

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
 TEST - 3 EXAMINATION, May 2019  
 B.Tech 2<sup>nd</sup> Semester (CSE/ECE/IT/CE)

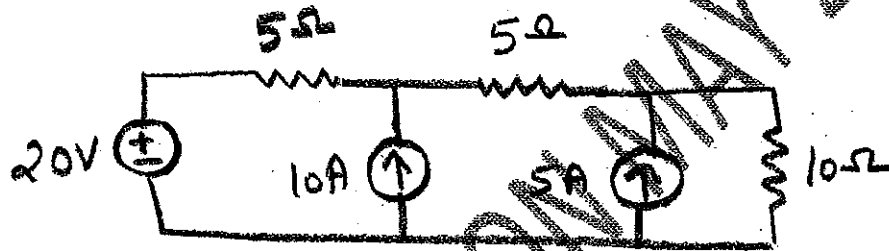
Course Code: 18B11EC211  
 Course Name: Electrical Sciences  
 Course Credits: 04

MAX. MARKS: 35

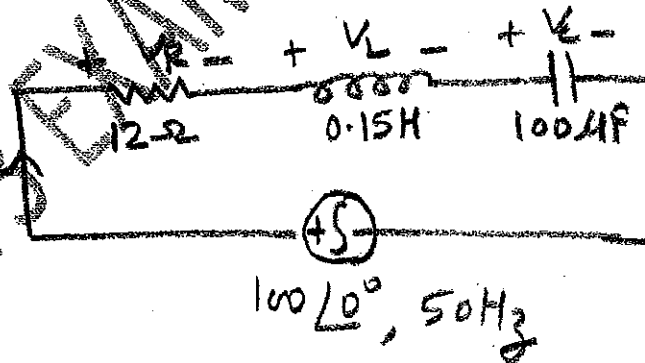
MAX. TIME: 2 Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated in square brackets against each question

- Q1. a) State Thevenin's theorem. [2] [CO3]  
 b) For given circuit, determine current passing through  $10\Omega$  resistor using superposition theorem. [3]



- Q2. a) For given values  $R = 5\Omega$ ,  $L = 0.2mH$ , &  $\omega = 50Hz$ , calculate the impedance of a parallel connected RL circuit. How does the series resistance of  $10\Omega$  in inductive branch affect this impedance? [3] [CO4]  
 b) For given circuit, calculate  $V_R$ ,  $V_L$  &  $V_C$ . [2]



- Q3. a) In what way an ideal transformer is differ from practical (real) transformer. [1] [CO2]  
 b) For practical (real) single phase transformer:  
 i. Draw the equivalent circuit [1]  
 ii. Draw the equivalent circuit referred to primary side, also write equations for equivalent resistance and equivalent inductance [2]  
 iii. Draw approximate equivalent circuit [1]

- Q4. a) A single phase  $250kVA$ ,  $11000V/415V$ ,  $50Hz$  transformer has 80 turns on the secondary. Calculate (i) the values of primary and secondary currents (ii) number of primary turns and (iii) maximum value of flux. [3] [CO5]
- b) A  $10kVA$ ,  $55V/1100V$  single phase transformer has a secondary terminal voltage of  $100V$  when loaded. Find voltage regulation of the transformer. [2]
- Q5. a) Discuss the different types of losses in transformer. [2] [CO2]
- b) Define efficiency of transformer. [1]
- c) Derive the condition for maximum efficiency of a transformer. [2]
- Q6. Explain the working principle and construction of a single phase induction motor. [5] [CO2]
- Q7. a) What is earthing? Explain the need of earthing in electrical installation and explain how earthing is done. [3] [CO2]
- b) Describe different types of cable and wires used for internal wiring. [2]

JUTT 13 EXAMINATION MAY 2019