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Question Paper Code : 70038

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2022.

Second Semester

Civil Engineering

BE 3252 – BASIC ELECTRICAL, ELECTRONICS AND
INSTRUMENTATION ENGINEERING

(Common to: Environmental Engineering/ Geoinformatics Engineering/
Petrochemical Engineering/ Agricultural Engineering/Bio Technology/Biotechnology
and Biochemical Engineering/Chemical Engineering/Chemical and Electrochemical
Engineering/Fashion Technology/Food Technology/Handloom and Textile
Technology/Petrochemical Technology/Petroleum Engineering/Pharmaceutical
Technology/Plastic Technology/Textile Chemistry/Textile Technology)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define power factor.
2. Mention the limitations of series connected circuit.
3. Define MMF.
4. List any two Electrical safety precautions.
5. State the Faraday's law of electromagnetic induction.
6. Define voltage transformation ratio of transformer.
7. Zener diode is referred as voltage regulator. Justify your answer.
8. Why PN junction gets damaged at high breakdown voltage?
9. Define transducer.
10. Compare active and passive transducer.

PART B — ($5 \times 13 = 65$ marks)

11. (a) Find the equivalent values of following elements (13)
- Three resistances in series
 - Three inductances in series
 - Three capacitances in series

Or

- (b) Obtain the potential difference V_{AB} in the circuit shown in Figure Q. 11 (b) below using Kirchhoff's laws. (13)

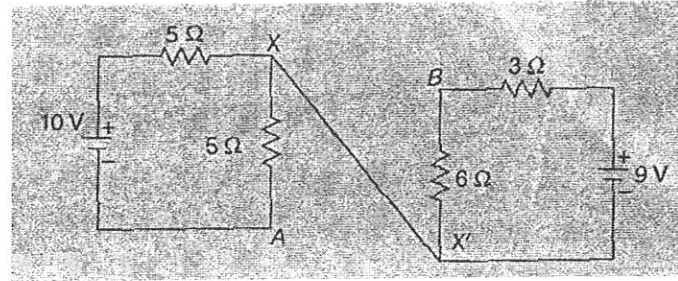


Figure Q. 11 (b)

12. (a) (i) Classify circuit breaker
(ii) Explain the working of circuit breaker with required sketch. (3+10)

Or

- (b) (i) Infer the functions earthing.
(ii) Classify the methods of earthing. (3+10)

13. (a) Discuss the constructional features of a DC generator. (13)

Or

- (b) (i) Explain the working principle of a single phase transformer.
(ii) Derive the EMF equation of a single phase transformer. (7+6)

14. (a) Explain the working of a depletion type MOSFET with relevant sketches. (13)

Or

- (b) Discuss the operation of common base configuration transistor. (13)

15. (a) Infer the output of LVDT under three different cases (i) no displacement (ii) upward displacement (iii) downward displacement. (13)

Or

- (b) Explain the operation of optical encoder with a neat sketch. (13)

PART C — ($1 \times 15 = 15$ marks)

16. (a) Determine the value of R and current through it for the circuit shown in Figure Q. 16 (a) when the current is zero in the branch CD. (15)

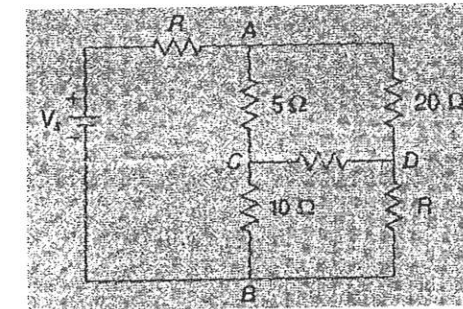


Figure Q. 16 (a)

Or

- (b) Performance of full-wave is better than half-wave rectifier. Justify the statement by ripple factor and efficiency of rectifier. (15)