



DF-2990

Second Year B. Sc. (Sem. III) Examination

March / April - 2016

Electronics : Paper - III

(Electronic Circuits & Applications)

Time : Hours]

[Total Marks : 50

Instructions :

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<input type="text" value="SECOND YEAR B. Sc. (SEM. 3)"/>	<input type="text" value="Student's Signature"/>
Name of the Subject :	
<input type="text" value="ELECTRONICS - 3"/>	
Subject Code No. : <input type="text" value="2"/> <input type="text" value="9"/> <input type="text" value="9"/> <input type="text" value="0"/>	Section No. (1, 2,.....) : <input type="text" value="3"/>

- (2) All 28 questions are compulsory.
- (3) All Symbols and abbreviations have their usual meaning.
- (4) Non-programmable calculators are allowed.
- (5) Assume data if necessary.

Q. 1 to 12 Multiple choice questions : (1 mark)

Q. 13 to 22 Multiple Choise Questions : (2 marks)

Q. 23 to 28 Multiple Choice Questions : (3 marks)

*O.M.R. Sheet ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ
O.M.R. Sheet-ની પાછળ છાપેલ છે.*

*Important instructions to fillup O.M.R. Sheet
is given back side of provided O.M.R. Sheet.*

- 1 The function of a transistor is to do _____.
- (A) Rectification
 - (B) Amplification
 - (C) Filtering
 - (D) Regulation
- 2 Stabilization means making _____ independent of temperature variations or variations of transistor parameters.
- (A) Operating Point
 - (B) Supply Voltage
 - (C) Input Current
 - (D) Collector Current
- 3 Which circuit has highest stability factor ?
- (A) Fixed bias circuit
 - (B) Emitter bias circuit
 - (C) Collector to base bias circuit
 - (D) Voltage divider bias with emitter bias
- 4 In the low frequency region of RC coupled amplifier the effect of capacitance is such that
- (A) The series capacitors are shorted
 - (B) Shunt capacitors are opened
 - (C) The series capacitors and shunt capacitors are opened
 - (D) The series capacitors and shunt capacitors are shorted

- 5 The half power frequency is also known as
- (A) Cut off frequency
 - (B) Corner frequency
 - (C) Break frequency
 - (D) All of these
- 6 What is the phase difference between input voltage and output voltage in a common emitter amplifier ?
- (A) 180°
 - (B) -180°
 - (C) 0
 - (D) 90°
- 7 For proper operation of transistor as an amplifier, (CE configuration) base emitter junction should be _____ and collector emitter junction should be _____.
- (A) (reverse biased, forward biased)
 - (B) (forward biased, reverse biased)
 - (C) (forward biased, forward biased)
 - (D) (reverse biased, reverse biased)
- 8 What is the main advantage of CE amplifier over CB amplifier as far as biasing is concerned ?
- (A) Single battery operation
 - (B) Small input resistance
 - (C) Less voltage gain
 - (D) None of these

- 9 Which circuit is the best biasing circuit ?
- (A) Fixed bias circuit
 - (B) Emitter bias circuit
 - (C) Collector to base bias circuit
 - (D) Voltage divider bias with emitter bias
- 10 Input resistance for CB amplifier is
- (A) Greater than h_{ib}
 - (B) Less than h_{ib}
 - (C) Equal to h_{ib}
 - (D) Greater than h_{ie}
- 11 Power gain is always
- (A) A positive number
 - (B) A negative number
 - (C) Zero
 - (D) All these
- 12 Input resistance for CC amplifier is
- (A) High
 - (B) Low
 - (C) Zero
 - (D) None of these

