| Printed pages: 4 EBT103 |
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| (Following paper code and roll No. to be filled in your answer book) |

Paper code: 154106 Roll No.

## B TECH

(SEM I) THEORY EXAMINATION 2014-15

## BASIC ELECTRICAL \& ELECTRONICS ENGINEERING

## Time: 3 Hours

Max. Marks: 100

## Section-A

Q1. Attempt all parts.
$2 \times 10=20$
a. State thevenin theorem, also Discuss its significance on the network theory.
b. What is the significance of back emf?
c. Discuss the classification of electrical instruments.
d. What are the applications of shaded pole motor?
e. Convert the following number as indicated:
(i) $(1434)_{8}=(\quad ? \quad)_{10}$
(ii) $(55.3425)_{10}=(\quad ? \quad)_{2}$
f. Give the relation between $\alpha, \beta$ and $\gamma$.
g. Define PIV of pn junction diode.
h. Draw the circuit diagram of AND \&OR gate using NAND gate only.
i. Define Pinch off voltage in JFET.
j. What will happen if, during running condition if the starting winding of a split phase induction motor is disconnected?

## Section-B

Q2. Attempt any three parts.

$$
10 \times 3=30
$$

a. With the suitable diagram explain the construction and working of $n$ channel JFET. And also draw its drain and transconductance curve.
b. Derive the emf equation of DC generator.
c. Calculate the current flowing in the 5 branch of the circuit shown, using nodal analysis.

d. Explain the principle and working of Induction type Energy meter.
e. For the voltage divider bias configuration determine :
(i) $I_{c}$ (ii) $V_{E}($ iii $) V_{C E}(i v) V_{B}(v) R_{1}$


Section-C
Attempt all questions

$$
10 \times 5=50
$$

Q3. Draw and explain the various characteristic of DC motor, also enlist its applications.

OR
Draw the block diagram of DVM and DMM and explain

Q4. Why single phase Induction motor is not self starting? Explain any one method of starting.

Draw the block diagram of CRO and Explain. How you measure the voltage, frequency and phase using CRO?

Q5. (i) Explain the working of p-n junction diode in reverse and forward bias with the help of V-I characteristics curve.
(ii) Explain the working of Bridge rectifier.

OR
(i) Explain the load line and operating point in BJT biasing.
(ii) Explain the input (base) curve and output (collector) curve of n-p-n transistor in CE configuration. make all the region in output curve.

Q6. State Thevenin's Theorem and solve the circuit shown below for the current in the branch AB using Thevenin's theorem.


## OR

Minimize the following function using K-map in SOP \& POS both, also implement the function using minimum number of NAND gate.

$$
\mathrm{F}(\mathrm{~A}, \mathrm{~B}, \mathrm{C}, \mathrm{D})=\sum \mathrm{m}(1,5,6,7,11,12,13,15) .
$$

Q7. ADD \& Subtract the following number without converting into decimal
(i) $(623)_{8}+(256)_{8}$
(ii) $(8 \mathrm{~A} 03)_{16}+(3 \mathrm{BC} 4)_{16}$
(iii) $(859)_{11}-(4 \mathrm{~A} 6)_{11}$
(iv) $(603)_{9}-(281)_{9}$
(v) $(434)_{6}+(303)_{6}$

OR
Explain the principle and construction of attraction and repulsion type M.I. instruments. Discuss their merits and demerits.

