

DEC 2012

Roll No.

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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Sem.-1st & 2nd)

BASIC ELECTRICAL

AND ELECTRONICS ENGINEERING

Subject Code : BTEE-101 (2011 & 2012 Batch)

Paper ID : [A1104]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Answer briefly :

(a) What will happen if the length of a conductor is doubled and its area of cross section is also doubled ?

(i) Resistance will increase four times.

(ii) Resistance remains unchanged.

(iii) Resistance decreases to four times.

(iv) Change at random.

(b) Give concept of work, power and energy in brief.

(c) Instantaneous current is given by the relation $I = 20 \sin 314t$, Find r.m.s. and average value of A.C. ?

(d) What is the theory of shunt ?

(e) State similarities of electric and magnetic circuits.

(f) Why cannot a 3-phase induction motor runs at synchronous speed ?

- (g) Give applications of strain gauge.
- (h) Draw symbolic representation of BJT and FET.
- (i) Convert $(4287)_{10}$ into hexadecimal number system.
- (j) Draw symbols of EX-OR and NAND gate.

SECTION-B

- 2. (a) State and explain Kirchoffs laws.
- (b) Illustrate Ohm's laws.
- 3. A wire of 100Ω resistance is cut into how many equal pieces, so that when they are connected in parallel resultant is 1Ω ?
- 4. (a) Derive an expression for emf equation of single phase transformer.
- (b) An a.c. has frequency 50 Hz and rms current 25 Amp. Write equation of instantaneous current and find :
 - (i) Current at time 0.0025 seconds
 - (ii) time at which current is 14.14 amp.
- 5. A 3 phase induction motor is wound for 4 poles and is supplied from 3 phase, 50 Hz system. Calculate :
 - (a) the synchronous speed
 - (b) Speed of the motor when slip is 0.04 and
 - (c) the rotor when motor runs at 60 rpm.

SECTION-C

- 6. What is LVDT ? Discuss its principle and applications with neat diagram.
- 7. (a) Discuss working principle of a P-N junction diode. Also show its characteristics and mention its important applications.
- (b) A germanium diode has a saturation current of 10^{-8} A. Calculate for the junction current for a forward bias of 0.4 volts and 300°K .
- 8. Describe the operation of RS flip flop with suitable wave form.
- 9. What are universal gates and why they are called so ? How can OR and XOR gates be realized using NAND gates only ?