00102

DECVI / DELVI / DCSVI /ACECVI / ACELVI / ACCSVI

Term-End Examination

December, 2011

OIEE-001 : BASICS OF ELECTRICAL ENGINEERING

Time : 2 hours   *Maximum Marks : 70*

*Note:-There are **seven** questions. Attempt **any five** questions and all questions carries equal marks. Question number 1 is **compulsory**.*

1. Identify True/False for (a) to (d) :   2x7=14

    (a) An ideal current source has zero internal resistance.

    (b) Superposition theorem is applicable for linear and non-linear network.

    (c) Peak-to-peak voltage is twice the peak value of voltage.

    (d) Single phase system is more capable and reliable than 3 phase system.

    Fill in the blanks for (e) to (g) :

    (e) Three resistors, each of R ohms are connected to form a triangle. The resistance between any two terminals will be _____ Ω .

    (f) If $V = 200\angle 36.9°$ and $I = 10\angle 90°$ then $Z =$_____ .

    (g) In a 3 phase delta connection, line voltage is _____ phase voltage.

2. (a) Find the current in $5\,\Omega$ resistance of circuit shown using superposition theorem. **2x7=14**
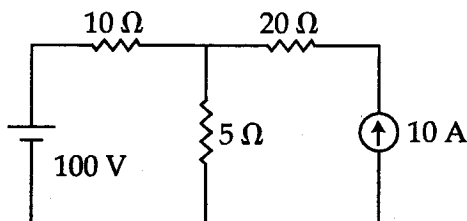
(b) Explain the charging methods used for lead acid battery.

3. (a) What are the advantages of AC over DC ?

(b) Draw and explain B-H curve. **2x7=14**

4. (a) Explain the concept of self induced emf and derive relation for self inductance. **2x7=14**

(b) Prove that for pure capacitive circuit power absorbed is zero.

5. (a) Define resonance. Find resonant frequency for series RLC circuit. **2x7=14**

(b) Two impedances $Z_1 = (6-j\;\theta)\,\Omega$ and $Z_2 = (\theta-j\;6)\;\Omega$ are connected in parallel across 100 V supply. Find :

(i) Current and power factor of each branch

(ii) Overall current and power factor.

6. (a) Derive the relationship for line current and phase current for delta connected system. **2x7=14**

    (b) A balanced star-connected load of $(\theta + j6)\Omega$ per phase is connected to a balanced 3 phase, 400V supply. Find the line current power factor, power and total volt-Amps.

7. Write short notes on *any two*.   **2x7=14**

    (a) Kirchoff's Law

    (b) Lenz's Law

    (c) Faraday's Law

    (d) Thevenin's theorem.

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