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Total No. of Questions : 09] [Total No. of Pages : 02

Paper ID [EE101]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 1st/2nd) MAY-2008

BASIC ELECTRICAL & ELECTRONICS ENGINEERING (EE - 101)

Time : 03 Hours **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) *(10 × 2 = 20)*

a) Find the temperature at which resistance of the conductor becomes double to that at °C.

b) What is admittance give units.

c) Draw symbols of NAND gate and NOR Gate.

d) What is gauge factor?

e) The synchronous speed of induction motor is 1500 r.p.m. and rotor speed is 1440 r.p.m. Find slip.

f) What is shunt? Give uses.

g) Give advantages and disadvantages of PMMC instruments.

h) What is voltmeter sensitivity?

i) Write equivalent polar form of vector 3 + j4 and illustrate on phasor diagram.

j) Convert $(4287)_{10}$ into hexadecimal number system.

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 1 ohm.

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 50 Hz 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 16A when running 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 152 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 diagram of 555 Ic.
(b) Explain the working of thermocouple thermometer.

Q8) Describe in detail the operation of R-S flip flop with wave form.

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