

fication of power system in terms of  
also draw line diagram of typical  
att-meter method to determine power in

(10×2=20)

ple of AC synchronous generator. What  
es of rotating field over stationary  
applications of synchronous motor.  
f operation and starting methods of 1-□

nd armature has 144 slots with two coil  
n coil having two turns. If the flux per  
d armature rotation at 720 rpm, what is

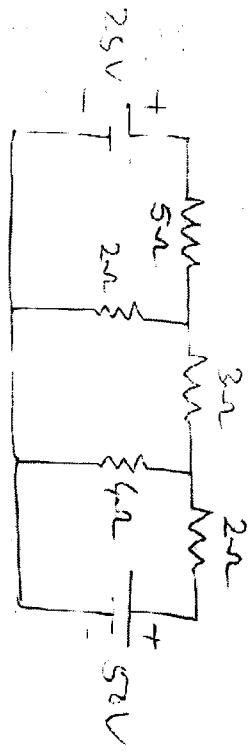
Printed pages: 4	EEE201/EEE101
(Following paper code and roll No. to be filled in your answer book)	
Paper ID : 199215	Roll No. <input type="text"/>

B. Tech.

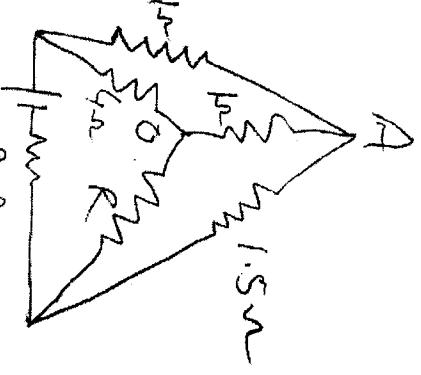
**(II SEM.) CARRY OVER EXAMINATION, 2014-15**  
**ELECTRICAL ENGINEERING****TIME : 3 hrs****Max.Marks.: 100****Note:** (1) Attempt *all* questions.  
(2) Each question carry equal marks.**1. Attempt any four parts:** (4×5=20)

- a. Explain active and passive elements and also unilateral and bilateral elements.
- b. The equation of an A.C. is given as  $i = 42.42 \sin 628t$ . Determine
  - i. Peak value
  - ii. Frequency
  - iii. Rms value
  - iv. Average value
  - v. Form factor
- c. Explain parallel resonance and show the current variation with frequency.
- d. Explain the following terms:
  - i. MMF
  - ii. Flux density
  - iii. Reluctance
  - iv. Relative permeability
  - v. Hysteresis
- e. Find the value of R and the current flowing through it in following network, when the current in branch OA is zero.

2. Answer any four parts of the following: (4x5=20)
- Find the impedance and the power factor of a circuit whose input voltage and current is given by  $v = 100\sin\omega t$  and  $i = 8\sin(100\pi t + 60^\circ)$ .
  - State and prove maximum power transfer theorem.
  - Show that in a  $3\parallel$  star connected system, the line voltage is  $\sqrt{3}$  times of the phase voltage.
  - A dc shunt motor develops an open-circuit emf of 250 volt at 1500 rpm. Find its developed torque for an armature current of 20A.
  - Describe the construction of a 1- $\perp$  induction energy meter with neat diagram.
  - Using nodal analysis, find the current through  $10\Omega$  resistor in following network:

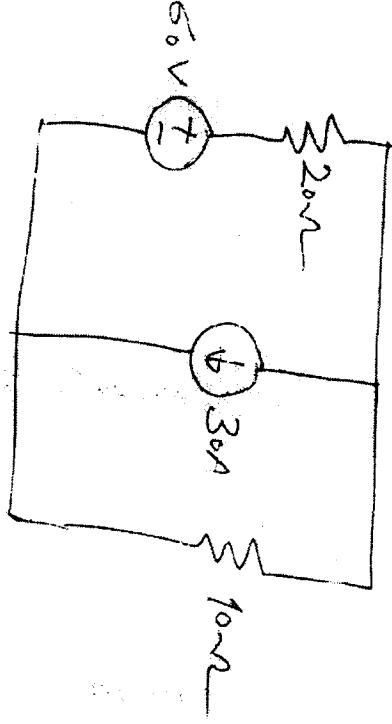


- f. Using mesh analysis find the branch current in following network:

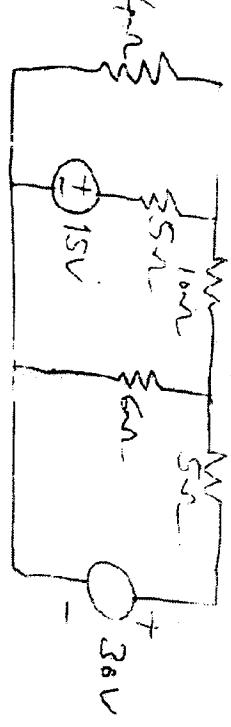


3. Attempt any two parts: (10x2=20)

- Derive an emf equation of power transformation. Also draw an equivalent circuit of it.
- Explain principle of operation and slip torque characteristics of a 3- $\perp$  induction motor.
- Find the current flowing through  $10\Omega$  resistance in the following circuit using superposition theorem.



4. Answer any two parts of the following: (10x2=20)
- Explain the following:
    - Similarities and dissimilarities between magnetic circuit and electric circuit.
    - A coil of 300 turns and  $10\Omega$  is wound uniformly over a steel ring of mean circumference of 30 cm and cross section area  $9 \text{ cm}^2$ . It is connected to a supply of 20V dc. If the relative permeability of the ring is 1500 find (i) the magnetising force, (ii) the reluctance, (iii) the mmf and (iv) the flux.



- B.T.E**
- ELECTRICAL E**
- (II SEM) CARRY OVER I**
- TIME : 3 hrs**
- 5. Attempt any two parts:** (10×2=20)
- a. Discuss the classification of power system in terms of voltage level. Also draw line diagram of typical substation.
- b. Explain the two watt-meter method to determine power in 3-L system.
- c. Explain the principle of operation and starting methods of 1- $\square$  armature? Give the applications of synchronous motor.
- d. Explain the advantages of rotating field over stationary armature? Give the applications of synchronous motor.
- e. Explain the principle of AC synchronous generator. What are the advantages of rotating field over stationary armature? Give the applications of synchronous motor.
- f. A 4 pole, lap wound armature has 144 slots with two coil sides per slot, each coil having two turns. If the flux per pole is 20mWb and armature rotation at 720 rpm, what is the induced voltage?
- g. The equation of an AC voltage is  $v = V_m \sin(\omega t + \phi)$ . The frequency of the supply is 50 Hz. The peak value of the voltage is 220V. Determine the peak value of current if the load resistance is 10 ohms.
- h. Explain active and passive and bilateral elements.
- i. Peak value
- j. Frequency
- k. Rms value
- l. Average value
- m. Form factor
- n. Parallel resonance
- o. Explain the following terms with frequency.
- p. Explain the following terms in terms of M.F.
- q. Flux density
- r. Reluctance
- s. Relative permeability
- t. Hysteresis
- u. Find the value of  $R$  and the following network, when it is zero.
- v. Following network, when it is zero.

Printed pages: 4	(Followig Paper code and roll No)	Paper ID : 199215	Roll
------------------	-----------------------------------	-------------------	------