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**Question Paper Code : 70647**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Second Semester

Civil Engineering

GE 6252 — BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to All Branches)

(Regulations – 2013)

(Also Common to PTGE 6252 – Basic Electrical and Electronics Engineering for B.E.  
(Part-Time) – Mechanical Engineering – First Semester (Regulation – 2014)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. A 50 ohm resistor is in parallel with a 100 ohm resistor. The current in 50 ohm resistor is 7.2 A. What is the value of third resistance to be added in parallel to make the total line current as 12.1 A?
2. List the operating forces present in indicating instruments.
3. Mentions few applications of DC. Generator.
4. Why single phase Induction Motor is non-self-starting?
5. Find the values of  $I_C$ ,  $I_B$  and  $\beta$ , Transistor values are  $\alpha = 0.95$ ,  $I_E = 1 \text{ mA}$ .
6. What is the total current at the junction of PN junction diode?
7. Explain universal gates.
8. Convert  $(63)_8$  to hexadecimal.
9. Draw the block diagram of optical fibre communication.
10. List few applications of microwaves communication.

PART B — (5 × 16 = 80 marks)

11. (a) (i) A series circuit has  $R = 5$  ohms,  $L = 13$  mH, and  $C = 140 \mu F$  and is supplied with 230V, 50Hz single phase. Find
- (1) Impedance (2)
  - (2) Current (2)
  - (3) Power (2)
  - (4) Power factors of the circuit. (2)
- (ii) Two impedances  $(8 + j10)$  ohm and  $(7 + j9)$  ohm are connected in parallel. Find magnitude and phase angle of total impedance. Another impedance  $(5 - j2)$  ohm is connected in series with above combination. Find overall impedance. (8)

Or

- (b) Explain the construction and principle of operation of single phase energy meter. (16)
12. (a) (i) With a neat diagram explain the construction and working of D.C Motor. (12)
- (ii) Derive the torque equation. (4)

Or

- (b) Explain the construction and working of single phase Induction motor. (16)
13. (a) Describe the working of a PN junction diode with neat diagrams. Also explain its V-I characteristics. (16)

Or

- (b) Explain the working of the CB configuration of a BJT and draw its input, output characteristics. (16)
14. (a) (i) Draw the logic symbol of OR, NAND, NOT gate and explain its logic operation. (8)
- (ii) Draw and explain the operation of following flip-flops,
- (1) RS flip-flops using NOR gate
  - (2) D flip-flops using NAND gate. (8)

Or

- (b) With necessary diagrams describe the operation of a 4-bit binary, ripple counter. (16)

15. (a) Short notes on
- (i) Microwave communication. (8)
  - (ii) FAX. (8)

Or

- (b) Draw the block diagram and explain the fiber optic communication.  
Mention its applications (12 + 4)
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