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) Fill up 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  

Seat No. :  

Subject Code No. : 2 9 9 7  
Section No. (1, 2, ...): 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 भरने अंग्रेजी अग्रणी सूचनाओं आधारे  
O.M.R. Sheet-ली पात्र आधारे हैं।  
Important instructions to fill up 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)  Correspondent metal film oxide semiconductor  
   (D)  Compulsory metal oxide semiconductor  

DPP-2997_D  |  3  [ Contd... ]
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 $\beta_{dc}$
(A) .49
(B) .049
(C) .0049
(D) 49

14 If transistors $\beta_{dc} = 100$, then value of $\alpha_{dc}$
(A) .99
(B) 9.9
(C) 99
(D) .099

15 The $\alpha$ (dc alpha) of a transistor equal the ratio of _______ current to _______ current, and $\beta$ (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 $\beta$'s to get the overall $\beta$ of a _____ pair. If $\beta_1$ is 50 and $\beta_2$ is 100 then $\beta$ 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 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) Face, 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-tye, 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 \( \mu s \)