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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.

Name of the Examination :

☛ SECOND YEAR B. Sc. (SEM. 3)

Name of the Subject :

☛ ELECTRONICS (APPLIED ELECTRONICS) - 3

☛ Subject Code No. : 2 9 9 7 ☛ Section No. (1, 2,.....) : 1,2,3

Seat No. :

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 Full form of JFET

(A) Junction field effect transformer

(B) Joint field effect transformer

(C) Joint field effect transistor

(D) Junction field effect transistor

2 Full form of MOSFET

(A) Metal oxygen semiconductor field effect transistor

(B) Metal oxygen semicondoctor field effect transformer

(C) Metal oxide semiconductor field effect transformer

(D) Metal oxide semiconductor field effect transistor

3 Full form of CMOS

(A) Corrosive metal oxide semiconductor

(B) Corrospondent metal film oxide semiconductor

(C) Compulsory metal oxide semiconductor

(D) Complementary metal oxide semiconductor

4 Gain-bandwidth product of amplifier with feedback and without feedback

(A) Both of these

(B) None of these

(C) Equal

(D) Unequal

5 Condition required for oscillation

(A) Barcation criteria and negative feedback

(B) Negative and positive feedback

(C) Barkhausen criteria and positive feedback

(D) Amplifier and negative feedback

6 Full form of UJT

(A) Uni-junctional transistor

(B) None of these

(C) Uni joint transformer

(D) Union junction transistor

7 For oscillator circuit

(A) Input required, feedback not required

(B) No input and feedback

(C) Input and frequency determining network is required

(D) No input, frequency determining network / tank circuit is required

8 For amplifier circuit

(A) No input required, feedback required

(B) No input and feedback

(C) Input and feedback network is required

(D) Input required, no feedback required

9 In oscillator the negative feedback is used for

(A) Stabilizing the output amplitude

(B) Decreasing the output impedance

(C) Increasing the output amplitude

(D) Decreasing the output amplitude

10 The negative feedback is used in the amplifier -

(A) For improving the gain stability

(B) All of these

(C) For extending the bandwidth

(D) For increasing the impedance

11 A class-C amplifier is operated with its operating point set in

(A) Active region

(B) None of these

(C) Saturation region

(D) Cut-off region

12 Full form of BJT

(A) BI-Junction transformer

(B) BI-polar junction transformer

(C) BI-Junction transistor

(D) BI-polar junction transistor

13 When the collector is at ac ground is called a grounded collector or _____amplifier, stepping up the impedence is the main reason for using CC amplifier, also known as _____.

(A) Common emitter emitter follower
(B) Common collector, emitter-follower
(C) Emitter-Follower, Common collector
(D) Common base, emitter follower

14 The ac collector voltage is 180^{o} out of face 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) Base, Phase
(B) None of thse
(C) Phase, base
(D) Face, Phase

15 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) Minimum, Less
(B) Maximum, Large
(C) Maximum, Less
(D) Less, Maximum

16 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, on
(B) Only enhancement, on
(C) Enhancement, off
(D) De-enhancement, off

17 If transistors α_{dc} = 0.98, the value of β_{dc}

(A) .049
(B) .0049
(C) 49
(D) .49

18 If transistors β_{dc}=100, then value of α_{dc}

(A) 9.9

(B) 99

(C) .099

(D) .99

19 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) Both of these

(B) None of the these

(C) Collector to emitter and collector to base

(D) Collector to base and collector to emitter

20 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) Transient, steady

(B) Small signal, Large signal

(C) dc, ac

(D) ac, dc

21 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) Supply, Ground

(B) Grounded, Supply

(C) Ground, Grounded

(D) Grounded, Ground

22 You multiply individual $\beta's$ to get the overall β of a _____ pair. If β_1 is 50 and β_2 is 100 then β equals

(A) Coupling, 5000

(B) Decoupling, 5000

(C) Darlington, 500

(D) Darlington, 5000

23 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, Depletion, Smaller

(B) Gate, Drain, Depletion, Larger

(C) Gate, Drain P-type, Smaller

(D) Gate, Drain, n-tye, Smaller

24 Data sheet of JFET is $g_m = 75\,\mu s$ then what is r_d ?

(A) 1330 $k\Omega$

(B) 13.3 $k\Omega$

(C) 133 $k\Omega$

(D) 1.33 $k\Omega$

25 In JFET the change in drain current of 0.2 mA and corresponding change of 0.001V, then g_m is

(A) 200 μs

(B) 20 μs

(C) 0.0002 μs

(D) 2000 μs

26 The quicent 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, No

(B) None of these

(C) Signal, dc, No

(D) Signal, ac, with

27 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 Depletion, On

(B) Floating-gate, Depletion On and Insulated-Gate Depletion, On

(C) Insulated-gate, ehnahcement, Off

(D) Floating-gate, Depletion On

28 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, Voltage

(B) Forward, Forward, Voltage

(C) Forward, Reverse, Current

(D) Reverse, Forward, Voltage