



UH-6203

B. E. - II (Sem. - III) (Electrical) Examination

May / June - 2012

ECE - 303 : Electronics : Paper - I

Time : Hours]

[Total Marks : 100

Instruction :

(1)

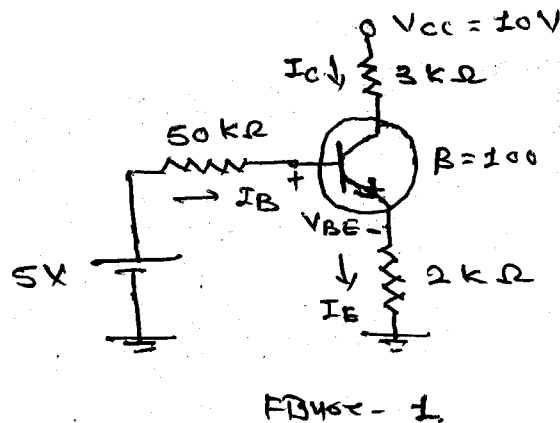
नीचे दृष्टावेव निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. - 2 (SEM. - 3) (ELECTRICAL)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="ECE - 303 : ELECTRONICS : PAPER - 1"/>	<input type="text"/>
Subject Code No. : <input type="text" value="6"/> <input type="text" value="2"/> <input type="text" value="0"/> <input type="text" value="3"/>	<input type="text"/>
Section No. (1, 2,.....): <input type="text" value="Nil"/>	<input type="text"/>
	Student's Signature

- (2) Attempt all questions.
- (3) Assume suitable data wherever necessary.
- (4) Figures to the right indicate full marks.
- 1 (a) Answer the following in brief : **10**
- (i) Define the static resistance and dynamic resistance of diode.
- (ii) Define and explain the ripple factor and form factor of rectifiers circuit.
- (iii) A transistor has a typical β_{dc} of 92. If the collector current is equal to 20 mA. Calculate base current and a_{dc} .
- (iv) For transistor amplifier explain the AC load line.
- (v) State the requirements of biasing circuits.
- (b) Answer the following : **10**
- (i) Compare zener breakdown and avalanche breakdown.
- (ii) Explain the full wave rectifier with capacitor filters.
- 2 (a) Draw and explain the input and output characteristics of common emitter configuration of transistor. What are the application of CE configuration ? **8**
- (b) A voltage $V=300 \cos 300 t$ is applied to a half wave rectifier with $R_L=5K\Omega$. The rectifier may be represented by an ideal diode in series with a resistance of $1 K\Omega$. Calculate **7**

- (i) I_m
- (ii) DC and AC power
- (iii) Rectifier efficiency
- (iv) Ripple factor

OR

- 2 (a) Explain the construction, V-I characteristics and application of zener diode. 8
- (b) Determine the region of operation of the silicon transistor shown in figure-1. Assume $\beta = 100$
 $V_{BE \text{ set}} = 0.8 \text{ V}$ and $V_{BE(\text{act})} = 0.7 \text{ V}$. 7

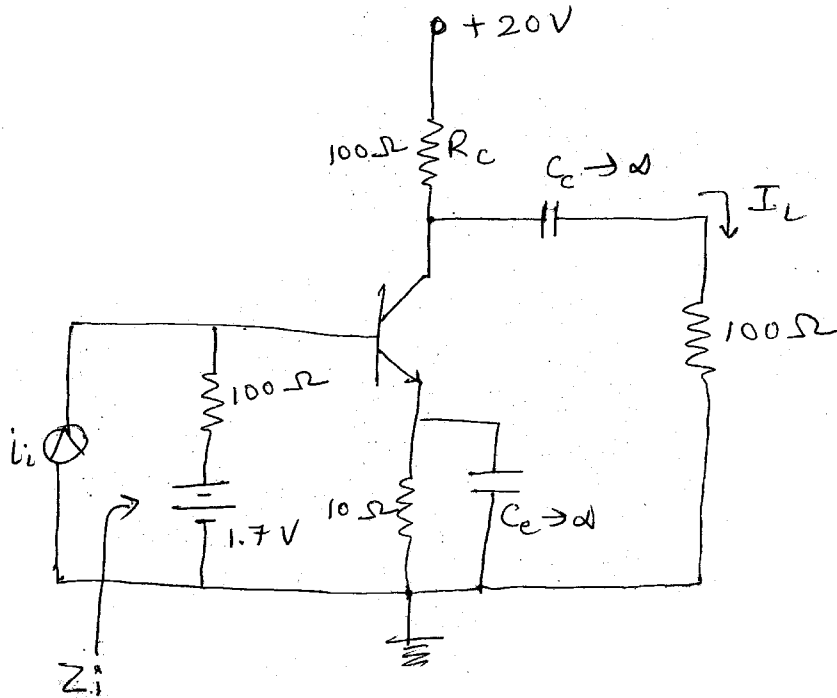


- 3 Write short notes on : (any three) 15
- (i) Bridge rectifiers
 - (ii) Diode capacitance
 - (iii) Potential divider bias
 - (iv) Schottky diode
 - (v) LC and PIE filters.
- 4 (a) Answer the following : 10
- (i) Why Q-point in a voltage amplifier is selected in the middle of the active region ?
 - (ii) The parameter h_{fe} is called _____ in CE arrangement with output shorted.
 - (iii) The unit of h_{11} is _____ and h_{22} is _____.
 - (iv) Full form of MOSFET is _____.
 - (v) Define Amplification.
 - (vi) True/False : BJT is current controlled device.
 - (vii) True/False : The maximum efficiency of a class A power amplifier is 25%.
 - (viii) What is the main application of cc configuration of transistor amplifier ?
 - (ix) Why N-channel FETs are superior to P-channel FET ?
 - (x) What is the need of biasing for FET ?

- (b) Explain stability factor analysis for common emitter amplifier. 10
- 5 (a) Explain direct coupled push-pull amplifier with advantages and disadvantages. 8
- (b) Draw a small signal equivalent circuit for the emitter-follower amplifier. Derive the expression for the input impedance, output impedance and voltage gain. 7

OR

- 5 (a) Explain N-channel FET and its characteristics. 8
- (b) For the given circuit $h_{re} = h_{oe} = 0$, $50 < h_{fe} < 150$ calculate the range of A_i and Z_i to be expected. 7



- 6 Attempt any two : 15
- (i) Phase splitting circuit.
- (ii) Temperature compensation using diodes.
- (iii) Impedance Reflection in the transistor.
- (iv) Compare BJT and FET and classify FET devices.