23. In a transistor amplifier, $\beta = 62, R_L = 5000\,\Omega$ and internal resistance of the transistor is $500\,\Omega$. The voltage amplification of the amplifier will be
1) 500 2) 620 3) 780 4) 950

24. In a transistor amplifier $\beta = 62, R_L = 5000\,\Omega$ and internal resistance of the transistor is $500\,\Omega$. Its power amplification will be
1) 25580 2) 33760
3) 38440 4) 55760

25. A transistor having $\alpha = 0.99$ is used in common base amplifier. If the load resistance is $4.5K\,\Omega$ and the dynamic resistance of the emitter junction is $50\,\Omega$, the voltage gain of the amplifier will be
1) 7910 2) 8910 3) 9910 4) 6910

26. For a transistor the current amplification factor is 0.8. The transistor is connected in common emitter configuration, the change in collector current when the base current changes by 6mA is
1) 6mA 2) 4.8mA 3) 24mA 4) 8mA

27. In a transistor circuit, when the base current is increased by $50\,\mu$ A, keeping collector voltage fixed at 2 volt, the collector current increases by 1.0mA. The current amplification factor of the transistor will be
1) 10 2) 20 3) 30 4) 40

28. The value of α of a transistor is 0.9. What would be the change in the collector current corresponding to a change of 4mA in the base current in a common emitter arrangement
1) 36mA 2) 72mA 3) 18mA 4) 54mA

29. In a common base circuit, if the collector base voltage is changed by 0.6V, collector current changes by 0.02mA. The output resistance will be
1) $10^4\,\Omega$ 2) $2 \times 10^4\,\Omega$
3) $3 \times 10^4\,\Omega$ 4) $4 \times 10^4\,\Omega$

30. For a common base amplifier, the values of resistance gain and voltage gain are 3000 and 2800 respectively. The current gain will be
1) 0.93 2) 0.83 3) 0.73 4) 0.63

31. For a CB amplifier current gain is 54. If the emitter current is 6.8mA, the base current will be
1) 0.486mA 2) 0.239mA
3) 0.123mA 4) 0.68mA

32. In a given transistor, the emitter current is changed by 2.1 mA. This results in a change of 2mA in the collector current and a change of 1.05V in the emitter base voltage. The imput resistance is
1) $5K\,\Omega$ 2) $3K\,\Omega$ 3) $1K\,\Omega$ 4) $0.5K\,\Omega$

33. The α_{dc} of a transister is always
1) > 1 2) < 1 3) = 0 4) Negative

34. The β of a transistor is 74. It is connected in common base configuration. If the emitter current is 5mA, the collector current is
1) 0.45mA 2) 4.93 mA
3) 370 mA 4) 5mA

35. If a change of $100\,\mu$ A in the base current of an n-p-n transistor causes a change of 10mA in the collector current, the ac current gain of the transistor is
1) 10 2) 100 3) 1000 4)10000

36. The collector current in a transistor circuit is 2.9mA. If base current is $100\,\mu A$. α of t;he transistor is
1) 0.06 2) 0.77 3) 0.97 4) 0.87

37. In a common base configuration the emitter current changes by 5mA when emitter voltage is changed by 200mA at a fixed collector to base voltage. The input resistance is
1) $40\,\Omega$ 2) $1000\,\Omega$ 3) $2.5\,\Omega$ 4) $4\,\Omega$

38. For a p-n-p transistor in CB configuration, the emitter current I_E is 1mA and $\alpha = 0.95$. The base current and collector current are
1) 0.95 mA, 0.05mA 2) 0.05mA, 0.95mA
3) 9.5mA, 0.5mA 4) 0.5mA, 9.5mA

39. In a n-p-n transistor 10^{10} electron enter the emitter in 10^{-6}s. If 2% of the electrons are lost in the base, the current transfer ratio and the current amplification factor are
1) 0.98, 49 2) 0.49, 49
3) 0.98, 98 4) 0.49, 98

40. If the collector current changes from 2mA to 3mA in a transistor when collector - emitter voltage is increased from 2V to 10V, the output resistance is
1) $1K\,\Omega$ 2) $8K\,\Omega$ 3) $8m\,\Omega$ 4) $1K\,\Omega$

