Code No: A109100104 **Set No. 1**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid Examinations, March – 2011

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-Dirac statistics deals with particles having [ ]
   (A) integral spin (B) half integral spin (C) no spin (D) any value of spin

2. In the spectrum of black body radiation, Wein's law is applicable to [ ]
   (A) longer wavelength region (B) shorter wavelength region
   (C) any wavelength region (D) none of wavelengths

3. The wavelength of a matter wave of an electron moving under the influence of a potential V is proportional to [ ]
   (A) V (B) $\sqrt{V}$ (C) $1/\sqrt{V}$ (D) $1/V$

4. The origin of energy bands in solids, is explained by [ ]
   (A) Sommerfeld model (B) Drude-Lorentz model
   (C) Kronig-Penney model (D) Rutherford model

5. An example for direct band gap semiconductor is [ ]
   (A) GaSb (B) Ge (C) Si (D) GaP

6. The color of light emitted from an LED manufactured from GaP material, is [ ]
   (A) red (B) green (C) blue (D) white

7. If ΔE and Δt are the uncertainties in the measurement of energy and time of a system, according to Heisenberg's uncertainty principle [ ]
   (A) $\Delta E.\Delta t \geq h/4\pi$ (B) $\Delta E.\Delta t \leq h/4\pi$ (C) $\Delta E.\Delta t \geq h/2\pi$ (D) $\Delta E.\Delta t \leq h/2\pi$

8. The second Brillouin zone corresponding to 'k' values, is in between [ ]
   (A) $-\pi/a$ to 0 (B) 0 to π/a (C) $-2\pi/a$ to $2\pi/a$ (D) $-\pi/a$ to π/a

9. If T is the absolute temperature, the concentration of charge carriers in an intrinsic semiconductor is proportional to [ ]
   (A) $T^{1/2}$ (B) $T^{3/2}$ (C) $T^{-1/2}$ (D) $T^{-3/2}$

10. The material used for most popular photo-diode, is [ ]
    (A) GaAs (B) Ge (C) Si (D) GaP

Cont…..2

II Fill in the blanks

11. For a system of two particles with three possible states, the number of distinct states, is _____ according to Maxwell-Bolzmann statistics.

12. G.P.Thomson's experiment supports the concept of _____ of matter particles.

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

14. The solutions of the Schrodinger's wave equation for an electron moving in a _____, are obtained using Bloch theorem.

15. In the case _____, the conduction band and valence band are overlapped.

16. The minimum voltage to operate a forward biased p-n junction diode is called _____ voltage.

17. At equilibrium, a black body radiation is an example for _____.

18. The de Broglie wavelength is infinity when the speed of the matter particle is _____.

19. If the current is carried by _____ in a semiconductor, the Hall coefficient is positive.

20. The process of emitting photons by a _____, is called injection electro-luminescence.

-oOo-

Code No: A109100104 **Set No. 2**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid Examinations, March – 2011

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 origin of energy bands in solids, is explained by [ ]
   (A) Sommerfeld model (B) Drude-Lorentz model
   (C) Kronig-Penney model (D) Rutherford model

2. An example for direct band gap semiconductor is [ ]
   (A) GaSb (B) Ge (C) Si (D) GaP

3. The color of light emitted from an LED manufactured from GaP material, is [ ]
   (A) red (B) green (C) blue (D) white

4. If ΔE and Δt are the uncertainties in the measurement of energy and time of a system, according to Heisenberg's uncertainty principle [ ]
   (A) $\Delta E.\Delta t \geq h/4\pi$ (B) $\Delta E.\Delta t \leq h/4\pi$ (C) $\Delta E.\Delta t \geq h/2\pi$ (D) $\Delta E.\Delta t \leq h/2\pi$

5. The second Brillouin zone corresponding to 'k' values, is in between [ ]
   (A) $-\pi/a$ to 0 (B) 0 to π/a (C) $-2\pi/a$ to $2\pi/a$ (D) $-\pi/a$ to π/a

6. If T is the absolute temperature, the concentration of charge carriers in an intrinsic semiconductor is proportional to [ ]
   (A) $T^{1/2}$ (B) $T^{3/2}$ (C) $T^{-1/2}$ (D) $T^{-3/2}$

7. The material used for most popular photo-diode, is [ ]
   (A) GaAs (B) Ge (C) Si (D) GaP

8. The Fermi-Dirac statistics deals with particles having [ ]
   (A) integral spin (B) half integral spin (C) no spin (D) any value of spin

9. In the spectrum of black body radiation, Wein's law is applicable to [ ]
   (A) longer wavelength region (B) shorter wavelength region
   (C) any wavelength region (D) none of wavelengths

10. The wavelength of a matter wave of an electron moving under the influence of a potential V is proportional to [ ]
    (A) V (B) $\sqrt{V}$ (C) $1/\sqrt{V}$ (D) $1/V$

Cont……2

II Fill in the blanks

11. The solutions of the Schrodinger's wave equation for an electron moving in a _____, are obtained using Bloch theorem.

12. In the case _____, the conduction band and valence band are overlapped.

13. The minimum voltage to operate a forward biased p-n junction diode is called _____ voltage.

14. At equilibrium, a black body radiation is an example for _____.

15. The de Broglie wavelength is infinity when the speed of the matter particle is _____.

16. If the current is carried by _____ in a semiconductor, the Hall coefficient is positive.

17. The process of emitting photons by a _____, is called injection electro-luminescence.

18. For a system of two particles with three possible states, the number of distinct states, is _____ according to Maxwell-Bolzmann statistics.

