Code No: 09A1BS02 Set No. 1

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid Examinations, March – 2010

ENGINEERING PHYSICS

Objective Exam

Name: _____ Hall Ticket No.

Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I. Choose the correct alternative:

1. The Maxwell-Boltzmann statistics deals with particles having [ ]
(A) integral spin (B) half integral spin
(C) no spin (D) any value of spin

2. According to Planck's quantum theory of radiation [ ]
(A) energy is emitted in the form of waves
(B) energy is emitted in the form of mechanical waves
(C) energy is emitted in the form of a continuous stream
(D) energy is emitted in the form of packets called photons

3. If E_1 is the energy value for the ground state of an electron in a one-dimensional potential well of
length L, the energy of the first excited state is equal to [ ]
(A) E_1 (B) 2 E_1 (C) 4 E_1 (D) 9 E_1

4. The zone theory of electrons was developed by [ ]
(A) Sommerfeld (B) Planck
(C) Drude and Lorentz (D) Bloch

5. In an allowed energy band, the velocity of an electron is zero, at [ ]
(A) top of the band (B) any where in the band
(C) top and bottom of the band (D) bottom of the band

6. An example for direct band gap semiconductor is [ ]
(A) Ge (B) GaAs (C) Si (D) SiO

7. If the Hall coefficient is negative, then the semiconductor is [ ]
(A) intrinsic (B) p-type (C) n-type (D) extrinsic

8. The Fermi level of intrinsic semiconductor raises slightly with increase of temperature, because
[ ]
(A) the effect mass of electron is greater than the effective mass hole
(B) the mass of hole is greater than the mass electron
(C) the effect mass of hole is greater than the effective mass electron
(D) the mass of electron is greater than the mass hole

9. Application of forward bias to a junction diode reduces [ ]
(A) the minority carrier current to zero (B) the majority carrier current to zero
(C) the potential barrier (D) the current to zero

10. Infra-red LED finds application in [ ]
(A) test instruments (B) burglar's alarm
(C) pocket calculators (D) display boards

II Fill in the Blanks

11. The number of quantum states present in a metal between the energies E and E+dE per unit volume
is called _____

12. In the spectrum of black body radiation, the wavelength maximum _____ with increase in
temperature.

13. When a potential difference of 400 volts is applied in accelerating an electron, the wavelength
attained by the electron, is _____ A.U.

14. One-dimensional time-independent Schrodinger's wave equation is _____

15. Pure semiconductor behaves as an insulator at _____ K

16. The electrons in a periodic potential move with _____ mass.

17. For Ge at room temperature, the intrinsic concentration is 2.5×10^{13} cm^{-3}. The donor impurity
concentration is 5×10^{15} cm^{-3}. Then the hole concentration in the semiconductor is
_____ cm^{-3}.

18. Under equilibrium conditions, the rate of generation of holes in a semiconductor, is equal to the
rate of loss due to recombination. The equation relating the generation rate and loss rate is known
as _____

19. The recombination produces a layer, at P-N junction, is called _____

20. The rectification efficiency of a half-wave rectifier is _____.

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Code No: 09A1BS02 Set No. 2

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid Examinations, March – 2010

ENGINEERING PHYSICS

Objective Exam

Name: _____ Hall Ticket No.

Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I. Choose the correct alternative:

1. The zone theory of electrons was developed by [ ]
(A) Sommerfeld (B) Planck (C) Drude and Lorentz (D) Bloch
2. In an allowed energy band, the velocity of an electron is zero, at [ ]
(A) top of the band (B) any where in the band
(C) top and bottom of the band (D) bottom of the band
3. An example for direct band gap semiconductor is [ ]
(A) Ge (B) GaAs (C) Si (D) SiO
4. If the Hall coefficient is negative, then the semiconductor is [ ]
(A) intrinsic (B) p-type (C) n-type (D) extrinsic
5. The Fermi level of intrinsic semiconductor raises slightly with increase of temperature, because
[ ]
(A) the effect mass of electron is greater than the effective mass hole
(B) the mass of hole is greater than the mass electron
(C) the effect mass of hole is greater than the effective mass electron
(D) the mass of electron is greater than the mass hole
6. Application of forward bias to a junction diode reduces [ ]
(A) the minority carrier current to zero (B) the majority carrier current to zero
(C) the potential barrier (D) the current to zero
7. Infra-red LED finds application in [ ]
(A) test instruments (B) burglar's alarm (C) pocket calculators (D) display boards
8. The Maxwell-Boltzmann statistics deals with particles having [ ]
(A) integral spin (B) half integral spin (C) no spin (D) any value of spin
9. According to Planck's quantum theory of radiation [ ]
(A) energy is emitted in the form of waves
(B) energy is emitted in the form of mechanical waves
(C) energy is emitted in the form of a continuous stream
(D) energy is emitted in the form of packets called photons

