

- (C) the cut-off frequency increases
- (3) the base doping and the base width are reduced
- (4) the emitter area is increased and the collector area is reduced
- (5) the base doping and the base width are increased

3.3 In a JFET if

- (A) the pinch-off voltage decreases
- (B) the transconductance increases
- (C) the transit time of the carriers in the channel is reduced
- (1) the channel doping is reduced
- (2) the channel length is increased
- (3) the conductivity of the channel increased
- (4) the channel length is reduced
- (5) the Gate area is reduced

3.4 In an extrinsic semiconductor if

- (A) the resistivity decreases
- (B) the temperature coefficient of resistivity is negative
- (C) the photo conductivity is low
- (1) the doping concentration is low
- (2) the length of the semiconductor is reduced
- (3) the band gap is high
- (4) the area of cross-section of the semiconductor is increased
- (5) the doping concentration is increased

3.5 For a TTL gate, match the following

- (A) V_{OH} (min)
- (B) V_{IH} (min)
- (C) V_{OL} (max)
- (1) 2.4 volts
- (2) 1.5 volts
- (3) 0.4 volts
- (4) 2.0 volts
- (5) 0.8 volts

3.6 For an ADC, match the following

- (A) Flash converter
- (B) Dual slope converter
- (C) Successive approximation converter
- (1) requires a conversion time of the order of a few seconds
- (2) requires a digital-to-analog converter
- (3) minimizes the effect of power supply interference
- (4) requires a very complex hardware
- (5) is a tracking A/D converter.

3.7 (A) Common-collector amplifier

- (B) Common-emitter amplifier
- (C) Common-base amplifier
- (1) Provides voltage gain but no current gain
- (2) Provides current gain but no voltage gain
- (3) Provides neither voltage nor power gain
- (4) Provides neither current nor power gain
- (5) Provides both voltage and current gain

3.8 (A) AM system

- (B) DSB-SC system
- (C) PAM system
- (1) Coherent detection
- (2) Envelope detection
- (3) Correlation detection
- (4) PLL
- (5) LPF

3.9 (A) AM system

- (B) SSB system
- (C) PCM (n bit) system
- (1) 2B (Band width of the modulating signal)
- (2) 2B
- (3) Between B and 2B
- (4) $2nB$
- (5) nB

$$V_0(s) = \frac{A}{s^2 + 1} \coth(\alpha s)$$

where α is a constant. Determine the value of α

ANSWERS

1. 1 (c) 1. 2 (b) 1. 3 (d) 1. 4 (a) 1. 5 (b) 1. 6 (a) 1. 7 (c) 1. 8 (c) 1. 9 (a) 1. 10 (a)
1. 11 (c) 1. 12 (c) 1. 13 (b) 1. 14 (a,c) 1. 15 (b) 1. 16 (a) 1. 17 (b) 1. 18 (d) 1. 19 (d) 1. 20 (c)
1. 21 (c) 1. 22 (a) 1. 23 (d) 1. 24 (c) 1. 25 (b) 1. 26 (a) 1. 27 (c) 1. 28 (a) 1. 29 (a) 1. 30 (d)
1. 31 (b) 1. 32 (d) 1. 33 (c) 1. 34 (b) 1. 35 (c) 1. 36 (b) 1. 37 (d) 1. 38 (b) 1. 39 (c) 1. 40 (b)
1. 41 (b) 1. 42 (c) 1. 43 (b) 1. 44 (*) 1. 45 (c) 1. 46 (c) 1. 47 (a)