41. A change of 200mV in base-emitter voltage causes a change of $100\,\mu$ A in the base current. The input resistance of the transistor is
1) $2K\,\Omega$ 2) $2\,\Omega$
3) $2m\,\Omega$ 4) $10K\,\Omega$

42. The change in base current from transistor characteristics when current amplification factor $\beta = 100$, with change in collector current as 1mA
1) 0.1mA 2) 1mA
3) 0.01mA 4) 0.001mA

43. For a common emitter amplifier, current gain is 70. If the emitter current is 8.8mA, then the collector current is
1) 0.124mA 2) 4.34mA
3) 8.68 mA 4) 1.72mA

44. For a common emitter amplifier, current gain is 70. If the emitter current is 8.4mA, then the base current is
1) 0.236mA 2) 0.118mA
3) 0.59mA 4) 8.3mA

45. A change of 8mA in the emitter current brings a change of 7.9mA in the collector current. The change in base current is required to have the same change in the collector curent is
1) 0.01mA 2) 1A
3) 10mA 4) 0.1mA

46. In the above problem value of α is
1) 80/79 2) 79/80
3) 79 4) 80

47. In problem number 45, the value of β is
1) 79/80 2) 80/79
3) 79 4) 80

48. For a common emitter amplifier, current gain is 60. If the emitter current is 6.6mA the collector current is
1) 0.108mA 2) 6.492mA
3) 1.1mA 4) 3.3mA

49. In the above problem, the base current is
1) 1.08mA 2) 10.8mA
3) 0.108mA 4) 8.01mA

50. In a common emitter amplifier the load resistance of the output circuit is 1000 times the load resistance of the input circuit. If $\alpha = 0.98$, the voltage gain is
1) 98000 2) 49000 3) 9800 4) 4900

51. In a common emitter amplifier the load resistance of the output circuit is 800 times the load resistance of the input circuit. If $\alpha = 0.99$, the voltage gain is
1) 79200 2) 39600 3) 7920 4) 3960

52. In a silicon transistor, a change of 7.89mA in the emitter current, produces a change of 7.8mA in the collector current. The change in the base current is necessary to produce an equivalent change in the collector current
1) 90mA 2) 90A
3) 90 μA 4) 0.9mA

53. The base current of a transistor is 105 μA and the collector current is 2.05mA. Then β of the transistor is
1) 1.952 2)19.52 3) 195.2 4) 1952

54. In the above problem α of the transistor is
1) 0.952 2) 9.51
3) 95.1 4) 0.0951

55. A change of 200mV in base-emitter voltage causes a change of 100 μA in the base current. The input resistance of the transistor is
1) $1K\Omega$ 2) $6K\Omega$
3) $2K\Omega$ 4) $8K\Omega$

56. In an n-p-n transistor, the collector current is 10mA. If 10% of the elctrons are lost in the base, then the emitter current is
1)10mA 2) 0.9mA
3) 0.09mA 4) 11.1mA

57. For a transistor the value of α is 0.9. Its β value is
1) 9 2) 0.9 3) 0.09 4) 90

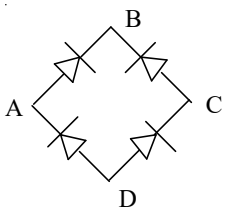
58. A transistor with β value equal to 80 has a change of 250 μA in base current. Then the change in collector current is
1) 2 μA 2) 20mA 3) 2mA 4)20 μA

59. The barrier potential in a p-n junction is 0.3V. The current required is 6mA. The emf of the cell required for use in the circuit if a resistance of 200 Ω is connected in series with junction
1) 3 V 2) 2 V 3) 1.5 V 4) 5 V

EXTRA BITS LEVEL-I

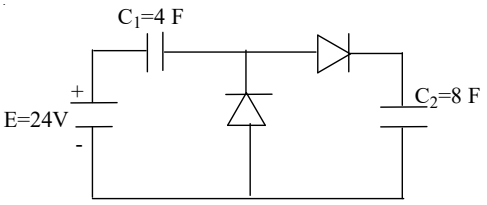
60) The electrical conductivity of a semi conductor increases when electromagnetic radiation of wavelength shorter than 2480 nm is incident on it. The forbidden band energy for the semi conductor is (in eV)
1) 0.5 2) 0.9 3) 0.7 4) 1.1

61) In the given diagram, the input is given across the terminals A and C and the output is taken across the terminals B and D. Then the output is



