

Model Guess Questions (OBJECTIVE TYPE)  
ELECTRONICS ENGINEERING (1<sup>st</sup> YEAR)

Faculty: Alok Goswami  
Asst. Prof.  
EC Deptt.  
IIT. Gr. Noida.

UNIT-1

- 1). For a silicon diode the value of forward bias voltage typically.
  - a) Must be greater than 0.3V.
  - b) Must be greater than 0.7V.
  - c) Depends upon the width of the depletion region.
  - d) Depends upon the concentration of majority carriers.
  
- 2). The term 'bias' means
  - a) Ratio of majority carriers to minority carriers.
  - b) The amount of current across the P-N junction.
  - c) A dc voltage applied across the P-N junction to control its operation.
  - d) None of the above.
  
- 3). A germanium diode carries a current of 1mA at room temperature when a forward bias of 0.15V is applied. Estimate the reverse saturation current at room temperature ( $I_0$ ).
 

a) $4\mu\text{A}$	b) $5\mu\text{A}$
c) $3\mu\text{A}$	d) $2\mu\text{A}$
  
- 4). The width of depletion layer of a P-N junction
  - a) Decreases with light doping.
  - b) Increases with heavy doping.
  - c) Is independent of applied voltage.
  - d) Is increased under reverse bias.

- 5). The primary function of a clamper circuit is to
- a) Suppress variation in signal voltage
  - b) Raise +ve half cycle of the signal
  - c) Lower -ve half cycle of the signal.
  - d) Introduce a dc level into an ac signal.
- 6). The basic reason why a FW rectifier has twice the efficiency of a HW rectifier is that
- a) It makes use of a transformer
  - b) Its ripple factor is much less.
  - c) It utilizes both half cycle of the input.
  - d) Its output frequency is double the line frequency.
- 7). The PIV of a HW rectifier circuit with a shunt capacitor filter is
- a)  $2V_m$
  - b)  $V_m$
  - c)  $V_m/2$
  - d)  $3V_m$
- 8). The circuits where the input and output signals have the same waveform but different dc levels are called
- a) Clippers
  - b) Clampers
  - c) Rectifiers
  - d) All of the above
- 9). The most popular filter arrangement is a
- a) Shunt capacitor
  - b) LC
  - c)  $\pi$
  - d) ~~LC~~ None of the above
- 10). Which is a low voltage breakdown mechanism.
- a) Zener
  - b) Avalanche
  - c) both a & b
  - d) None of the above

Unit-2

- 11). The emitter of a transistor is generally doped heaviest because
- has to dissipate maximum power
  - has to supply the charge carriers.
  - is the first region of the transistor
  - Must possess low resistance.
- 12). The incorrect relation between  $\alpha$  and  $\beta$  is
- $\beta = \frac{\alpha}{1-\alpha}$
  - $\alpha = \frac{\beta}{1-\beta}$
  - $\alpha = \frac{\beta}{1+\beta}$
  - $1-\alpha = \frac{1}{1+\beta}$
- 13). The value of total collector current in CB circuit is
- $I_c = \alpha I_E$
  - $I_c = \alpha I_E + I_{CO}$
  - $I_c = \alpha I_E - I_{CO}$
  - $I_c = \beta I_E$
- 14). Which of the following approximations is often used in electronics circuits.
- $I_B \cong I_C$
  - $I_C \cong I_E$
  - $I_E \cong I_B + I_C$
  - $I_B \cong I_E$
- 15). A CB circuit has  $R_i = 20 \Omega$  and  $R_o = 100 K\Omega$ . If a signal of 400 mV is applied, find voltage amplification. Let  $\alpha_{ac} = 1$
- 10
  - 50
  - 75
  - 100
- 16). For proper working of NPN transistor, the different electrodes should have the following polarities with respect to emitter.
- Collector +ve, base +ve
  - Collector +ve, base -ve
  - collector -ve, base -ve
  - Collector -ve, base +ve.

17). The dc load line of a transistor circuit

- a) has a negative slope.
- b) is a curved line.
- c) Gives graphic relation between  $I_c$  and  $I_B$ .
- d) Does not contains the Q-point.

18). To obtain distortionless output, the Q-point in a voltage amplifier is selected in the

- a) Cut-off region
- b) Active region
- c) Saturation region
- d) All of the above

19). In CE configuration, the output characteristics are drawn in between.

