



C16-AEI-106

6013

BOARD DIPLOMA EXAMINATION, (C-16)

OCTOBER—2020

DAEI—FIRST YEAR EXAMINATION

BASIC ELECTRICAL ENGINEERING

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

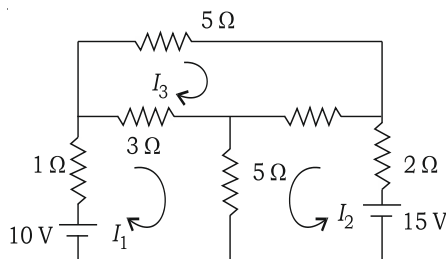
1. Define KCL.
2. State maximum power transfer theorem.
3. Draw series resonance curves.
4. Define power factor and give its formula series $R-L$ circuit.
5. Define Joule's law of electric current.
6. Find the Q -factor for a series $R-L-C$ circuit fed with 230 v supply and having resistor, inductor and capacitor values are given by $10\ \Omega$, 1 H and $100\ \mu\text{F}$.
7. Define mechanical equivalent of heat.
8. Define regulation of transformer.
9. Give reasons for using laminations in transformer core.
10. Write the expression for torque in d.c. motor.

PART—B

10×5=50

- Instructions :** (1) Answer *any five* questions.
 (2) Each question carries **ten** marks.
 (3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

11. Find the branch currents I_1, I_2, I_3 using mesh analysis method. 10



12. Transform Fig.-A into delta and Fig.-B into star respectively. 5+5

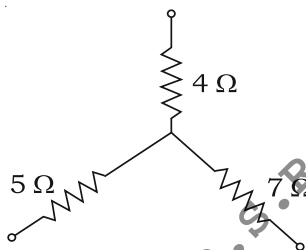


Fig.-A

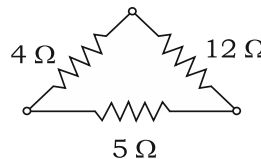


Fig.-B

13. A resistance of 12 Ω, an inductor of 0.15 H and capacitance of 100 μF are connected in series across 100 V, 50 Hz supply. Calculate impedance, current, power factor and power. 10

14. (a) Define resonance in parallel R-L-C circuit. 5
 (b) Compare series and parallel resonance. 5

15. (a) Sketch the incandescent bulb and label its parts. 7
 (b) State thermal efficiency. 3

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16. The maximum flux density in the core of a 250/3000 V, 50 Hz single-phase transformer is 1.2 Wb/m^2 . If the e.m.f. per turn is 8 volts, determine (a) Primary and secondary turns, (b) Area of the core. 10
17. (a) Explain working principle of a transformer. 7
(b) State the need for cooling of a transformer. 3
18. Explain the constructional details of alternator. 10

A.A.N.M & V.V.R.S.R POLYTECHNIC, GUDLAVALLERU, KRISHNA

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