1) Zero 2) Same as input
3) Full wave rectified
4) Half-wave rectified

62) In the figure shown, the potential drop across each capacitor is (assume diodes to be ideal)



1) 12V, 12V 2) 16V, 8V
3) zero, 24V 4) 8V, zero

KEY

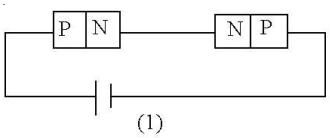
1) 1 2) 3 3) 2

KEY

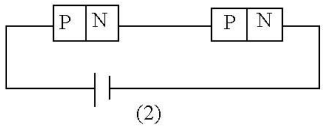
1) 3	2) 2	3) 4	4) 1	5) 4
6) 3	7) 2	8) 4	9) 2	10) 2
11) 1	12) 1	13) 4	14) 2	15) 1
16) 3	17) 1	18) 4	19) 2	20) 3
21) 1	22) 4	23) 2	24) 3	25) 2
26) 3	27) 2	28) 1	29) 3	30) 1
31) 3	32) 4	33) 2	34) 2	35) 2
36) 3	37) 1	38) 2	39) 1	40) 2
41) 1	42) 3	43) 3	44) 2	45) 4
46) 2	47) 3	48) 2	49) 3	50) 2
51) 1	52) 3	53) 2	54) 1	55) 3
56) 4	57) 1	58) 2	59) 3	60) 1
61) 3	62) 2			

LEVEL-II

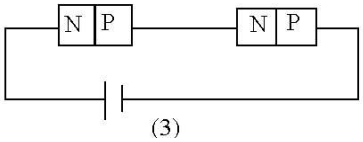
1. Two similar p-n junctions can be connected in three different ways as shown in the figures. The two connections across which the potential difference is same are



(1)



(2)

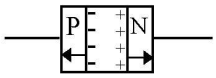


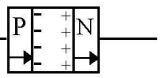
(3)

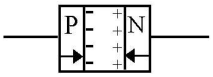
1) circuits 1 and 2 2) circuits 2 and 3
3) circuits 1 and 3 4) all the circuits

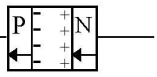
2. A cell of emf 4.5V is connected to a junction diode whose barrier potential is 0.7V. If the external resistance in the circuit is 190 Ω, the current in the circuit is
1) 20 mA 2) 2m A
3) 23mA 4) 200mA

3. Which of the following circuit diagram correctly represent the direction of flow of charge carriers in the farward bias of p-n junction

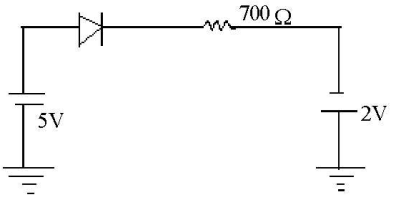
1) 

2) 

3) 

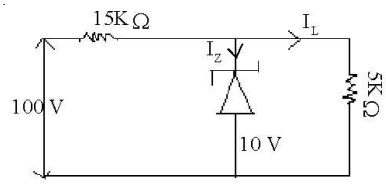
4) 

4. The current through a ideal P-N junction shown in the following circuit diagram will be



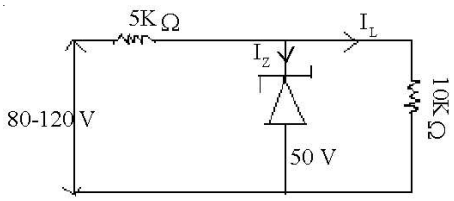
1) 5 mA 2) 10 mA 3) 70 mA 4)100 mA

5. From the adjecent circuit, the output voltage is



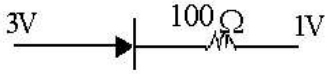
1) 10 V 2) 100 V 3) 90 V 4) zero

6. From the circuit shown below, the maximum and minimum values of zener diode current are



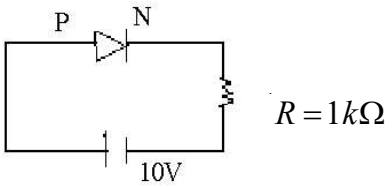
1) 6mA, 5mA 2) 14mA, 5mA
3) 9 mA, 1mA 4) 3mA, 2mA

