

**BACHELOR OF SCIENCE (COMPUTER SCIENCE) (CBCS - 2018 COURSE)**  
**F.Y.B.Sc.(Computer Science) Sem-I : WINTER :- 2021**  
**SUBJECT: PRINCIPLES OF ANALOG ELECTRONICS-I**

Day : Thursday  
 Date 27-01-2022

W-20070-2021

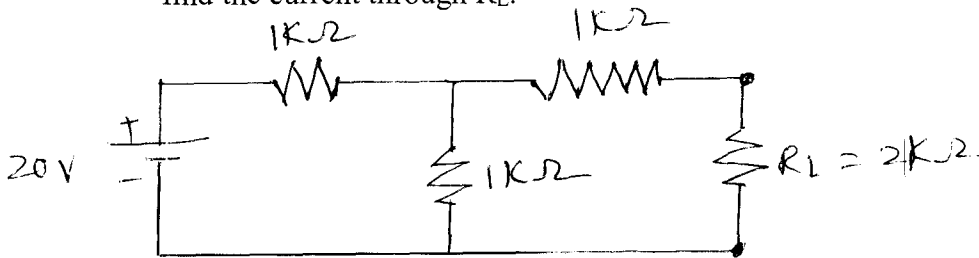
Time : 10:00 AM-01:00 PM  
 Max. Marks: 60

**N.B.**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Neat diagrams must be drawn **WHEREVER** necessary.
- 4) Use of scientific calculator is **ALLOWED**.

**Q.1** Answer any **TWO** of the following: **(12)**

- a) Draw and explain the output characteristics of transistor in CE configuration.
- b) With necessary diagram explain the working of n-channel MOSFET.
- c)
  - i) Give the statement for Thevenin's theorem.
  - ii) Draw the Thevenin's equivalent circuit for following circuit and also find the current through  $R_L$ .

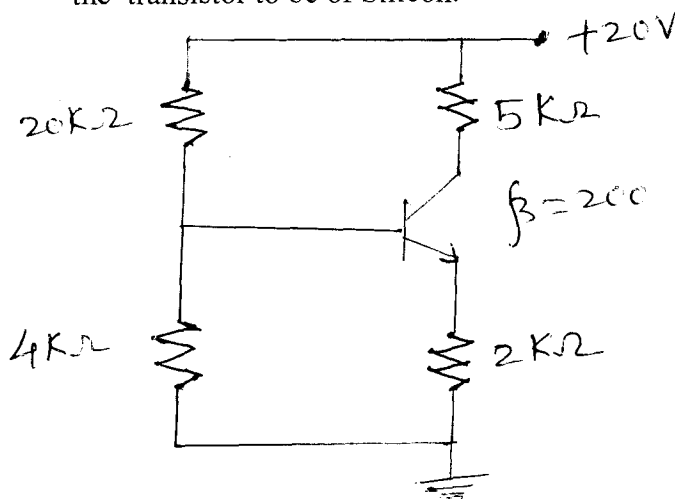


**Q.2** Answer any **TWO** of the following: **(12)**

- a) Derive an equation for growth and decay of current in R-C circuit.
- b) What do you mean by biasing of transistor? Explain potential divider bias in detail. How does it stabilize Q-point?
- c)
  - i) Give the statements for Norton's theorem and Superposition theorem.
  - ii) Explain types of transformers.

**Q.3** Answer any **TWO** of the following: **(12)**

- a) Draw dc load line for the following circuit and locate the Q-point. Assume the transistor to be of Silicon.

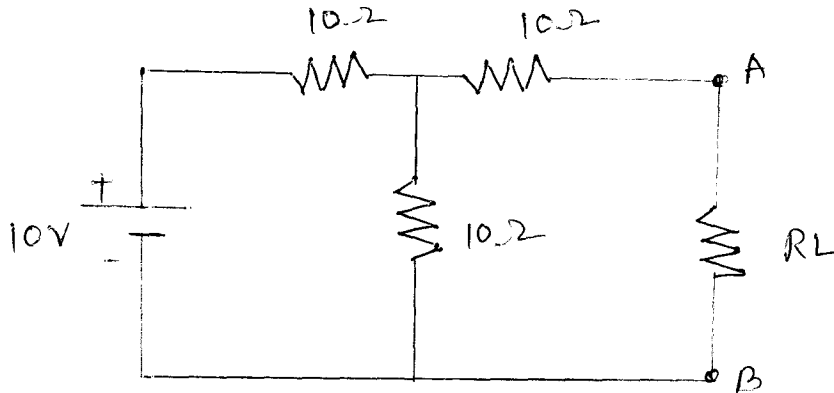


P.T.O.

- b) Draw well labelled circuit diagram for RC - coupled amplifier and explain it.
- c) With necessary diagram explain the working of UJT as a relaxation oscillator. Also define intrinsic stand-off ratio for UJT.

**Q.4** Answer any **THREE** of the following: (12)

- a) For the given circuit calculate the value of  $R_L$  for which the power dissipated in it would be maximum. Also, calculate the power.



- b) Explain the action of electrolytic capacitor.
- c) Explain the construction of n-channel JFET with necessary diagram.
- d) Differentiate between BJT and FET.

**Q.5** Answer any **FOUR** of the following: (12)

- a) If the base current in a transistor is  $10 \mu\text{A}$  when the emitter current is  $5.4 \text{ mA}$ , find the values of  $\alpha$  and  $\beta$ ? Also calculate the collector current.
- b) Define the following parameters for JFET:
  - i) Drain resistance ii) Trans conductance iii) Amplification factor
- c) Explain the construction of LDR. Also give its symbol.
- d) Give the classification of amplifiers on the basis of frequency.
- e) Define inductance. State types of inductors.
- f) Find the value of resistance from the given colour code: i) Brown Black Red Gold ii) Red Red Orange Silver

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