Cont…2

10. If E_1 is the energy value for the ground state of an electron in a one-dimensional potential well of
length L, the energy of the first excited state is equal to [ ]
(A) E_1 (B) 2 E_1 (C) 4 E_1 (D) 9 E_1

II Fill in the Blanks

11. One-dimensional time-independent Schrodinger's wave equation is _____
12. Pure semiconductor behaves as an insulator at _____ K
13. The electrons in a periodic potential move with _____ mass.
14. For Ge at room temperature, the intrinsic concentration is 2.5×10^{13} cm^{-3}. The donor impurity
concentration is 5×10^{15} cm^{-3}. Then the hole concentration in the semiconductor is
_____ cm^{-3}.

15. Under equilibrium conditions, the rate of generation of holes in a semiconductor, is equal to the
rate of loss due to recombination. The equation relating the generation rate and loss rate is known
as _____
16. The recombination produces a layer, at P-N junction, is called _____
17. The rectification efficiency of a half-wave rectifier is _____.
18. The number of quantum states present in a metal between the energies E and E+dE per unit volume
is called _____
19. In the spectrum of black body radiation, the wavelength maximum _____ with increase
in temperature.
20. When a potential difference of 400 volts is applied in accelerating an electron, the wavelength
attained by the electron, is _____ A.U.

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Code No: 09A1BS02 Set No. 3

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid Examinations, March – 2010

ENGINEERING PHYSICS

Objective Exam

Name: _____ Hall Ticket No. A

Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I. Choose the correct alternative:

1 An example for direct band gap semiconductor is [ ]
(A) Ge (B) GaAs (C) Si (D) SiO
2 If the Hall coefficient is negative, then the semiconductor is [ ]
(A) intrinsic (B) p-type (C) n-type (D) extrinsic
3 The Fermi level of intrinsic semiconductor raises slightly with increase of temperature, because
[ ]
(A) the effect mass of electron is greater than the effective mass hole
(B) the mass of hole is greater than the mass electron
(C) the effect mass of hole is greater than the effective mass electron
(D) the mass of electron is greater than the mass hole
4 Application of forward bias to a junction diode reduces [ ]
(A) the minority carrier current to zero (B) the majority carrier current to zero
(C) the potential barrier (D) the current to zero
5 Infra-red LED finds application in [ ]
(A) test instruments (B) burglar's alarm (C) pocket calculators (D) display boards
6 The Maxwell-Boltzmann statistics deals with particles having [ ]
(A) integral spin (B) half integral spin
(C) no spin (D) any value of spin
7. cording to Planck's quantum theory of radiation [ ]
(A) energy is emitted in the form of waves
(B) energy is emitted in the form of mechanical waves
(C) energy is emitted in the form of a continuous stream
(D) energy is emitted in the form of packets called photons
8. f E_1 is the energy value for the ground state of an electron in a one-dimensional potential well of
length L, the energy of the first excited state is equal to [ ]
(A) E_1 (B) 2 E_1 (C) 4 E_1 (D) 9 E_1
9. The zone theory of electrons was developed by [ ]
(A) Sommerfeld (B) Planck (C) Drude and Lorentz (D) Bloch

Cont….2

10. In an allowed energy band, the velocity of an electron is zero, at [ ]
(A) top of the band (B) any where in the band
(C) top and bottom of the band (D) bottom of the band