7. The junction diode shown in the figure is ideal. The current in the circuit is



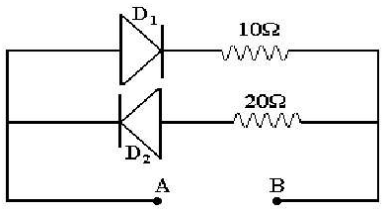
1) 20mA 2) 2mA
3) 200mA 4) 200 A

8. A junction diode is connected to a 10V source and 1KΩ rheostat. The slope of load line on the characteristic curve of diode will be (in amp/volt)



1) 0.1 2) 0.01
3) 0.001 4) 0.0001

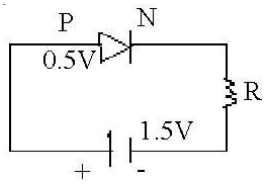
9. Two ideal junction diodes D_1, D_2 are connected as shown in the figure. A 3V battery is connected between A and B. The current supplied by the battery if its positive terminal is connected to A is



1) 0.1A 2) 0.3 A 3) 0.9 A 4) 90 A

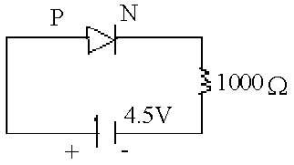
10. In the above problem if the positive terminal of the battery is connected to B, then the curent supplied by the battery is
1) 0.15 A 2) 0.3 A 3) 3 A 4) 1 A

11. A PN junction diode when forward biased has a drop of 0.5V which is assumed to be independent of current. The current in excess of 10mA through the diode produces large joule heating which damages the diode. If we want to use a 1.5V battery to forward bias the diode, the resistor used in series with the diode so that the maximum curent does not exceed 5mA is



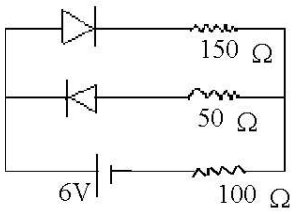
1) 2 x $10^2\Omega$ 2) 2 x 10Ω
3) 2 x $10^3\Omega$ 4) 2 x $10^4\Omega$

12. Caculate the current in the given circuit. (Given barrier potential of the diode = 0.5V)



1) 4mA 2) 4 A 3) 4 μA 4) 40 μA

13. Current through 100Ω resistor is (Given forward resistance of diode = 50Ω), reverse bias resistance=∞



1) 0.01A 2) 0.02 A 3) 0.03A 4) 0.04A

KEY

1) 2	2) 1	3) 3	4) 2
5) 1	6) 3	7) 1	8) 3
9) 2	10) 1	11) 1	12) 1
13) 2			

LEVEL - I

HINTS

14. $E = \frac{\text{Voltage}}{\text{Thickness}} = \frac{0.7}{10^{-6}} = 7\times10^5\,V/m$

15. $P = Vi$ for diode $P = 0.7\times20mA$
for resistor $P = 2.3\times20mA$

41. $\beta = \frac{\alpha}{1-\alpha}$ and

$\alpha = \frac{I_C}{I_E}$

$\therefore I_B = \frac{I_c}{\beta}$

45. $\Delta I_B = \Delta I_E - \Delta I_C$

46. $\alpha = \frac{\Delta I_C}{\Delta I_E}$

47. $\beta = \frac{\alpha}{1-\alpha}$

48. $\frac{\alpha}{\beta} = \frac{I_B}{I_E} \Rightarrow I_B = \frac{\alpha}{\beta}\times I_E \left(\beta = \frac{\alpha}{1-\alpha}\right)$

$\therefore I_C = I_E - I_B$

49. $I_B = \frac{\alpha}{\beta}\times I_E$

50. voltage amplification $\propto = \beta \times \frac{R_L}{R_i}$

but $\beta = \frac{\alpha}{1-\alpha} \Rightarrow \beta = 49$

$\frac{R_L}{R_i} = 1000$

51. same as 50

52. $\Delta I_b = \Delta I_E - \Delta I_C$

53. $\beta = \frac{I_c}{I_b}$

54. $\beta = \frac{\alpha}{1-\alpha}$

55. $\beta = \frac{\alpha}{1-\alpha}$ find β

$\beta \times I_B = I_C$

56. $I_B = 10 \times 10^{-3} - \frac{10}{100} \times 10^{-3} = 1 \times 10^{-3}$ amp

