D

DF-2990

Second Year B. Sc. (Sem. III) Examination
March / April - 2016
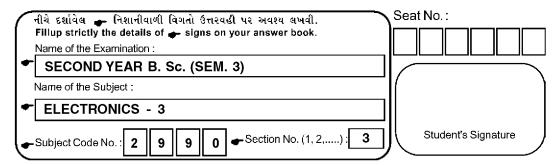## Electronics : Paper - III
(Electronic Circuits & Applications)

Time :   Hours]   [Total Marks : **50**

Instructions :

(1)

(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. Sheetની પાછળ છાપેલ છે.
*Important instructions to fillup O.M.R. Sheet
is given back side of provided O.M.R. Sheet.*

1   Power gain is always

    (A)   A negative number

    (B)   Zero

    (C)   All these

    (D)   A positive number

2   Input resistance for CC amplifier is

    (A)   Low

    (B)   Zero

    (C)   None of these

    (D)   High

3   The function of a transistor is to do _____.

    (A)   Amplification

    (B)   Filtering

    (C)   Regulation

    (D)   Rectification

4   Stabilization means making _____ independent of temperature variations
    or variations of transistor parameters.

    (A)   Supply Voltage

    (B)   Input Current

    (C)   Collector Current

    (D)   Operating Point

5   Which circuit has highest stability factor ?

(A)   Emitter bias circuit

(B)   Collector to base bias circuit

(C)   Voltage divider bias with emitter bias

(D)   Fixed bias circuit

6   In the low frequency region of RC coupled amplifier the effect of capacitance is such that

(A)   Shunt capacitors are opened

(B)   The series capacitors and shunt capacitors are opened

(C)   The series capacitors and shunt capacitors are shorted

(D)   The series capacitors are shorted

7   The half power frequency is also known as

(A)   Corner frequency

(B)   Break frequency

(C)   All ot these

(D)   Cut off frequency

8   What is the phase difference between input voltage and output voltage in a common emitter amplifier ?

(A) -180°

(B)   0

(C) 90°

(D) 180°

9   For proper operation to transistor as an amplifier, (CE configuration) base emitter junction should be _____ and collector emitter junction should be _____.

   (A)   (forward biased, reverse biased)

   (B)   (forward biased, forward biased)

   (C)   (reverse biased, reverse biased)

   (D)   (reverse biased, forward biased)

10 What is the main advantage of CE amplifier over CB amplifier as far as biasing is concerned ?

   (A)   Small input resistance

   (B)   Less voltage gain

   (C)   None of these

   (D)   Single battery operation

11 Which circuit is the best biasing circuit ?

   (A)   Emitter bias circuit

   (B)   Collector to base bias circuit

   (C)   Voltage divider bias with emitter bias

   (D)   Fixed bias circuit

12 Input resistance for CB amplifier is

   (A)   Less than h_{ib}

   (B)   Equal to h_{ib}

   (C)   Greater than h_{ie}

   (D)   Greater than h_{ib}

13 An amplifier has a voltage gain of 100. What will be the voltage gain if 10% negative feedback is given ?

(A) 90%

(B) 90.0

(C) 0.909

(D) 9.09

14 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) 10 kHz

(B) 1000 kHz

(C) 500 kHz

(D) 100 kHz

15 Example of voltage series negative feedback amplifier is

(A) CE amplifier without bypass capacitor

(B) CC amplifier

(C) CB amplifier

(D) CE amplifier with bypass capacitor

16 The circuit which exhibits 100% negative feedback

(A) CE amplifier without bypass capacitor

(B) Collector to base biasing circuit

(C) Emitter follower

(D) CE amplifier with bypass capacitor

17 For voltage shunt feedback amplifier input resistance

(A) Decreases

(B) Becomes zero

(C) None

(D) Increases

18   Voltage shunt feedback amplifier is a

(A)   Pure current amplifier

(B)   Transconductance amplifier

(C)   Transresistance amplifier

(D)   Pure voltage amplifier

19   Select the correct relation for CE configuration

(A) $I_b = h_{ie}I_b + h_{re}V_c$, $V_c = h_{fe}I_b + h_{oe}V_c$

(B) $V_e = h_{ie}I_c + h_{re}V_c$, $I_c = h_{fe}I_c + h_{oe}V_b$

(C) $V_c = h_{ie}I_b - h_{re}V_c$, $I_b = h_{fe}I_c - h_{oe}V_c$

(D) $V_b = h_{ie}I_b + h_{re}V_c$, $I_c = h_{fe}I_b + h_{oe}V_c$

20   h_{fe} is

(A)   A negative number

(B)   Zero

(C)   All of these

(D)   A positive number

21   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) $A/(1-A\beta)$

22   An amplifier has a voltage gain of 40. Calculate feedback in dB if a 10% negative feedback is introduced ?

(A)   −14 dB

(B)   1.4 dB

(C)   −1.4 dB

(D)   14 dB

23 The frequency range of an audio amplifier is

(A) 20 Hz to 20 kHz

(B) Few kHz to 100 MHz

(C) All of these

(D) 0 to few Hz

24 In class B amplifier the Q – point is located

(A) Near the saturation region

(B) Near the cut off region

(C) Below the cut off region

(D) At the centre of the active region

25 An ideal current amplifier must have

(A) Zero input resistance and zero output resistance

(B) Zero input resistance and infinite output resistance

(C) Infinite input resistance and infinite output resistance

(D) Infinite input resistance and zero output resistance

26   With negative feedback the bandwidth _____ and the noise _____ .

(A)   increases, decreases

(B)   decreases, increases

(C)   decreases, decreases

(D)   increases, increases

27   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)   7 kHz, 142.8

(B)   70 kHz, 14.28

(C)   700 Hz, 1.428

(D)   0.7 MHz, 14.28

28   Design a voltage divider bias circuit for the following specifications $V_{cc} = 20$ v, $I_c = 10$ mA, $V_{CE} = 8$ V, $\beta = 80$

(A) $R_E = 200k\Omega$, $R_C = 1\Omega$, $R_2 = 160\Omega$, $R_1 = 1k\Omega$

(B) $R_E = 200m\Omega$, $R_C = 10$ kΩ, $R_2 = 16\Omega$, $R_1 = 1k\Omega$

(C) $R_E = 20\mu\Omega$, $R_C = 1$ mΩ, $R_2 = 1600M\Omega$, $R_1 = 10k\Omega$

(D) $R_E = 200\Omega$, $R_C = 1$ kΩ, $R_2 = 1600\Omega$, $R_1 = 10k\Omega$