

B.TECH. DEGREE EXAMINATIONS: NOV/DEC 2010

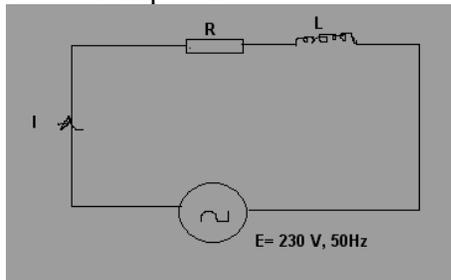
Second Semester

INFORMATION TECHNOLOGY

U07EC207: Electrical and Electronic Circuits

Time: Three Hours**Maximum Marks: 100****Answer all the Questions:-****PART A (10 x1 = 10 Marks)**

- The resistance of a 230 V incandescent lamp is 270 Ω . The current consumed by the lamp is
A) 0.9342 Amps B) 1.5 Amps C) 0.85 Amps D) 0.112 Amps
- If two resistors of 10 Ω are connected in parallel, what is the resultant resistance
A) 20 Ω B) 10 Ω C) 100 Ω D) 5 Ω
- The phase difference between current and voltage is in a pure inductor is
A) 0⁰ B) 90⁰ C) 180⁰ D) 270⁰
- A series RL circuit with R = 25 Ω and L = 0.02H is connected to a 230 V, 50 cycle source. Find the magnitude of impedance



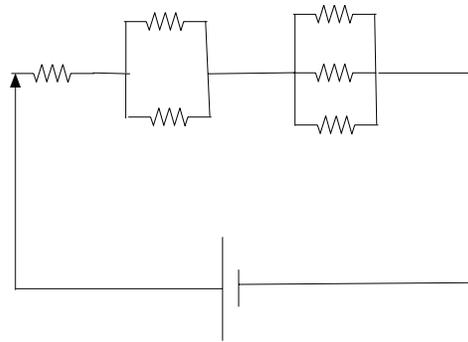
- A) 20.107 Ω B) 25.78 Ω C) 35.438 Ω D) 125.428 Ω
- The maximum safe rating voltage of a rectifier diode when it is reverse biased is called
A) Operating voltage B) Break down voltage C) Barrier voltage D) Peak inverse voltage
 - Mention the efficiency of full wave recitifier
A) 25 % B) 40% C) 80 % D) 100 %
 - The current amplification factor of Common Emitter Transistor configuration is equal to
A) $\frac{I_C}{I_E}$ B) $\frac{I_C}{I_B}$ C) $\frac{I_B}{I_C}$ D) $\frac{I_E}{I_C}$
 - In phototransistor, when no light is incident, a small leakage current flows from collector to emitter, due to small thermal generation. It is called
A) Dark current B) Eddy current C) Bright current D) Direct current
 - In a Colpitts oscillator, $C_1 = 0.2 \mu\text{F}$ and $C_2 = 0.02 \mu\text{F}$, find the required gain of oscillation
A) 0 B) 1 C) 10 D) 100
 - The Bandwidth of an ideal op-amp is
A) Zero B) unity C) 10 D) Infinite

PART B (10 x 2 = 20 Marks)

11. Write down the Kirchoff's Voltage Law.
12. Determine the current through the 5 KΩ resistors when the power dissipated by the element is 20 W.
13. What are vector and scalar quantities?
14. What happens when RLC series circuit is at resonance?
15. Distinguish between intrinsic and extrinsic semiconductor
16. Point out the application of Zenor diode
17. Define the stability factor of a transistor
18. What is a SCR?
19. Mention the operating principle of crystal oscillator.
20. What is a Voltage follower?

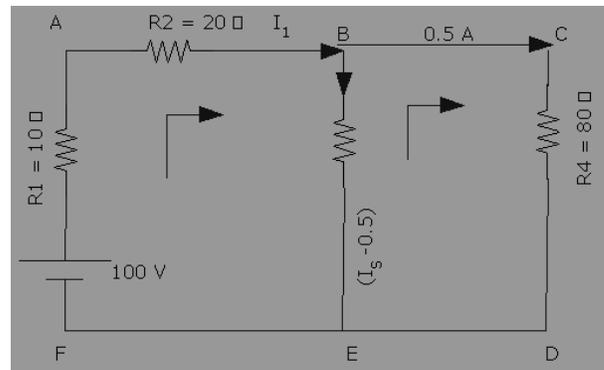
PART C (5 x 14 = 70 Marks)

21. a) For the circuit given below find the equivalent resistance of the circuit, the total current flow through the circuit, the currents flow through each resistors.



(OR)

- b) In the circuit shown in figure find the voltage across R1 and R2.



R2 = 2 Ω

R4 = 1

R5 = 1 Ω

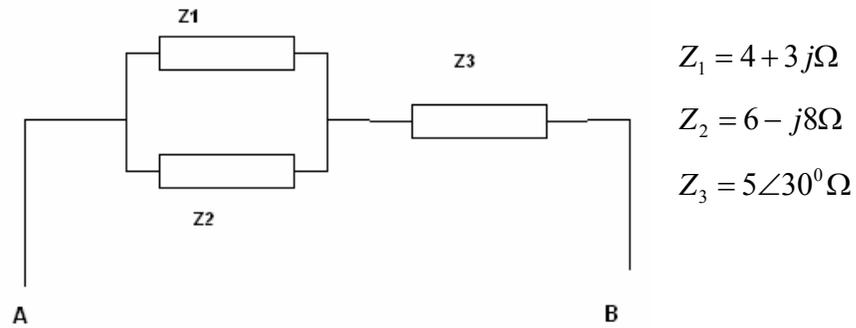
R3 = 2 Ω

R6 = 1

22. a) Find out the resultant voltage (magnitude and phase angle) by adding the voltages. $V_1 = 100 \sin(\omega t)$, $V_2 = 50 \sin(\omega t - \frac{\pi}{6})$, $V_3 = 100 \sin(\omega t + \frac{\pi}{4})$. Also obtain the r.m.s value of the resultant voltage.

(OR)

- b) Calculate the equivalent impedance of the network as viewed through the terminals A-B shown in fig. If an alternating voltage of $150\angle 0^\circ$ V is connected across A-B. Calculate the current drawn from the source and the power consumed.



23. a) Describe the working principle and characteristics of PN junction diode with relevant diagram. **(OR)**
 b) Draw the circuit diagram of Bridge rectifier and explain its operation.
24. a) Explain the CE configuration of BJT with relevant diagram **(OR)**
 b) Describe the working of a Silicon Controlled Rectifier
25. a) Write a brief note on the following
 (i) Wein Bridge oscillator (7)
 (ii) Hartley oscillator (7)
(OR)
 b) Write a brief note on the following
 (i) Noninverting Amplifier (7)
 (ii) Inverting Amplifier (7)
