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**C09–AEI–304**

# 3214

## BOARD DIPLOMA EXAMINATION, (C–09)

## MARCH/APRIL—2017

## DAEI—THIRD SEMESTER 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 junction and loop.

**2.** State maximum power transfer theorem.

**3.** Write any three differences between series and parallel resonance.

**4.** Draw circuit diagram of parallel resonance circuits.

**5.** Write the expression for resonance frequency in a series resonance circuit.

**6.** Define 'commutation' in a DC machine.

**7.** State the e.m.f equation of a DC generator and indicate the terms involved in it.

**8.** Mention the principle on which DC motor works.

**9.** Define autotransformer.

**10.** State the e.m.f. equation of an alternator and indicate the terms involved in it.

## PART—B

10×5=50

***Instructions*** : (1) Answer *any* **five** questions.

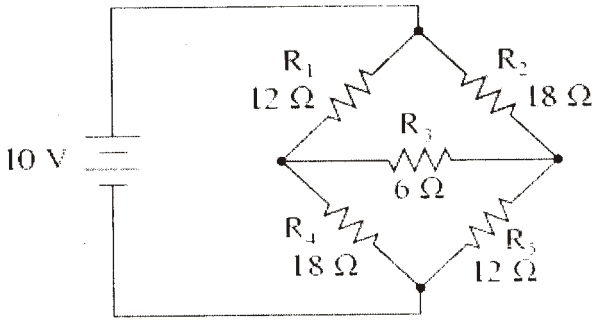
(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

**11.** *(a)* Explain ideal voltage source and ideal current source. 6

*(b)* State superposition theorem. 4

**12.** Find the resistance between the terminals of the battery in bridge network using star-delta transformation and the total current flowing in the circuit as shown in the figure :




**13.** Derive the relationship between voltage and current in a pure capacitive circuit.

**14.** Derive impedance, current and phase angle in a series *R-L* circuit.

**15.** Classify DC machines with reference to excitation and write the formulae for the above classification.

**16.** Explain the electrical and mechanical characteristics of DC compound motors.

**17.** Explain any two methods of cooling a transformer.

**18.** *(a)* Explain the constructional features of single-phase induction motor. 5

*(b)* Explain the principle of working of synchronous motors. 5

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