

Que.1 (A) Write any One. (4)

1. Explain in detail the Thermal Expansivity.
2. Explain in detail the Alternative deduction method of Maxwell's velocity distribution law.

(B) Write any Three. (3)

1. Write second energy equation.
2. Give the name of instrument, which use for liquefaction of gas by throttling process.
3. What is Gibb's function $G = \text{_____} - TS$.
4. Enthalpy $H = \text{_____} + \text{_____}$.
5. Write any two Maxwell's equations

(C) Write any One. (3)

1. Write one useful application of first energy equation.
2. Derive the value of constant a in the equation of velocity distribution.

Que.2 (A) Write any One. (4)

1. Explain the diffraction through double slit with the help of any one method.
2. Explain the Lorentz Transformations.

(B) Write any Three. (3)

1. What is Minkowski space ?
2. Write equation of relativistic velocity.
3. Write equation of relativistic mass.
4. Per inch of Grating there is _____ lines are drawn.
5. What is Diffraction?

(C) Write any One. (3)

1. Diffracting Power of Grating
2. If two space suttles s and s' are moving towards each other with velocity $0.90 c$ then find its relativistic speed.

Que.3 (A) Write any One. (4)

1. Explain Sommerfield Model.
2. Explain the spacing of a set of crystal planes.

(B) Write any Three. (3)

1. Draw a figure for plane (110) of Miller indices.
2. Packing Fraction PF = _____

3. The co-ordination number are _____ of simple cubic lattice.

4. Draw structure of CsCl.

5. Draw structure of NaCl.

(C) Write any One.

(3)

Que.4

1. Write a note on Wigner- Seitz cell.

2. Write the limitation of Bohr Theory.

Write any Five.

(10)

1. How many hypothesis of special theory of Relativity ?

2. Can we put $k = 0$ in equation $\frac{b}{a} = \frac{k}{n}$ which get in Sommerfield Model ?

3. Who invented the effect of diffraction.

(i) Fresnel (ii) Frounhoffer (iii) Einstein (iv) Grimaldi

4. Crystal = _____ + _____.

5. Describe Fresnel diffraction.

6. Which function is taken as constant for deriving the Tds equation ?

7. The value of an ideal gas is increased at constant temperature then it's internal energy becomes _____.

(i) Increase (ii) decrease (iii) remain constant (iv) destroyed.

8. Who has given equation $E=mc^2$?
