64

1M2A23125

(Pages : 2)

Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester Integrated M.Sc Geology Degree Examination, April 2023

GL02IB02–CRYSTALLOGRAPHY AND MINERALOGY

(2022 Admission onwards)

Time: 2 hours

Max. Marks: 60

(Draw neat sketches, wherever necessary)

PART – A

Answer *all* questions.

Each question carries Two mark.

Ceiling -20 Marks

1. Differentiate crystalline and amorphous materials.
2. Draw and explain Contact Goniometer?
3. How crystallographic axes are used in naming of crystal faces?
4. What do you mean by *enantiomorphous* forms?
5. Define specific gravity.
6. Write about morphological characters of crystal.
7. Briefly explain chemical properties of mineral.
8. How isomorphism is different from polymorphism?
9. What are *holohedral* and *hemihedral* forms?
10. What do you mean by crystal coordination?
11. What is crystal zone axis and how it is found out?
12. Describe pseudomorphism?

PART – B

Answer *all* questions.

Each question carries Five marks.

Ceiling -30 Marks

13. Describe various point group Symmetry elements in a crystal.
14. Explain Laws of crystallography.
15. Write about the Symmetry and forms present in *Normal class* of the triclinic system.
16. What is solid solution series and how they are formed?
17. Explain crystallographic notation.
18. What is called twinning? Explain the types of twinning.
19. Write a short note on Walker's Steel Yard & Jolly's Spring balance

PART - C

Answer any *one* question.

20. Describe the symmetry elements and forms present in the *Zircon type class* of the Tetragonal system
21. What is silicate mineral and explain various silicate structures.

1 x 10 = 10 Marks

2M2A23124

(Pages : 2)

Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester Integrated M.Sc Geology Degree Examination, April 2023

PHY2IC01: Properties of Matter, Thermodynamics, Waves & Oscillations, Electricity & Magnetism, Computational Physics

(2020 Admission onwards)

Time: 2 ½ hours

Max. Marks: 80

PART A

Answer all questions

1. What is meant by Poisson's ratio? What do you know about its value?
2. What is internal energy? State and explain Zeroth law of thermodynamics?
3. Graphically represent the variation of P.E. and K.E. of a simple harmonic oscillator When are they equal?
4. State Gauss theorem in electrostatics.
5. Distinguish between diamagnets and paramagnets.
6. How step size effects on round off error.
7. State Hooke's law.
8. What is Brownian motion?
9. What are equi potential surfaces? What is dielectric?
10. What is entropy? Explain the entropy of reversible and irreversible processes?
11. explain how infinite looping is achieved in python language.
12. What is meant by quasi-static process?
13. Define angle of contact?
14. State Kelvin-Planck and Clausius statement of Second law of thermodynamics?
15. Define the term Surface tension of a liquid?

(15 x 2 = 30, Maximum ceiling 25 marks)

PART B

Answer all questions

16. With suitable example in python explain the main operation on a dictionary.
17. Define a) Declination b) Dip c) Horizontal intensity.
18. A torsion pendulum is set up by suspending a disc of mass 1.2 kg and radius 0.1 m at the lower end of a wire of length 1m and radius 0.72 mm. the period of torsional oscillation is 2 sec. Calculate the rigidity modulus of the material of the wire.
19. Show that Cp-Cv = R.
20. Find the pressure inside a small air bubble of radius 0.4mm, situated just below the surface of water. Given surface tension of water is equal to 72×10^{-3} N/m, and the atmospheric pressure is equal to 1.012×10^{5} N/m^2.
21. What are electric field lines. Write down its properties. Draw the field lines around a positive charge.
22. Find the efficiency of Carnot engine working between 127°C and 27°C. If it absorbs 840J of heat from the source, calculate the amount of heat rejected to the sink.
23. Deduce work done per unit volume is equal to1/2(Stress x Strain), using volume strain.

(8 x 5 = 40, Maximum ceiling 35 marks)

PART C

Answer any two questions

24. Define surface tension and surface energy. How are they related? Derive expression for excess pressure a) inside a liquid drop and b) inside a bubble
25. State and explain first law of thermodynamics. Discuss its applications and apply it to various quasi- static processes.
26. Discuss how a deflection magnetometer is used for finding the moment of a bar magnet by arranging in Tan B position.
27. Explain the method of making user-defined function with examples. Write a program to find factorial of a given number using user defined function.

(2 x 10 = 20 Marks)