

Time allowed: **3 hours**; Maximum marks: **90**

General Instructions:

- All Questions are compulsory
- The Question Paper consists of 29 Questions divided in to four sections A, B, C and D
- Section - A comprises of 3 Very Short Questions of 1 mark each
- Section - B comprises of 3 Short Questions I of 2 marks each
- Section - C comprises of 12 Short Questions II of 3 marks each
- Section - D comprises of 6 Long Questions of 5 marks each
- Section – E comprises of 9 Practical Based Very Short Questions of 1 mark each
- Section – F comprises of 3 Practical Based Short Questions I of 2 marks each

Section – A

- Explain the term Biodiversity?
- What kind of energy does the still water consists?
- Which metal was used by Rutherford in his alpha-scattering experiment?
 - Gold
 - Platinum
 - Silver
 - Lead

Section – B

- Which of the following is true about a charged atom?
 - Anion is negatively charged
 - Cation is negatively charged
 - Cation has gained an electron
 - Anion has lost an electron
- What is the full form of CAT in CAT scan (CT scan)?
- Define mitochondria?

Section - C

- Differentiate between rashes caused by measles and chickenpox?
- What are the five main threats to biodiversity?
- Despite having a large amount of biodiversity, why is the Amazon Rainforest facing the risk of desertification?
- Palladium crystallizes in a face-centered cubic unit cell. Its density is 12.023g/cm³. Calculate the atomic radius of palladium?
- Describe Rutherford's model of an atom?
- Find mass of Fe in the compound including 4,8x10²³ O atoms; Fe₃O₄?
- Calculate gram molecular weights of the following gases?
 - N₂ (if 360 cm³ at STP weighs 0.45g)
 - Cl₂ (if 308 cm³ at STP weighs 0.97g) (Mole concept) (3m)
- A force of 30 N acts on a body having displacement 10 m. Calculate the work done.
- (a) A sound influx of wave length 0. 2 m has an era of 10⁻² s. In the event that the day and age is diminished to 10⁻³ s. Ascertain the wave length and recurrence of the new wave?

- (b) Name the subjective property of sound identified with its recurrence and of light identified with its wavelength?
16. Calculate the work done in lifting a box of 15kg to a shelf at height 1.5m from ground.
17. Explain meristematic tissue.
18. Differentiate between acute and chronic disease.

Section - D

19. Discuss the major uses of energy?
20. What is the carbon cycle?
21. Calculate the power of an engine required to lift 105kg of coal per hour from a mine 100m deep? Given $g=10\text{m/s}^2$.
- (a) The density of turpentine oil is 840 Kg/ m^3 . What will be its relative density? (Density of water at 4 degree C is $10\text{ cube kg minus cube}$)
- (b) A ball of relative density 0.8 falls into water from a height of 2m. Find the depth to which the ball will sink?
22. What are characteristics of particles of matter?
23. State the laws of Dalton's Atomic theory?
24. Calculate the molecular mass of H_2SO_4 .

Section - E

25. How is sound produced?
26. What is sound ranging?
27. Find the distance between the obstacle and observer for velocity of sound is taken to be equal to 334 m/s and $t = 0.1\text{ sec}$.
28. Which type of sound wave is human speech?
29. What are anode rays? State three properties of anode rays?(particle nature, basic unit) (1m)
30. Give example of sound diffraction?
31. Decibel scale chart for real life example?
32. What is buoyancy?
33. A cube of mass 10 kg with each side of 2cm is lying on the table. Calculate the pressure exerted by the block on the table. Take $g=10\text{ m/s}^2$?

Section - F

34. Define Taxonomy?
35. Mention the chief characteristic for the first division of organisms?
36. What do you mean by nutrition management?