

**F.Y. B. SC. (Computer Science) SEM – I (CBCS 2018 COURSE) :**

**WINTER - 2018**

**SUBJECT : Principles of Analog Electronics - I**

Day : Wednesday  
Date : 17/10/2018

**W-2018-0889**

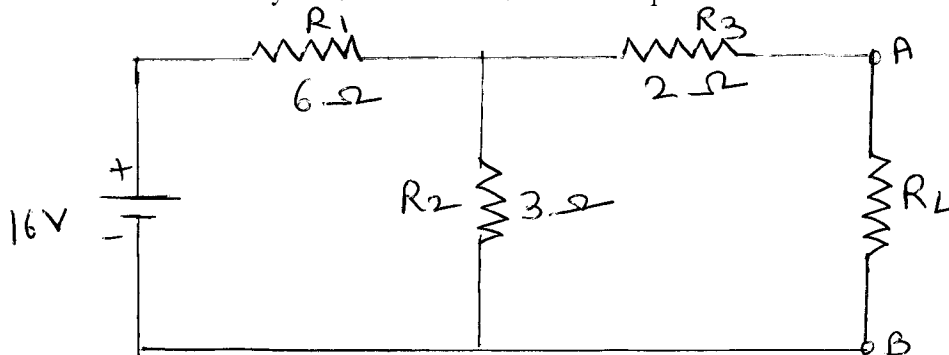
Time : 11.00 AM TO 02.00 PM  
Max. Marks : 60

**N.B.**

- 1) All questions are **COMPULSORY**.
- 2) Figure to the right indicate **FULL** marks.
- 3) Draw neat labeled diagrams **WHEREVER** necessary.
- 4) Use of log table and scientific calculator is allowed.

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

- a) Explain the working of n-channel depletion MOSFET with neat diagram.
- b)
  - i) Give the statement for Maximum Power transfer theorem.
  - ii) According to Maximum power transfer theorem what should be the value of load resistance  $R_L$  to abstract maximum power from the 16V battery. Also calculate the value of power.



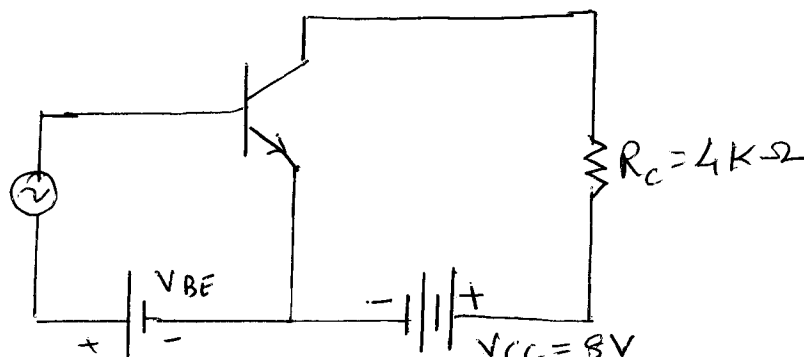
- c) Explain the charging and discharging action of capacitor.

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

- a) Explain the output characteristic for transistor in CE mode.
- b) Explain the colour code theory for fixed resistors.
- c) Explain the classification of amplifiers on the basis of Q-point.

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

- a) With necessary diagram explain the working principle of UJT.
- b) Explain the action of varistor.
- c) In the following circuit diagram if  $V_{CC} = 8V$  and  $R_C = 4k\Omega$ . Draw the dc load line. What will be Q-point if zero signal base current is  $20\mu A$  and  $\beta = 60$ ?



P.T.O.

- Q.4** Answer **ANY THREE** of the following: **(12)**
- a) Explain the construction of JFET with necessary diagram.
  - b) Define  $\alpha$  and  $\beta$ . Obtain relation between them.
  - c) Give the statements for :
    - i) Thevenin's theorem
    - ii) Norton's theorem
  - d) Draw well labelled circuit diagram for n-channel enhancement MOSFET.

- Q.5** Answer **ANY FOUR** of the following: **(12)**
- a) For a transistor  $\alpha_{dc} = 0.98$  and  $I_E = 2\text{mA}$ . Calculate  $I_C$  and  $I_B$ .
  - b) State three points of difference between BJT and FET
  - c) Draw the symbols for
    - i) SCR
    - ii) LDR
    - iii) n-channel enhancement MOSFET
  - d) State the types of transformers.
  - e) Derive an equation for the growth of current in RC circuit.
  - f) Define the following parameters of JFET:
    - i) Drain resistance
    - ii) Transconductance
    - iii) Amplification factor.

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