19. G.P.Thomson's experiment supports the concept of _____ of matter particles.

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

-oOo-

Code No: A109100104 **Set No. 3**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid Examinations, March – 2011

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 color of light emitted from an LED manufactured from GaP material, is [ ]
(A) red (B) green (C) blue (D) white

2. If ΔE and Δt are the uncertainties in the measurement of energy and time of a system, according to Heisenberg's uncertainty principle [ ]
(A) $\Delta E.\Delta t \geq h/4\pi$ (B) $\Delta E.\Delta t \leq h/4\pi$ (C) $\Delta E.\Delta t \geq h/2\pi$ (D) $\Delta E.\Delta t \leq h/2\pi$

3. The second Brillouin zone corresponding to 'k' values, is in between [ ]
(A) $-\pi/a$ to 0 (B) 0 to π/a (C) $-2\pi/a$ to $2\pi/a$ (D) $-\pi/a$ to π/a

4. If T is the absolute temperature, the concentration of charge carriers in an intrinsic semiconductor is proportional to [ ]
(A) $T^{1/2}$ (B) $T^{3/2}$ (C) $T^{-1/2}$ (D) $T^{-3/2}$

5. The material used for most popular photo-diode, is [ ]
(A) GaAs (B) Ge (C) Si (D) GaP

6. The Fermi-Dirac statistics deals with particles having [ ]
(A) integral spin (B) half integral spin (C) no spin (D) any value of spin

7. In the spectrum of black body radiation, Wein's law is applicable to [ ]
(A) longer wavelength region (B) shorter wavelength region
(C) any wavelength region (D) none of wavelengths

8. The wavelength of a matter wave of an electron moving under the influence of a potential V is proportional to [ ]
(A) V (B) $\sqrt{V}$ (C) $1/\sqrt{V}$ (D) $1/V$

9. The origin of energy bands in solids, is explained by [ ]
(A) Sommerfeld model (B) Drude-Lorentz model
(C) Kronig-Penney model (D) Rutherford model

10. An example for direct band gap semiconductor is [ ]
(A) GaSb (B) Ge (C) Si (D) GaP

Cont.....2

II Fill in the blanks

11. The minimum voltage to operate a forward biased p-n junction diode is called _____ voltage.

12. At equilibrium, a black body radiation is an example for _____.

13. The de Broglie wavelength is infinity when the speed of the matter particle is _____.

14. If the current is carried by _____ in a semiconductor, the Hall coefficient is positive.

15. The process of emitting photons by a _____, is called injection electro-luminescence.

16. For a system of two particles with three possible states, the number of distinct states, is _____ according to Maxwell-Bolzmann statistics.

17. G.P.Thomson's experiment supports the concept of _____ of matter particles.

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

19. The solutions of the Schrodinger's wave equation for an electron moving in a _____, are obtained using Bloch theorem.

20. In the case _____, the conduction band and valence band are overlapped.

-oOo-

Code No: A109100104 **Set No. 4**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

I B.Tech. II Mid Examinations, March – 2011

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 second Brillouin zone corresponding to 'k' values, is in between [ ]
(A) $-\pi/a$ to 0 (B) 0 to π/a (C) $-2\pi/a$ to $2\pi/a$ (D) $-\pi/a$ to π/a

2. If T is the absolute temperature, the concentration of charge carriers in an intrinsic semiconductor is proportional to [ ]
(A) $T^{1/2}$ (B) $T^{3/2}$ (C) $T^{-1/2}$ (D) $T^{-3/2}$

3. The material used for most popular photo-diode, is [ ]
(A) GaAs (B) Ge (C) Si (D) GaP

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

5. In the spectrum of black body radiation, Wein's law is applicable to [ ]
(A) longer wavelength region (B) shorter wavelength region
(C) any wavelength region (D) none of wavelengths

6. The wavelength of a matter wave of an electron moving under the influence of a potential V is proportional to [ ]
(A) V (B) $\sqrt{V}$ (C) $1/\sqrt{V}$ (D) $1/V$

7. The origin of energy bands in solids, is explained by [ ]
(A) Sommerfeld model (B) Drude-Lorentz model
(C) Kronig-Penney model (D) Rutherford model

8. An example for direct band gap semiconductor is [ ]
(A) GaSb (B) Ge (C) Si (D) GaP

9. The color of light emitted from an LED manufactured from GaP material, is [ ]
(A) red (B) green (C) blue (D) white

10. If ΔE and Δt are the uncertainties in the measurement of energy and time of a system, according to Heisenberg's uncertainty principle [ ]
(A) $\Delta E.\Delta t \geq h/4\pi$ (B) $\Delta E.\Delta t \leq h/4\pi$ (C) $\Delta E.\Delta t \geq h/2\pi$ (D) $\Delta E.\Delta t \leq h/2\pi$

Cont.....2

II Fill in the blanks

11. The de Broglie wavelength is infinity when the speed of the matter particle is _____.

12. If the current is carried by _____ in a semiconductor, the Hall coefficient is positive.

13. The process of emitting photons by a _____, is called injection electro-luminescence.

14. For a system of two particles with three possible states, the number of distinct states, is _____ according to Maxwell-Bolzmann statistics.

15. G.P.Thomson's experiment supports the concept of _____ of matter particles.

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

17. The solutions of the Schrodinger's wave equation for an electron moving in a _____, are obtained using Bloch theorem.

18. In the case _____, the conduction band and valence band are overlapped.

19. The minimum voltage to operate a forward biased p-n junction diode is called _____ voltage.

20. At equilibrium, a black body radiation is an example for _____.

-oOo-