different type of capacitances diode posses.

(Section- B)

(Marks: 8 Each)

Q2) (a) Derive an expression for resistivity of a conductor material and explain the effect of temperature on it.

(b) A wire of 100 ohm resistance is cut into how many equal pieces so that – when they are Connected in parallel resultant is-1ohm.

Q3) (a) Discuss the phasor relation between emf and current when a.c. flows through series C-R circuit.

(b) An a.c. has frequency 50Hz and r.m.s current 25 amp. Write equation of instantaneous current and find (i) current at time 0.0025 second (ii)Time at which current is 14.14 amp.

Q4) (a). Derive an expression for emf equation of single phase transformer.

(b) A 60 kW, 250V shunt motor takes.l6A when miming light at 1440 rpm. The resistance of armature and field windings are 0.2 ohm and 125 ohm resp. (i) Find the efficiency of the motor when taking 1~2 A. (ii) Also estimate the efficiency when working as generator and delivering 152 Ampere at 250V.

Q5) Explain the principle and working of dynamometer type instruments and derive expression for deflecting torque.

(Section- C)

(Marks: 8 Each)

Q6) (a) Draw and explain input and output characteristic of NPN transistor.

(b) Explain working of PN junction diode as full wave rectifier.

Q7) (a) Describe pin diagramof5551c.

(b) Explain the working of thermocouple thermometer. .

Q8) Describe in detail the operation of R-S flipflop with waveform.

Q9) Explain principle and operation of unbonded metal strain gauge arid bonded resistance wire strain gauge.