58. $\beta = \frac{\Delta I_c}{\Delta I_b}$

59. Diode resistance $\propto \frac{0.3}{6mA} = 50\Omega$

$\therefore$ cell voltage $\propto (6mA) \times (200 + 50)$

NEW MODEL QUESTIONS

Statement Type

01. The current through any p-n junction is due to
a) drift of charge carriers
b) diffusion of charge carriers
c) different concentrations of same type of charge carriers in different regions
d) same concentrations of same type of charge carriers in different regions
1) a,b and c 2) a and b only
3) only d 4) all

02. when a p-n junction is formed ,then
a) immediately, there is a diffusion of charge carriers across the junction
b) immediately, there is no diffusion of charge carriers across the junction
c) diffusion of charge carriers is due to thermal agitation
d) diffusion of charge carriers is due to potential barrier across the junction
1) a & b 2) a & c 3) b & c 4) all

03. In a p-n junction
a) The diffusion current is from n- side to p-side
b) The diffusion current p-side to n-side
c) The drift current is from n-side to p-side
d) the drift current from p-side to n-side
1) a & b 2) b & c 3) a,b & c 4) all

04. Leakage current in a juction diode
a) increases with temperature
b) is due to minority carries
c) depends on method of its fabricatiiond) is in the range of μA (or) nA
1) a, b & d 2) a & b 3) a & c 4) all

5) In a $p-n$ junction
a) drift current is influenced by concentration gradient of carriers.
b) diffusion current is influenced by concentration gradient of carriers.
c) drift is influenced by magnitude of applied voltage
d) diffusion is influenced by magnitude of applied voltage,
1) a & b 2) b & c 3) a, b & c 4) all

6) In a $p-n$ junction with no applied voltage
a) There is a net charge transfer between the two sides
b) There is no net charge transfer between the two sides
c) There is no electric field near the junction
d) There is a constant electric field near the junction
1) a & b 2) b & c 3) b & d 4) all

07. Diode is forward biased and the applied voltage is greater than the potential barrier then
I) Resistance of the junction in the forward bias decreases
II) Potential barrier remains same
III) Width of the depletion layer decreases
IV) p-type is at higher potential than the n-type
1. All are true 2. All are false
3. I, III, IV are true 4. I, II, III are true

08. I) The current in a diode is directly proportional to the applied voltage
II) During amplification frequency of the signal is increased
1. Both are true 2. both are false
3. I is true 4. II is true

9. Match the following

LIST - I	LIST - II
a. Antimony	e. P - type
b. Indium	f. N - type
c. Carbon	g. not semiconductor
d. Silicon	h. semiconductor

1. a - f, b - e, c - g, d - h
2. a - e, b - g, c - h, d - f
3. a - g, b - h, c - f, d - e
4. a - h, b - f, c - e, d - g

10. Match the following

LIST - I	LIST - II
a. h_{fe}	e. $\left(\frac{\Delta V_{BE}}{\Delta I_b}\right)_{V_{CE}}$
b. h_{ie}	f. $\left(\frac{\Delta I_C}{\Delta V_{CE}}\right)_{I_b}$
c. h_{re}	g. $\left(\frac{\Delta I_C}{\Delta I_b}\right)_{V_{CE}}$
d. h_{oe}	h. $\left(\frac{\Delta V_{BE}}{\Delta I_{CE}}\right)_{I_b}$

1. a - g, b - e, c - h, d - f
2. a - e, b - h, c - f, d - g
3. a - h, b - f, c - g, d - e
4. a - f, b - g, c - e, d - h

11. Match the following

LIST - I	LIST - II
a. Transistor	e. in filter circuit
b. Diode	f. voltage regulator
c. Zener diode	g. switch
d. Capacitor	h. modulator

1. a - h, b - g, c - f, d - e
2. a - g, b - f, c - e, d - h
3. a - f, b - e, c - h, d - g
4. a - e, b - h, c - g, d - f

12. Match the following

LIST - I	LIST - II
a. Current gain	e. $\frac{\Delta I_c}{\Delta I_b}$
b. Voltage gain	f. $\frac{\Delta I_c}{\Delta I_b}\ \frac{R_L}{R_i}$
c. Power gain	g. $\left(\frac{\Delta I_c}{\Delta I_b}\right)^2\ \frac{R_L}{R_i}$
d. Resistance gain	h. $\frac{R_L}{R_i}$

1. a - e, b - f, c - g, d - h
2. a - f, b - g, c - h, d -e
3. a - g, b - h, c - e, d - f
4. a - h, b - e, c - f, d - g

ASSERTION AND REASON TYPE

In each of the following questions, a statement of Assertion (A) is given followed by a corresponding statement of Reason (R) just below it. Of the statements, mark the correct answer.

1. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
2. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
3. If assertion is true but Reason is false.
4. If assertion and reason are false

13. (A) : Holes cannot be considered as antiparticles of electrons
(R) : Electron is a material particle but not a hole
14. (A) : The potential difference across an unbiased P - N junction cannot be measured by connecting voltmeters across its terminals.
(R) : There are no free charge carriers in the depletion zone. Voltmeter requires current to indicate potential difference.
15. (A) : Germanium is more preferred to the silicon.
(R) : Forbidden energy gap is less in germanium.
16. (A) : The silicon diode conducts current when the battery voltage is greater than 0.7V.
(R) : Barrier potential of the silicon is 0.3V.
17. (A) : Diode is unidirectional.
(R) : It allows the current in the forward bias when the applied voltage is greater than the barrier potential.
18. (A) : All the intrinsic semiconductors are insulators at absolute zero temperature.
(R) : All electrons are tightly bound at absolute zero temperature.
19. (A) : The resistance of instrinsic semiconductor decreases with increase of temperature.
(R) : Mobile electrons are present in valence band.

20. (A): Both N-type and P- type are electrically neutral
(R) : Neutral atoms are added during doping

21. (A) : When a donor electron is excited to the conduction band no hole is created
(R) : Donor energy level does not exist in the valence band

22. (A) : Holes are positievly charged particles.
(R) : Holes are the vacanies for the positive ions to form the covalent bonds.

KEY FOR NEW MODEL QUESTIONS

1) 1	2) 2	3) 2	4) 1
5) 2	6) 3	7) 3	8) 2
9) 1	10) 1	11) 1	12) 1
13) 1	14) 1	15) 1	16) 3
17) 1	18) 1	19) 2	20) 1
21) 1	22) 4		

QUESTIONS FROM PREVIOUS EAMCET EXAMS

1. An n-pn transistor power amplifier in C-E configuration gives (2005 E)
1) Voltage amplification only
2) Current amplification only
3) Both current and voltage amplification
4) Only power gain of unity

2. Consider the following statements A and B and identify the correct answer (2005M)
A) : Germanium is preferred over silicon in the construction of zener diode.
B) : Germanium has high thermal stability than silicon in the construction of Zener diode
1) Both (A) and (B) are true
2) Both (A) and (B) are false
3) (A) is true but (b) is false
4) (A) is false but (B) is true

3. A Zener diode when used as a voltage regulator is connected(2004 M)
(a) in forward bias (b) in reverse bias
(c) in parallel to the load (d) in series to the load
1. (a) and (b) are correct
2. (b) and (c) are correct
3. (a) only is correct
4. (d) only is correct

4. In n-p-n transistor, in CE configuration :(2004E)
(a) The emitter is heavily doped than the collector
(b) Emitter and collector can be interchanged
(c) The base region is very thin but is heavily doped
(d) The conventional current flows from base to emitter
1. (a) and (b) are correct
2. (a) and (c) are correct
3. (a) and (d) are correct
4. (b) and (c) are correct

5. Consider the following statements A and B and identify the correct answer : (2003M)
(A) A Zener diode is always connected in reverse bias.
(B) The potential barrier of a p - n junction lies between 0.1 to 0.3V, approximately
1. A and B are correct 2. A and B are wrong
3. A is correct but B is wrong
4. A is wrong but B is correct

6. When n - p - n transistor is used as an amplifier: (2003 E)
1. electrons move from base to collector
2. holes moves from emitter to base
3. holes move from collector to base
4. holes move from base to emitter

7. In a transistor circuit, when the base curent is increased by 50micro-amperes keeping the collector voltage fixed at 2 volts, the collector curent increases by 1mA. The current gain of the transistor is (2002E)
1) 20 2) 40 3) 60 4) 80

8. A common emitter transistor amplifier has a current gain of 50. If the load resistance is 4k Ω, and input resistance is 500 Ω, the voltage gain of amplifier is (2002E)
1) 100 2) 200 3) 300 4) 400

