

Roll No.

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B. Tech. II Sem. (Main) Exam., May – 2018

EE -101 Basic Electrical &amp; Electronics Engineering

Time: 3 Hours

Maximum Marks: 80  
Min. Passing Marks: 28**Instructions to Candidates:**

Attempt any **five** questions including Question No. 1, which is Compulsory. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly. Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL2. NIL**Q.1 COMPULSORY**

Answers for each sub – question be given in about 25 words.

[8×2=16]

- Explain Zener diode operation
- State Fleming's Left hand rule.
- Implement an XOR gate using NOR gates only.
- Explain commutator working in DC Motor.
- Convert  $(689)_{10}$  into hexadecimal.
- Find the average value of Periodic sine wave for complete cycle which is clamped to half its Positive Maximum Value.
- Establish relation of Power Consumed in balanced 3 – Phase load.
- Explain Statically & Dynamically induced emf with examples.

Q.2 (a) Explain Principle, construction and working of 3 – Phase Induction Motor, with suitable diagram. [8]

(b) Find the r. m. s. value of sine wave for complete cycle which is clamped to half its negative Maximum Value. [8]

Q.3 (a) Explain Principle of operation of Transformer and Draw its Phasor diagram referred to secondary side, supplying Leading Power factor Load. [8]

(b) Explain the Principle of operation of D. C. generator and also derive its E. M. F. equations. [8]

Q.4 (a) Explain Principle of operation and characteristics of P – N junction diode. [8]

(b) Explain Principle of operation and characteristics of BJT. [8]

Q.5 (a) Using Boolean Techniques simplify the following expression: [8]

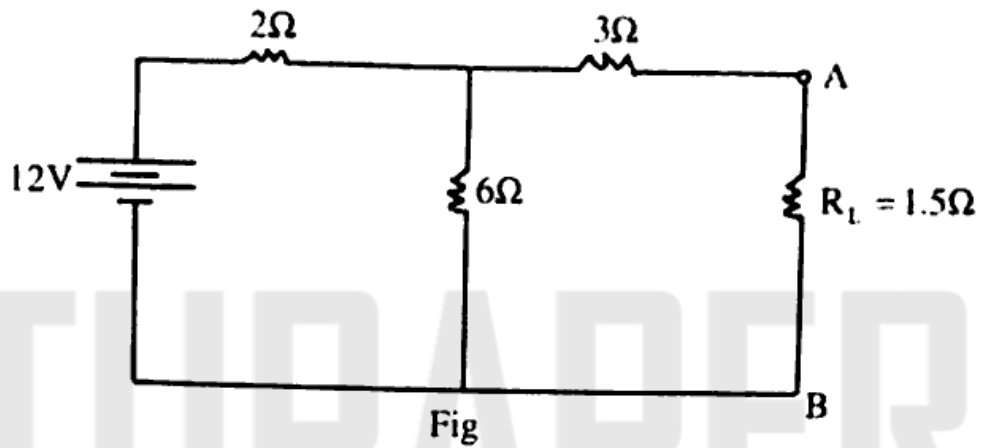
$$Y = (A+B+C).(A+B)$$

(b) Draw the truth table of universal logic gates. [8]

Q.6 (a) What is the value of series resistance required when 20watts, 15volts, 1000 milliampere Zener diode are connected in series to obtain 20volts regulated output from 40 volts d.c. source. [8]

(b) (i) State and Explain Norton's theorem [2]

(ii) Find the load current  $I_L$  in  $R_L$  [6]



- Q.7 (a) Explain PMMC instruments with suitable diagrams and necessary formulas. [8]
- (b) Explain AC watt hour meter with suitable diagram and necessary Mathematics formulas. [8]

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