II Fill in the Blanks

11. The electrons in a periodic potential move with _____ mass.
12. For Ge at room temperature, the intrinsic concentration is 2.5×10^{13} cm^{-3}. The donor impurity
concentration is 5×10^{15} cm^{-3}. Then the hole concentration in the semiconductor is _____ cm^{-3}.
13. Under equilibrium conditions, the rate of generation of holes in a semiconductor, is equal to the

rate of loss due to recombination. The equation relating the generation rate and loss rate is known
as _____
14. The recombination produces a layer, at P-N junction, is called _____
15. The rectification efficiency of a half-wave rectifier is _____.
16. The number of quantum states present in a metal between the energies E and E+dE per unit volume
is called _____
17. In the spectrum of black body radiation, the wavelength maximum _____ with increase in
temperature.
18. When a potential difference of 400 volts is applied in accelerating an electron, the wavelength
attained by the electron, is _____ A.U.
19. One-dimensional time-independent Schrodinger's wave equation is _____
20. Pure semiconductor behaves as an insulator at _____ K

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Code No: 09A1BS02 Set No. 4

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid Examinations, March – 2010

ENGINEERING PHYSICS

Objective Exam

Name: _____ Hall Ticket No. A

Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I. Choose the correct alternative:

1. The Fermi level of intrinsic semiconductor raises slightly with increase of temperature, because
[ ]
(A) the effect mass of electron is greater than the effective mass hole
(B) the mass of hole is greater than the mass electron
(C) the effect mass of hole is greater than the effective mass electron
(D) the mass of electron is greater than the mass hole

2. Application of forward bias to a junction diode reduces [ ]
(A) the minority carrier current to zero (B) the majority carrier current to zero
(C) the potential barrier (D) the current to zero

3. Infra-red LED finds application in [ ]
(A) test instruments (B) burglar's alarm
(C) pocket calculators (D) display boards

4. The Maxwell-Boltzmann statistics deals with particles having [ ]
(A) integral spin (B) half integral spin
(C) no spin (D) any value of spin

5. According to Planck's quantum theory of radiation [ ]
(A) energy is emitted in the form of waves
(B) energy is emitted in the form of mechanical waves
(C) energy is emitted in the form of a continuous stream
(D) energy is emitted in the form of packets called photons

6. If E_1 is the energy value for the ground state of an electron in a one-dimensional potential well of
length L, the energy of the first excited state is equal to [ ]
(A) E_1 (B) 2 E_1 (C) 4 E_1 (D) 9 E_1

7. The zone theory of electrons was developed by [ ]
(A) Sommerfeld (B) Planck
(C) Drude and Lorentz (D) Bloch

8. In an allowed energy band, the velocity of an electron is zero, at [ ]
(A) top of the band (B) any where in the band
(C) top and bottom of the band (D) bottom of the band

Cont..2

9. An example for direct band gap semiconductor is [ ]
(A) Ge (B) GaAs (C) Si (D) SiO

10. If the Hall coefficient is negative, then the semiconductor is [ ]
(A) intrinsic (B) p-type (C) n-type (D) extrinsic

II Fill in the Blanks

11. Under equilibrium conditions, the rate of generation of holes in a semiconductor, is equal to the
rate of loss due to recombination. The equation relating the generation rate and loss rate is known
as _____

12. The recombination produces a layer, at P-N junction, is called _____
13. The rectification efficiency of a half-wave rectifier is _____.
14. The number of quantum states present in a metal between the energies E and E+dE per unit volume
is called _____
15. In the spectrum of black body radiation, the wavelength maximum _____ with
increase in temperature.
16. When a potential difference of 400 volts is applied in accelerating an electron, the wavelength
attained by the electron, is _____ A.U.
17. One-dimensional time-independent Schrodinger's wave equation is _____
18. Pure semiconductor behaves as an insulator at _____ K
19. The electrons in a periodic potential move with _____ mass.
20. For Ge at room temperature, the intrinsic concentration is 2.5×10^{13} cm^{-3}. The donor impurity
concentration is 5×10^{15} cm^{-3}. Then the hole concentration in the semiconductor is
_____ cm^{-3}.

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