



DPP-2997

Second Year B. Sc. (Sem. III) Examination
March / April - 2016
Electronics (Applied Electronics) : Paper - III
(Electronics Devices & Circuit)

Time : 2 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" value="SECOND YEAR B. Sc. (SEM. 3)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="ELECTRONICS (APPLIED ELECTRONICS) - 3"/>	<input type="text"/>
Subject Code No. : <input type="text" value="2"/> <input type="text" value="9"/> <input type="text" value="9"/> <input type="text" value="7"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="1,2,3"/>	<input type="text"/>
	Student's Signature

- (2) All 28 questions are compulsory.
- (3) Symbols used in the paper have their usual meaning.
- (4) Figures to right indicate full marks.

Q. 1 to 12 Multiple Choice Questions : (1 mark)

Q. 13 to 22 Multiple Choice 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 on back side of the provided O.M.R. Sheet.*

- 1 The negative feedback is used in the amplifier -
- (A) For extending the bandwidth
 - (B) For increasing the impedance
 - (C) For improving the gain stability
 - (D) All of these
- 2 A class-C amplifier is operated with its operating point set in
- (A) Saturation region
 - (B) Cut-off region
 - (C) Active region
 - (D) None of these
- 3 Full form of BJT
- (A) BI-Junction transistor
 - (B) BI-polar junction transistor
 - (C) BI-Junction transformer
 - (D) BI-polar junction transformer
- 4 Full form of JFET
- (A) Joint field effect transistor
 - (B) Junction field effect transistor
 - (C) Junction field effect transformer
 - (D) Joint field effect transformer

- 5 Full form of MOSFET
- (A) Metal oxide semiconductor field effect transformer
 - (B) Metal oxide semiconductor field effect transistor
 - (C) Metal oxygen semiconductor field effect transistor
 - (D) Metal oxygen semiconductor field effect transformer
- 6 Full form of CMOS
- (A) Compulsory metal oxide semiconductor
 - (B) Complementary metal oxide semiconductor
 - (C) Corrosive metal oxide semiconductor
 - (D) Corrospondent metal film oxide semiconductor
- 7 Gain-bandwidth product of amplifier with feedback and without feedback
- (A) Equal
 - (B) Unequal
 - (C) Both of these
 - (D) None of these
- 8 Condition required for oscillation
- (A) Barkhausen criteria and positive feedback
 - (B) Amplifier and negative feedback
 - (C) Barcation criteria and negative feedback
 - (D) Negative and positive feedback

- 9** Full form of UJT
- (A) Uni joint transformer
 - (B) Union junction transistor
 - (C) Uni-junctional transistor
 - (D) None of these
- 10** For oscillator circuit
- (A) Input and frequency determining network is required
 - (B) No input, frequency determining network / tank circuit is required
 - (C) Input required, feedback not required
 - (D) No input and feedback
- 11** For amplifier circuit
- (A) Input and feedback network is required
 - (B) Input required, no feedback required
 - (C) No input required, feedback required
 - (D) No input and feedback
- 12** In oscillator the negative feedback is used for
- (A) Increasing the output amplitude
 - (B) Decreasing the output amplitude
 - (C) Stabilizing the output amplitude
 - (D) Decreasing the output impedance

- 13 I_{DSS} is the current from drain to source with shorted gate. Since loss is measured with the shorted gate it is the _____ drain current you can get with normal operation of the JFET. All other gate voltages are negative and result in _____ drain current.
- (A) Maximum, Less
 (B) Less, Maximum
 (C) Minimum, Less
 (D) Maximum, Large
- 14 The E-MOSFET operates in the _____ mode only. This kind of MOSFET is important in digital circuit. It is also known as normally _____ MOSFET.
- (A) Enhancement, off
 (B) De-enhancement, off
 (C) Enhancement, on
 (D) Only enhancement, on
- 15 If transistors $\alpha_{dc} = 0.98$, the value of β_{dc}
- (A) 49
 (B) .49
 (C) .049
 (D) .0049
- 16 If transistors $\beta_{dc} = 100$, then value of α_{dc}
- (A) .099
 (B) .99
 (C) 9.9
 (D) 99
- 17 The α (dc alpha) of a transistor equal the ratio of _____ current to _____ current, and β (dc Beta) equals the ratio of _____ current to _____ current.
- (A) Collector to emitter and collector to base
 (B) Collector to base and collector to emitter
 (C) Both of these
 (D) None of the these

