# 

# [4656] – 205

Seat	
No.	

### F.E. (Semester – II) Examination, 2014 BASIC ELECTRICAL ENGINEERING (2012 Course)

Time : 2 Hours		Max. Marks : 50	
	Instructions :	<ol> <li>Attempt Q. No. 1 or 2, Q. No. 3 or 4, Q. No. 5 or 6, Q. No. 7 or 8.</li> <li>Figures to the right indicate full marks.</li> <li>Use of non-programmable pocket size scientific calculator is permitted.</li> <li>Neat diagrams must be drawn wherever necessary.</li> <li>Assume suitable data, if necessary.</li> </ol>	
1. a)	Define temperature coefficient of resistance. State its unit and the factors on which it depends.		6
b)	Compare electric ar them. OR	nd magnetic circuit i.e. explain similarities and dissimilarities between	6
2. a) b)	A motor pump set efficiency of motor if it is used 4 hrs p An iron ring with me with 500 turns of wi	lifts 1200 m <sup>3</sup> of water to a height of 15 meter per hour. If the is 80% and that of pump is 75%, calculate the monthly bill of set er day for 30 days at a rate of Rs. 5/unit. ean circumference of 140 cm and cross section of 12 cm <sup>2</sup> is wound re. What is the relative permeability of the iron if exciting current of 2	6
	flowing in coil, prod	uces flux of 1.2 mwb ?	6
3. a) b)	Derive the expressi Obtain the equation its peak value. OR	on for energy stored in the capacitor. for root mean square value of alternating sinusoidal current in terms of	6 6
4. a)	The equation for the by current to reach i) 30 Amp and	e alternating current is given by i = 100 sin100 $\pi$ t . Find the time taken ii) 50 Amp for 1 <sup>st</sup> time.	6
b)	A 600 KVA transfor Calculate the efficie i) half load 0.8 p. ii) full load 0.8 p.f	rmer has iron losses of 4 kw and half load copper losses are 2 kw. ency of transformer at f. lagging and . lagging.	6

#### 5. a) Explain advantages of three phase system over single phase system. 6 b) Sketch the voltage, current and power waveforms for R-L series circuit. State the equations of v, i and p. 7 OR 6. a) A series circuit, consist of resistance of 10 ohm and inductance of 0.1 Henry, connected across one phase 50 Hz A.C. supply. If the voltage across resistance is 50 volt. Calculate i) Voltage drop across inductance and ii) Supply voltage. 7 b) A coil having resistance of 50 ohm and inductance of 0.02 H is connected in parallel with a capacitor of 35 $\mu$ F across a single phase 200 V, 50 Hz supply. Calculate branch currents and total current drawn by the circuit. 6 7. a) State and explain Kirchhoff's laws. 6 b) Derive the expressions/formulae to convert Delta connected network into its equivalent star connected network. 7 OR

8. a) Apply Thevenin's theorem, to calculate current flowing in 10 ohm resistance, for the circuit shown in fig. 1.





b) Apply Superposition Theorem, to the circuit shown in Fig. 1 to calculate current flowing in 10  $\Omega$  resistance.

B/II/14/

6

## [4656] – 205

## 

7