- a)  $V_{CB}$  and  $I_c$
- b)  $V_{EB}$  and  $I_c$
- c)  $V_{CE}$  and  $I_c$
- d) both a & b

20). The most commonly used transistor circuit arrangement is

- a) CB
- b) CE
- c) CC
- d) both a & b

### Unit-5

21). The input impedance of a FET is of the order of

- a)  $10^2 \Omega$
- b) Hundreds of mega ohms.
- c) Hundred ohms
- d) A few ohms.

22). A FET is characterised by

- a) Current gain
- b) Voltage gain.
- c) Power gain
- d) None of these.

23). For a N-channel JFET  $I_{DSS} = 8.7 \text{ mA}$ ,  $V_p = -3 \text{ V}$  and  $V_{GS} = -1 \text{ V}$ , Find the value of  $I_D$ .

- a)  $3 \text{ mA}$
- b)  $3.4 \text{ mA}$
- c)  $3.8 \text{ mA}$
- d)  $4 \text{ mA}$

- 24). Pinch-off voltage in a FET is
- The drain voltage that gives zero drain current.
  - The gate to source voltage that gives unity drain current.
  - The gate to source voltage that gives zero drain current.
  - The drain voltage that gives infinite drain current.
- 25). In a MOSFET, the polarity of the inversion layer is same as that of the
- charge on the gate electrode.
  - Minority carriers in the drain.
  - Majority carriers in the substrate
  - Majority carriers in the source.
- 26). For the operation of N-channel enhancement MOSFET, value of gate voltage has to be
- High positive
  - High negative
  - Low positive
  - Zero
- 27). The extremely high input impedance of MOSFET is primarily due to
- Absence of its channel
  - Negative gate-source voltage
  - Depletion of current carriers.
  - Extremely small leakage current of its gate capacitor
- 28). JGFET is a
- Square-law device
  - Half-power device
  - $3/2$  power law device
  - Linear device.
- 29). An ideal OP-AMP has
- Infinite  $A_v$
  - Infinite  $R_i$
  - Zero  $R_o$
  - All the above

- 30). The gain of an actual OP-AMP is around
- a)  $1 \times 10^6$                       b)  $1 \times 10^3$   
 c)  $1 \times 10^2$                       d)  $1 \times 10^4$
- 31). -An inverting amplifier has  $R_f = 2M\Omega$  &  $R_i = 2K\Omega$  its scale factor is
- a) 1000                              b) -1000  
 c)  $10^{-3}$                             d)  $-10^{-3}$
- 32). When in a negative scaler, both  $R_i$  and  $R_f$  are reduced to zero, the circuit function as
- a) Integrator                      b) Subtractor  
 c) Comparator                    d) Unity follower
- 33). The transconductance ( $g_m$ ) of FET is given as
- a)  $\frac{\Delta I_D}{\Delta V_{DS}}$                       b)  $\frac{\Delta I_D}{\Delta V_{GS}}$   
 c)  $\frac{\Delta I_D}{\Delta V_{GD}}$                       d) None of the above
- 34). The self-bias configuration of FET eliminates the use of two
- a) DC power supply              b) External bias voltage  
 c) ~~internal batteries.~~              d) both a & b.

#### Unit-4

- 35). The 2's complement of  $(1000)_2$  is
- a) 0111                              b) 0101  
 c) 1000                              d) 0001
- 36). In binary numbers, shifting the binary point one place to the right
- a) Multiplies by 2                      b) Divides by 2  
 c) Decreases by 10                    d) Increases by 10



-44).  $(7041)_9 = ( )_{10}$

a) 5700

b) 5707

b) 5600

d) 5607

Unit-5.

45). Digital instruments are those which

a) have numerical readout

b) Use LED or LCD display

c) Have a circuitary of digital design.

d) use deflection type meter movement.

46). The current sensitivity of a meter is expressed in

a) Ampere

b) ohm / ampere

c) ohm / volt

d) ampere / division.

47). A multimeter is used to measure

a) Resistance

b) Current

c) Voltage

d) All the above.

48). In a  $3\frac{1}{2}$  digit voltmeter, the largest number that can be read is

a) 0999

b) 1999

c) 4999

d) 9999

49). The signal to be observed on the screen of an oscilloscope is applied.

a) across its X-plates

b) across its Y-plates

c) to the horizontal amplifier

d) to the trigger circuit.

50). During the retrace time, the electrons forming the horizontal beam

- a) move from left to right on the screen
- b) move from right to left on the screen
- c) move from bottom to top of screen.
- d) move from top to bottom of screen

51). An aquadag is used in a CRO to collect

- a) Primary electrons
- b) Secondary emission electrons.
- c) both a & b
- d) None.



P.T.O.