



**SARASWATI EDUCATION SOCIETY'S  
SARASWATI COLLEGE OF ENGINEERING  
KHARADI, NAVI MUMBAI  
DEPARTMENT OF HUMANITY & SCIENCE  
UNIT TEST II SEM-I (2015-2016)  
SET B**

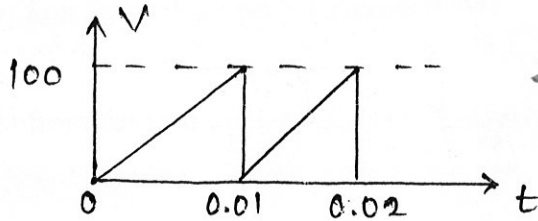
**SUB: BEEE**  
**Date:**

**Time: 1 hour**  
**Total Marks: 20**

$2 \sin^2 \frac{\omega t}{2}$

3  
5 x 0.275  
0.2735

Q1) (a) Determine the RMS value of voltage waveform shown below. (3)



$2 \sin^2 = 10.05$

15

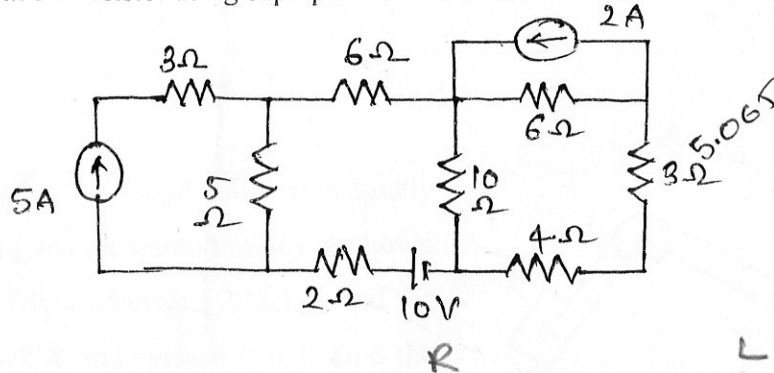
(b) For a series RLC circuit having  $R = 10 \Omega$ ,  $L = 0.01 \text{ H}$  and  $C = 100 \mu\text{F}$  so find the resonant frequency, quality factor and bandwidth. (3)

Q2) a) With the help of neat circuit diagram and input and output waveforms explain the working of a full wave centre tapped rectifier (4)

b) The voltage and current in a series circuit are given by  $e = 100 \sin(\omega t + 30^\circ)$  and  $i = 50 \sin(\omega t + 60^\circ)$ . Determine the impedance of the circuit. Find resistance, reactance and power factor of the circuit (3)

OR

Q2) Determine current in  $5 \Omega$  resistor using superposition theorem. (7)



Q.3) Three similar coils each having a resistance of  $10 \Omega$  and inductance of  $0.04 \text{ H}$  are connected in star across a 3 phase  $50 \text{ Hz}$ ,  $200 \text{ V}$  supply calculate line current, total power absorbed, reactive power and apparent power. (7)

$I_L = 7 \text{ ph}$  .OR  $V_L = \sqrt{3} V_{ph}$

$X_L = 17.5 \Omega$

Q.3) An inductive coil having a resistance of  $10 \Omega$  and inductance  $0.1 \text{ H}$  is connected in parallel with  $150 \mu\text{F}$  capacitor to a variable frequency,  $200 \text{ V}$  supply. Find the resonance frequency at which the total current taken from supply is in phase with supply voltage. Also find value of this current. Draw the phasor diagram. (7)

$P = V_L I_L \cos \phi$   
 $= 1435 \text{ W}$

0.536