

Reg. No. :

Question Paper Code : 11011

B.E./B.Tech. DEGREE EXAMINATION, JUNE 2011.

Common to ECE, CSE, IT and Biomedical Engineering Branches

Second Semester

147201 — ELECTRIC CIRCUITS AND ELECTRON DEVICES

(Regulation 2010)

Time : Three hours

Maximum : 100 marks

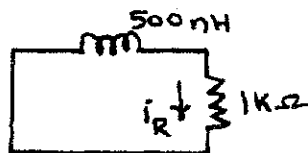
Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the maximum power transfer theorem.
2. Apply KVL to the following circuit and find i_x .



3. What is meant by quality factor?
4. Determine the current i_R through the resistor in following figure at $t = 1\text{ms}$ if $i_R(0) = 6\text{A}$.

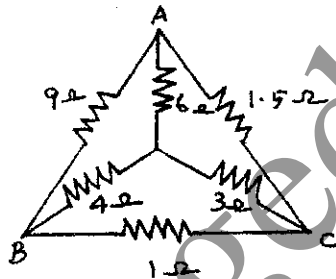


5. Differentiate between intrinsic and extrinsic semiconductors.
6. Draw the symbol of P-channel MOSFET.
7. Give short notes on diffusion capacitance.

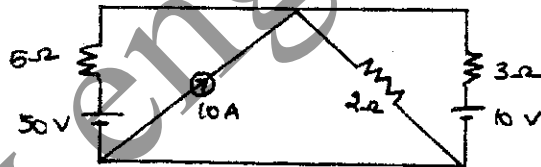
8. Draw the equivalent circuit of CE and CC configuration of transistors.
9. What is
 (a) LED
 (b) LCD?
10. Draw the V-I characteristics of Triac.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Find an equivalent resistance between A and B in the following circuit using star-delta transformation. (8)

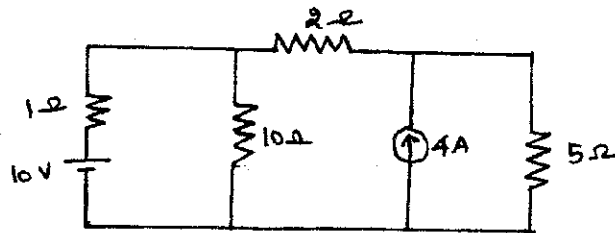


- (ii) Find the power delivered by the 50 V source in the circuit. (8)

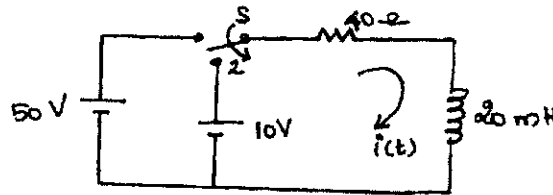


Or

- (b) Determine the current in the 10Ω resistor of the following circuit using super position theorem. (16)



12. (a) The circuit shown below is under steady state with switch at position 1. At $t=0$, switch is moved to position 2. Find $i(t)$.



Or

- (b) A coil having a resistance of 20Ω and an inductance of $200\mu\text{H}$ is connected in parallel with the variable capacitor. This parallel combination is connected in series with resistance of 8000Ω . A voltage of 230V at frequency of 10^6Hz is applied across the circuit. Calculate
- Value of capacitance at resonance
 - Q factor of the circuit
 - Dynamic impedance of the circuit
 - Total circuit current. (16)
13. (a) (i) Draw and explain the V-I characteristics of PN diode. (8)
- (ii) Explain how temperature affects the power dissipation in a PN diode. (3)
- (iii) A diode with 700mW power dissipation at 25°C has a $5\text{mW}/^\circ\text{C}$ derating factor. If the forward voltage drop remains constant at 0.7V , Calculate the maximum forward current at 25°C and at 65°C temperatures. (5)

Or

- (b) (i) Draw the symbol of zener diode and explain the V-I characteristics of zener diode. (8)
- (ii) Derive the current equation of a diode. (8)
14. (a) What is FET? Compare the N-channel and P-channel JFET with its operation. (16)

Or

- (b) (i) Briefly explain the operation of enhancement and depletion type MOSFET. (8)
- (ii) Draw and explain the input and output characteristics of BJT with CB configuration. (8)

15. (a) (i) With neat sketch explain the SCR characteristics. (8)
(ii) Draw and explain the two transistor equivalent model of SCR. (8)

Or

- (b) Explain about the working of photo-conductive cell with its characteristics and applications. (16)

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