

**D****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"/> <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 (APPLIED ELECTRONICS) - 3"/>	
Subject Code No. : <input type="text" value="2"/> <input type="text" value="9"/> <input type="text" value="9"/> <input type="text" value="7"/>	Section No. (1, 2,.....) : <input type="text" value="1,2,3"/>

- (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 For amplifier circuit
 - (A) Input required, no feedback required
 - (B) No input required, feedback required
 - (C) No input and feedback
 - (D) Input and feedback network is required

- 2 In oscillator the negative feedback is used for
 - (A) Decreasing the output amplitude
 - (B) Stabilizing the output amplitude
 - (C) Decreasing the output impedance
 - (D) Increasing the output amplitude

- 3 The negative feedback is used in the amplifier -
 - (A) For increasing the impedance
 - (B) For improving the gain stability
 - (C) All of these
 - (D) For extending the bandwidth

- 4 A class-C amplifier is operated with its operating point set in
 - (A) Cut-off region
 - (B) Active region
 - (C) None of these
 - (D) Saturation region

5 Full form of BJT

- (A) BI-polar junction transistor
- (B) BI-Junction transformer
- (C) BI-polar junction transformer
- (D) BI-Junction transistor

6 Full form of JFET

- (A) Junction field effect transistor
- (B) Junction field effect transformer
- (C) Joint field effect transformer
- (D) Joint field effect transistor

7 Full form of MOSFET

- (A) Metal oxide semiconductor field effect transistor
- (B) Metal oxygen semiconductor field effect transistor
- (C) Metal oxygen semiconductor field effect transformer
- (D) Metal oxide semiconductor field effect transformer

8 Full form of CMOS

- (A) Complementary metal oxide semiconductor
- (B) Corrosive metal oxide semiconductor
- (C) Corrospendent metal film oxide semiconductor
- (D) Compulsory metal oxide semiconductor

- 9 Gain-bandwidth product of amplifier with feedback and without feedback
- (A) Unequal
 - (B) Both of these
 - (C) None of these
 - (D) Equal
- 10 Condition required for oscillation
- (A) Amplifier and negative feedback
 - (B) Barkhausen criteria and negative feedback
 - (C) Negative and positive feedback
 - (D) Barkhausen criteria and positive feedback
- 11 Full form of UJT
- (A) Union junction transistor
 - (B) Uni-junctional transistor
 - (C) None of these
 - (D) Uni joint transformer
- 12 For oscillator circuit
- (A) No input, frequency determining network / tank circuit is required
 - (B) Input required, feedback not required
 - (C) No input and feedback
 - (D) Input and frequency determining network is required

- 13 If transistors $\alpha_{dc} = 0.98$, the value of β_{dc}
- (A) .49
 - (B) .049
 - (C) .0049
 - (D) 49
- 14 If transistors $\beta_{dc} = 100$, then value of α_{dc}
- (A) .99
 - (B) 9.9
 - (C) 99
 - (D) .099
- 15 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 base and collector to emitter
 - (B) Both of these
 - (C) None of the these
 - (D) Collector to emitter and collector to base
- 16 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) ac, dc
 - (B) Transient, steady
 - (C) Small signal, Large signal
 - (D) dc, ac
- 17 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) Grounded, Ground
 - (B) Supply, Ground
 - (C) Grounded, Supply
 - (D) Ground, Grounded

- 18 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, 5000
 - (B) Coupling, 5000
 - (C) Decoupling, 5000
 - (D) Darlington, 500
- 19 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) Common base, emitter follower
 - (B) Common emitter emitter follower
 - (C) Common collector, emitter-follower
 - (D) Emitter-Follower, Common collector
- 20 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, Phase
 - (B) Base, Phase
 - (C) None of these
 - (D) Phase, base
- 21 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) Less, Maximum
 - (B) Minimum, Less
 - (C) Maximum, Large
 - (D) Maximum, Less
- 22 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) De-enhancement, off
 - (B) Enhancement, on
 - (C) Only enhancement, on
 - (D) Enhancement, off

- 23 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, ac, with
- (B) Signal, ac, No
- (C) None of these
- (D) Signal, dc, No
- 24 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) Floating-gate, Depletion On
- (B) Insulated-Gate Depletion, On
- (C) Floating-gate, Depletion On and Insulated-Gate Depletion, On
- (D) Insulated-gate, enhancement, Off
- 25 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) Reverse, Forward, Voltage
- (B) Forward, Reverse, Voltage
- (C) Forward, Forward, Voltage
- (D) Forward, Reverse, Current

- 26 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, n-type, Smaller
- (B) Gate, Drain, Depletion, Smaller
- (C) Gate, Drain, Depletion, Larger
- (D) Gate, Drain P-type, Smaller
- 27 Data sheet of JFET is $g_m = 75 \mu s$ then what is r_d ?
- (A) $1.33 k\Omega$
- (B) $1330 k\Omega$
- (C) $13.3 k\Omega$
- (D) $133 k\Omega$
- 28 In JFET the change in drain current of 0.2 mA and corresponding change of 0.001V, then g_m is
- (A) $2000 \mu s$
- (B) $200 \mu s$
- (C) $20 \mu s$
- (D) $0.0002 \mu s$