9. The current gain of transistor in a common emitter circuit is 40. The ratio of emitter current to base current is (2002M)
1) 40 2) 41 3) 42 4) 43

10. The reverse voltage ratio of emitter transistor circuit is represented as (2002M)

1) $\left(\frac{\Delta V_{be}}{\Delta V_{ce}}\right)_{I_b}$ 2) $\left(\frac{\Delta V_{be}}{\Delta I_b}\right)_{V_{ce}}$

3) $\left(\frac{\Delta I_c}{\Delta I_b}\right)_{V_{ce}}$ 4) $\left(\frac{\Delta V_{ce}}{\Delta V_{bc}}\right)_{I_b}$

11. While a collector emitter voltage is constant in a transistor, the collector current changes by 8.2mA when the emitter current changes by 8.3mA. The value of forward curent ratio h_{fe} is (2001E)
1) 82 2) 83 3) 8.2 4) 8.3

12. The current gain (β) of a transistor in common emitter mode is 40. To change the collector current by 160mA, the necessary change in the base current is (at constant V_{CE}) (2001)
1) 0.25 μ A 2) 4 μ A
3) 4mA 4) 40mA

13. Consider the following statements A and B identify the correct of the give answer. (2000)
A) The width of the depletion layer in a p-n juction diode increases in forward biads.
B) In an intrinsic semiconductor the fermi energy level is exactly in the middle of the forbidden gap
1) A is true and B is false
2) Both A and B are false
3) A is false and B is true
4) Both A and B are true

14 An n-type and p-type silicon can be obtained by doping pure silicon with (2000)
1) Arsenic and phosphrous
2) Indium and aluminium
3) Phosphorous and indium
4) aluminium and boron

15. The width of forbidden gap in silicon crustal is 1.1 ev. when the crystal is converted into a n-type semiconductor the distance of fermi level from conduction band is (1999)
1) Greater than 0.55eV
2) Equal to 0.55 eV
3) lesser than 0.55eV
4) Equal to 1.1 eV

16. The donor impurity to be added for doping germanium crystal, will be valency (1999)
1) 2 2) 3 3) 4 4) 5

17. In extrinsic semiconductors (1999)
1) The conduction band are valence abnd overlap
2) The gap between conduction hand and valence band is near about 16eV
3) the gap between conduction band and valence band is near about 1eV
4) The gap between conduction band and valence band will be 100eV and more

18. The element that can be used as acceptor impurity to dop silion is (1999)
1) Antimony 2) Arsenic
3) Boron 4) phosphorous

19. In case of semiconductor which one of the following statement is wrong? (1998)
1) Resistivity is in between that of a conductor and insulator
2) Temperature coefficient of resistance is negative
3) doping increases conductivity
4) At absolute zero temperature it behaves like a conductor

20. The potential in the depeltion layer due to (1998)
1) Electrons 2) Holes
3)Ions 4) Forbidden band

21. A hole is (1998)
1) A positively charged electron
2) An electron in the valence band
3) an unfulfilled covalent band
4) an excess electron in covalent bond

22. The value indicated by fermi energy level in an intrinsic semiconductor is (1997)
1) The average energy of electrons and holes
2) the energy of electrons in conduction band
3) the energy of holes in valence band
4) The energy of forbieen region

23. The conduction band and valency band of a good conductor (1996)
1) Are well separated 2) They just touch
3) Are very close 4) They overlap

24. Pickout the incorrect statement regardiang reverse saturation current in the p-n junction diode (1996)
1) this current doubles for every 100^0C rise of temperature
2) This current is due to minority carriers
3) the current carrries are produced by thermal agitation
4) Reverse saturation current is also known as leakage current

25. Two pieces one of germinium and the other of aluminium are cooled from T_1K to T_2K. The resistance of (1996)
1) Aliminium increases and that of germanium decrease
2) Each of them decreases
3) Aluminium decreases and that of germanium increases
4) Each of the increases

26. When the p-n junction diode is reverse is biased, the thickness of the depletion layer (1996)
1) increases 2) Decreases
3) Becomes zero 4) remain constant

27. Fermi level of energy of an intrinsic semiconductor lies (1995)
1) In the middle of the forbidden gap
2) Below the middle of forbidden gap
3) above the middle of forbidden gap
4) Outside the forbidden gap

