Test #2

Transistor biasing

1. The three terminals of a bipolar junction transistor are called

A. input, output, ground
B. base, emitter, collector
C. p,n,p
D. n,p,n

2. In a pnp transistor, the p-region are

A. base and emitter
B. base and collector
C. emitter and collector

3. For operation as an amplifier, the base of a npn transistor must be

A. 0 V
B. negative with respect to the emitter
C. positive with respect to the collector
D. positive with respect to the emitter

4. The emitter current is always

A. greater than the base current
B. less than the collector current
C. greater than the collector current
A. answer a and c

5. The β_{DC} of a transistor is its

A. internal resistance
B. power gain
C. voltage gain
D. current gain

6. If I_C is 50 times larger than I_B, then β_{DC} is

A. 500 B. 0.02

C. 100 D. 50

7. The approximate voltage across the forward-biased base emitter junction of a silicon BJT is

A. 0.3 V B. 0.7 V

C. 0 V D. VBB

8. The bias condition for a transistor to be used as linear amplifier is called

A. reverse-reverse B. forward-reverse

C. collector bias D. forward-forward

9. If the output of a transistor amplifier is 5 V rms and the input is 100 mV rms, the voltage gain is

A. 50 B. 500

C. 5 D. 100

10. When operated in cutoff and saturation, the transistor acts like

A. a switch B. a linear amplifier

C. a variable capacitor D. a variable resistor

11. In cutoff, V_{CE} is

A. 0 V B. minimum
C. maximum D. equal to VCC
E. answer a and b F. answer c and d

12. In saturation, V_{CE} is

A. 0.7 V B. equal to V_{CC}
C. maximum D. minimum

13. To saturate a BJT,

A. $I_B > I_{C(sat)}/\beta_{DC}$
B. $I_B = I_{C(sat)}$
C. V_{CC} must be at least 10 V
D. the emitter must be grounded

14. Once in saturation, a further increase in base current will

A. not affected the collector current
B. cause the collector current to decrease
C. cause the collector current to increase
D. turn the transistor off

15. If the base-emitter junction is open, the collector voltage is

A. floating B. V_{CC}
C. 0 V D. 0.2 V

16. The maximum value of collector current in a biased transistor is

A. $\beta_{DC}I_B$ B. $I_{C(sat)}$

C. greater than I_E D. I_E-I_B

17. Ideally, a dc load line is s straight line drawn on the collector characteristics curves between

A. the Q-point and saturation B. $V_{CE(cut\ off)}$ and $I_{C(sat)}$

C. the Q-point and cut-off D. $I_B = 0$ and $I_B = I_C / \beta_{DC}$

18. If a sinusoidal voltage is applied to the base of a biased npn transistor and the resulting sinusoidal collector voltage is clipped near zero volts, the transistor is

A. being driven into saturation B. being driven into cut off

C. operating nonlinearly D. answer a and c

E. answer b and c

19. The input resistance at the base of a biased transistor depends mainly on

A. β_{DC} B. β_{DC} and R_E

C. R_B D. R_E

20. In a certain voltage-divider biased npn transistor, V_B is 2.95 V. The dc emitter voltage is approximately

A. 2.95 V B. 2.25 V

C. 0.7 V D. 3.65 V