- 13 What is the general equation for voltage gain of an amplifier with feedback?
- (A) $A/(1-A\beta)$
 - (B) $A/(1+A\beta)$
 - (C) $A(1-A\beta)$
 - (D) $A(1+A\beta)$
- 14 An amplifier has a voltage gain of 40. Calculate feedback in dB if a 10% negative feedback is introduced ?
- (A) 14 dB
 - (B) -14 dB
 - (C) 1.4 dB
 - (D) -1.4 dB
- 15 An amplifier has a voltage gain of 100. What will be the voltage gain if 10% negative feedback is given ?
- (A) 9.09
 - (B) 90%
 - (C) 90.0
 - (D) 0.909
- 16 An amplifier has a voltage gain of 40 and 200 kHz bandwidth. Calculate the bandwidth with feedback if a 10% negative feedback is introduced in series with input.
- (A) 100 kHz
 - (B) 10 kHz
 - (C) 1000 kHz
 - (D) 500 kHz
- 17 Example of voltage series negative feedback amplifier is
- (A) CE amplifier with bypass capacitor
 - (B) CE amplifier without bypass capacitor
 - (C) CC amplifier
 - (D) CB amplifier

- 18 The circuit which exhibits 100% negative feedback
- (A) CE amplifier with bypass capacitor
 - (B) CE amplifier without bypass capacitor
 - (C) Collector to base biasing circuit
 - (D) Emitter follower
- 19 For voltage shunt feedback amplifier input resistance
- (A) Increases
 - (B) Decreases
 - (C) Becomes zero
 - (D) None
- 20 Voltage shunt feedback amplifier is a
- (A) Pure voltage amplifier
 - (B) Pure current amplifier
 - (C) Transconductance amplifier
 - (D) Transresistance amplifier
- 21 Select the correct relation for CE configuration
- (A) $V_b = h_{ie}I_b + h_{re}V_c$, $I_c = h_{fe}I_b + h_{oe}V_c$
 - (B) $I_b = h_{ie}I_b + h_{re}V_c$, $V_c = h_{fe}I_b + h_{oe}V_c$
 - (C) $V_e = h_{ie}I_c + h_{re}V_c$, $I_c = h_{fe}I_c + h_{oe}V_b$
 - (D) $V_c = h_{ie}I_b - h_{re}V_c$, $I_b = h_{fe}I_c - h_{oe}V_c$
- 22 h_{fe} is
- (A) A positive number
 - (B) A negative number
 - (C) Zero
 - (D) All of these

23 Design a voltage divider bias circuit for the following specifications

$$V_{cc} = 20 \text{ V}, I_c = 10 \text{ mA}, V_{CE} = 8 \text{ V}, \beta = 80$$

(A) $R_E = 200 \Omega, R_C = 1 \text{ k}\Omega, R_2 = 1600 \Omega, R_1 = 10 \text{ k}\Omega$

(B) $R_E = 200 \text{ k}\Omega, R_C = 1 \Omega, R_2 = 160 \Omega, R_1 = 1 \text{ k}\Omega$

(C) $R_E = 200 \text{ m}\Omega, R_C = 10 \text{ k}\Omega, R_2 = 16 \Omega, R_1 = 1 \text{ k}\Omega$

(D) $R_E = 20 \mu\Omega, R_C = 1 \text{ m}\Omega, R_2 = 1600 \text{ M}\Omega, R_1 = 10 \text{ k}\Omega$

24 The frequency range of an audio amplifier is

(A) 0 to few Hz

(B) 20 Hz to 20 kHz

(C) Few kHz to 100 MHz

(D) All of these

25 In class B amplifier the Q – point is located

(A) At the centre of the active region

(B) Near the saturation region

(C) Near the cut off region

(D) Below the cut off region

- 26 An ideal current amplifier must have
- (A) Infinite input resistance and zero output resistance
 - (B) Zero input resistance and zero output resistance
 - (C) Zero input resistance and infinite output resistance
 - (D) Infinite input resistance and infinite output resistance
- 27 With negative feedback the bandwidth _____ and the noise _____.
- (A) increases, increases
 - (B) increases, decreases
 - (C) decreases, increases
 - (D) decreases, decreases
- 28 If an amplifier has a bandwidth of 200 kHz and voltage gain of 50, what will be new bandwidth and gain if 5% negative feedback is introduced?
- (A) 0.7 MHz, 14.28
 - (B) 7 kHz, 142.8
 - (C) 70 kHz, 14.28
 - (D) 700 Hz, 1.428