

F.Y. B. SC. (Computer Science) SEM – I (CBCS - 2016 COURSE) :
WINTER - 2018
SUBJECT : PRINCIPLES OF ANALOG ELECTRONICS – I

Day : Saturday
Date : 20/10/2018

W-2018-0898

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

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw diagrams **WHEREVER** necessary.
- 4) Use of scientific **CALCULATOR** is allowed.

Q.1 A) Select the correct option and rewrite the complete sentence: [06]

- a) Thevenin's equivalent voltage is _____
 - i) open circuit voltage
 - ii) short circuit voltage
 - iii) voltage across load
 - iv) voltage across any component
- b) Majority carriers in npn transistor are _____
 - i) holes
 - ii) ions
 - iii) electrons
 - iv) atoms
- c) The transformer is an important application of _____.
 - i) eddy currents
 - ii) voltage convertor
 - iii) mutual inductance
 - iv) capacitance
- d) _____ device is known as unipolar device.
 - i) Diode
 - ii) Resistor
 - iii) Transistor
 - iv) JFET
- e) The value of resistance colour coded as brown, black, red and silver is _____.
 - i) $1k\ \Omega \pm 10\%$
 - ii) $1k\ \Omega \pm 5\%$
 - iii) $100\ \Omega \pm 5\%$
 - iv) $100\ \Omega \pm 10\%$
- f) Turns ratio for a transformer is defined as _____.
 - i) $\frac{P_s}{P_p}$
 - ii) $\frac{N_p}{N_s}$
 - iii) $\frac{N_s}{N_p}$
 - iv) $\frac{N_p}{P_p}$

B) Answer all the questions in one sentence: [06]

- a) Give the full form of UJT.
- b) Define inductance.
- c) Draw the symbol for n-channel depletion MOSFET.
- d) State the condition for maximum power to be transferred.
- e) Define α_{dc} for transistor.
- f) Draw symbols for pnp and npn transistor.

Q.2 Answer ANY THREE of the following: [12]

- a) With necessary diagram explain the action of electrolytic capacitor.
- b) Give statements for: i) Norton's theorem ii) Superposition theorem.
- c) Explain the working principle of SCR.
- d) Give four points of difference between BJT and FET.

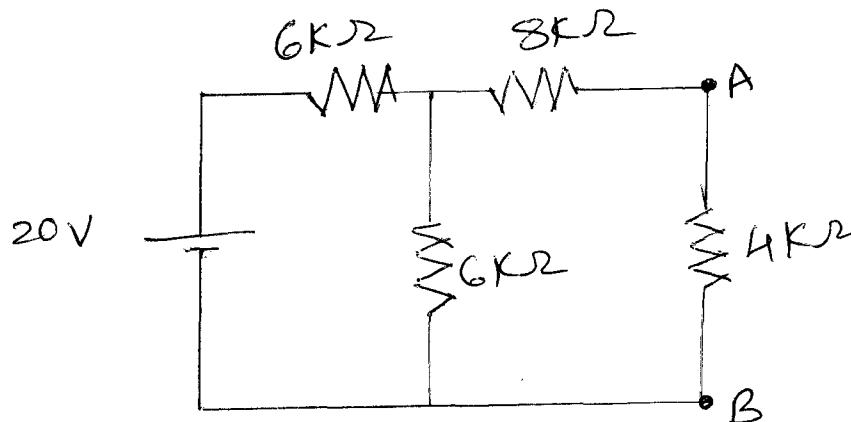
P.T.O.

Q.3 Answer **ANY FOUR** of the following: [12]

- a) Define the following for JFET:
 - i) drain resistance
 - ii) transconductance
 - iii) amplification factor
- b) A transistor has its emitter current increased from 10mA to 15mA. This produces change of base current from 0.16mA to 0.32mA. Find α_{ac} and β_{ac} .
- c) Explain the working of P-channel JFET.
- d) Explain the colour code theory to find the value of fixed resistors.
- e) Draw input characteristic curve for transistor in CB – mode.

Q.4 Answer **ANY TWO** of the following: [12]

- a)
 - i) Give statement for Thevenin's theorem.
 - ii) Theveninize the following circuit and also find I_L .



- b) Give classification of amplifiers on the basis of Q-point and frequency.
- c) With necessary diagram explain the working principle of UJT.

Q.5 Answer **ANY TWO** of the following: [12]

- a) Explain the working of n-channel MOSFET with necessary diagram.
- b) With necessary diagram explain the action of RC coupled CE – amplifier.
- c) Derive equations for growth and decay of current in RC circuit.

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