28. In a semiconductor the separation beetween conduction band and valence band is of the order (1995)
1) 100eV 2) 10 eV 3) 1 eV 4) 0 eV

29. The intrinsic semiconductor behaves as insulator at (1995)
1) 0^0C 2) 100^0C 3) 100 K 4) 0 K

30. The bond, that exists in a semiconductor is (1995)
1) covalent bond 2) Ionic bond
3) Metalic bond 4) hydrogen bond

31. In forward bias of p-n junction, the potential barrier (1995)
1) Increases 2) Decreases
3) Remains unchanged 4) Becomes zero

32. In intrinsic semiconductor at room temperature the no. of electrons and holes are (1995)
1) Equal 2) Zero
3) Unequal 4) Infinite

33. Band gap in insulator is of the order (1995)
1) 6 eV 2) 0.60 eV 3) -6 eV 4) 0eV

34. Indium impurity in germanium makes (1995)
1) n-type 2) p-type
3) insulator 4) Intrinsic

35. Forbidden gap in a pure conductor is (1994)
1) 0 eV 2) 0.7 eV 3) 1.1 eV 4) 6 eV

36. p-n junction diode can be used as (1994)
1) Amplifer 2) Detector
3) Oscillator 4) Modulator

37. When p-n junction diode is forward biased potential barrier (1994)
1) Remains the same 2) Increases
3) Decreases
4) may increase of decreases

38. In which of the following ionic bond is present? (1994)
1) NaCl crystal 2) Ge
3) Ar 4) Si

39. Which of the following contains a covalent tbond (1994)
1) copper 2) Nacl 3) Ge 4)Helium

40. In p-type semiconductor conduction is due to (1994)
1) Greater number of holes and less number of electrons
2) Only electrons 3) Only holes
4) greater number of electrons and less number of holes

41. In an intrinsic semiconductor, the fermi energy level is (1994)
1) Nearer to valence band than conduction band
2) Equidistant from conduction band and valence band
3) Nearer to conduction band than valence band
4) Bisecting the conduction band

42. A p-n junction diode is reverse biased. Then (1994)
1) More current flows
2) The barrier potential decreases
3) the barrier potential increases
4) Resistance offered is low

43. In an intrinsic semiconducter the ratio of conduction electrons and holes ..... with increase in temperature (1993)
1) 1:1 2) 1: 2 3) 2 :1 4) 1 : 3

44. In an insulator, the energy gap between conduction band and valence band is about (1993)
1) 0 ev 2) 6 ev 3) 1 ev 4) 0.6 ev

45. If 'p' region of a semi conductor is connected to negative and 'n' region to positive pole, it is said to be..... (1993)
1) Directed biased 2) Unbiased
3) Forward biased 4) Reverse biased

46. To obtain p-type extrinsic semiconductor, the impurity element to be added to germanium should be valency (1993)
1) 2 2) 3 3) 4 4) 5

47. A half -wave rectifier is used to convent 50Hz A.C. to D.C. voltage. The number of pulses per second in the rectified voltage are (1993)
1) 50 2) 25 3) 100 4) 75

48. The majority carries in a p-type semi-conductor are..... (1993)
1) Electrons 2) Holes
3) Both 4) Impurities

49. If to an intrinsic semi conductor a pentavalent element is added as impurity, one get extrinsic semi conductor of ..... type (1993)
1) n-type 2) p-type
3) intrinsic 4) both 1 & 2

50. In an intrinsic semiconductor the charge carriers responsible for electrical conduction are (1992)
1) Electrons 2) Holes
3) Impurities 4) Both 1 & 2

KEY

1) 3	2) 2	3) 2	4) 3	5) 1
6) 1	7) 1	8) 4	9) 2	10) 1
11) 1	12) 3	13) 3	14) 3	15) 3
16) 4	17) 3	18) 3	19) 4	20) 3
21) 3	22) 1	23) 4	24) 1	25) 3
26) 1	27) 1	28) 3	29) 4	30) 1
31) 2	32) 1	33) 1	34) 2	35) 1
36) 2	37) 3	38) 1	39) 3	40) 1
41) 2	42) 3	43) 1	44) 2	45) 4
46) 2	47) 1	48) 2	49) 1	50) 4