# JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

## MID SEMESTER EXAMINATION (SUMMER SEMESTER)(IIND SEMESTER BT)

COURSE CODE: 15B11EC411                                          MAX. MARKS: 50

COURSE NAME: BASIC ELECTRONICS                        MAX. TIME: 2 HRS.

*Note: All questions are compulsory. Carrying of mobile phone during examination will be treated as case of unfair means. Use of calculator is permitted.*

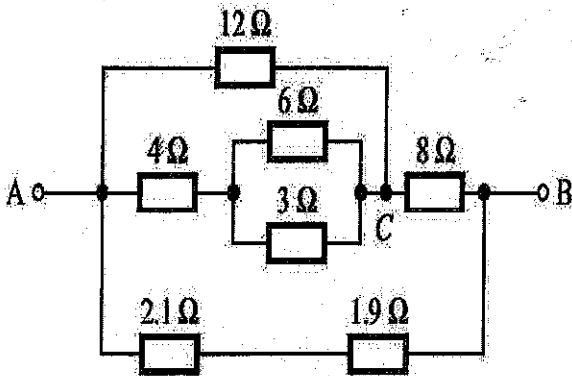**Q1 (a)** Determine the total resistance between points A and B in the network shown in Fig. 1. **[5 Marks]**
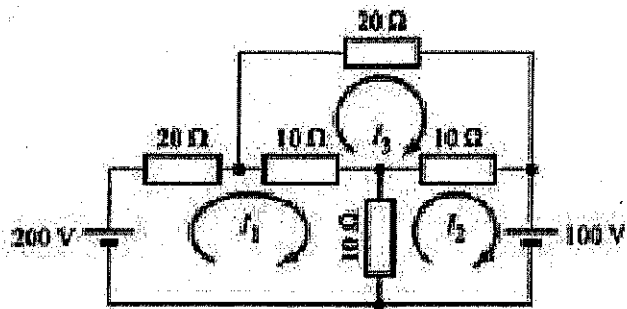


Fig. 1



Fig. 2

**(b)** A 10-$\Omega$ resistance is in series with a parallel combination of 15-$\Omega$ resistance and 5-$\Omega$ resistance. If the current in 5-$\Omega$ resistance is 6 A, what total power is dissipated in the three resistances?   **[5 Marks]**

**Q2 (a)** Explain the working of a full wave bridge rectifier in detail with the input and output waveforms.
                                                                                            **[7 Marks]**
**(b)** How does a BJT work in common emitter mode. Describe the input and output characteristics.
                                                                                            **[8 Marks]**
**Q3(a)** With the help of a suitable diagram differentiate between the two types of transistor. **[7 Marks]**

**(b)** What is the affect of biasing on the depletion region of a PN diode. Explain in detail. **[8 Marks]**

**Q4(a)** Apply mesh analysis and determine the loop currents $I_1$, $I_2$ and $I_3$ in the Fig 2.      **[5 Marks]**

**(b)** Why is common collector configuration required? Write the expression for $\alpha$ for CB configuration.
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