- 18 If you reduce all ac sources to zero and open all capacitor, the circuit that remains is called _____. equivalent circuit. If you reduce all sources to zero and short all coupling and by-pass capacitors, the circuit that remains is the _____ equivalent circuit.
- (A) dc, ac
 - (B) ac, dc
 - (C) Transient, steady
 - (D) Small signal, Large signal
- 19 A by-pass capacitor is similar to coupling capacitor except that it couples an ungrounded points to a _____ point. A by-pass capacitor produces an ac _____.
- (A) Ground, Grounded
 - (B) Grounded, Ground
 - (C) Supply, Ground
 - (D) Grounded, Supply
- 20 You multiply individual β 's to get the overall β of a _____ pair. If β_1 is 50 and β_2 is 100 then β equals
- (A) Darlington, 500
 - (B) Darlington, 5000
 - (C) Coupling, 5000
 - (D) Decoupling, 5000
- 21 When the collector is at ac ground is called a grounded collector or _____ amplifier, stepping up the impedance is the main reason for using CC amplifier, also known as _____.
- (A) Emitter-Follower, Common collector
 - (B) Common base, emitter follower
 - (C) Common emitter emitter follower
 - (D) Common collector, emitter-follower
- 22 The ac collector voltage is 180° out of phase with the ac base voltage. This _____ inversion between base and collector happens in all base driven amplifiers. The phase of the emitter voltage is the same as the phase of ac _____ voltage.
- (A) Phase, base
 - (B) Phase, Phase
 - (C) Base, Phase
 - (D) None of these

- 23 In JFET the change in drain current of 0.2 mA and corresponding change of 0.001V, then g_m is
- (A) 0.0002 μs
 - (B) 2000 μs
 - (C) 200 μs
 - (D) 20 μs
- 24 The quiescent collector current and voltage are the I_C and V_{CE} when there is no input _____. You can determine quiescent current and voltage from the _____ equivalent circuit. V_{CEQ} represent the collector to emitter voltage with _____ ac signal.
- (A) Signal, dc, No
 - (B) Signal, ac, with
 - (C) Signal, ac, No
 - (D) None of these
- 25 Because the gate is insulated from the channel, a mosfet is also known as _____ FET. The D-MOSFET can operate in either the enhancement mode or the _____ mode. This type of MOSFET is also known as normally _____ MOSFET.
- (A) Insulated-gate, enhancement, Off
 - (B) Floating-gate, Depletion On
 - (C) Insulated-Gate Depletion, On
 - (D) Floating-gate, Depletion On and Insulated-Gate Depletion, On

- 26 The key difference between a JFET and a bipolar transistor is this: the gate is _____ biased and whereas the base is _____ biased. The crucial difference means the JFET is a _____ controlled device.
- (A) Forward, Reverse, Current
- (B) Reverse, Forward, Voltage
- (C) Forward, Reverse, Voltage
- (D) Forward, Forward, Voltage
- 27 The three part of a JFET is the source, the _____ and the _____. The field effect is related to the _____ layer around each pn junction. The more negative the gate voltage, the _____ the drain current.
- (A) Gate, Drain P-type, Smaller
- (B) Gate, Drain, n-type, Smaller
- (C) Gate, Drain, Depletion, Smaller
- (D) Gate, Drain, Depletion, Larger
- 28 Data sheet of JFET is $g_m = 75 \mu s$ then what is r_d ?
- (A) $133 \text{ k}\Omega$
- (B) $1.33 \text{ k}\Omega$
- (C) $1330 \text{ k}\Omega$
- (D) $13.3 \text{ k}\Omega$