

NEW STANDARD ACADEMY

Marks: 60

Date : 08-07-24

CLASS : 11TH NEET

Time: 3 HRS

PHYSICS

1. A book is at rest on a table top. Diagram the forces acting on the book.
2. A girl is suspended motionless from a bar which hangs from the ceiling by two ropes. Diagram the forces acting on the girl.
3. An egg is free-falling from a nest in a tree. Neglect air resistance. Diagram the forces acting on the egg as it is falling.
4. A flying squirrel is gliding (no wing flaps) from a tree to the ground at constant velocity. Consider air resistance. Diagram the forces acting on the squirrel.
5. A rightward force is applied to a book in order to move it across a desk with a rightward acceleration. Consider frictional forces. Neglect air resistance. Diagram the forces acting on the book.
6. A rightward force is applied to a book in order to move it across a desk at constant velocity. Consider frictional forces. Neglect air resistance. Diagram the forces acting on the book.
7. A college student rests a backpack upon his shoulder. The pack is suspended motionless by one strap from one shoulder. Diagram the vertical forces acting on the backpack.
8. A skydiver is descending with a constant velocity. Consider air resistance. Diagram the forces acting upon the skydiver.
9. A force is applied to the right to drag a sled across loosely-packed snow with rightward acceleration. Diagram the forces acting upon the sled.
10. A car is coasting to the right and slowing down. Diagram the forces acting upon the car.

CHEMISTRY

1. Na_2CO_3 does not decompose on heating whereas CaCO_3 decomposes, why?

2. Which of the following species has greater polarizing power?
(i) Fe^{3+} or Fe^{2+}
(ii) Cu^+ or Na^+
(iii) Mg^{2+} or Al^{3+}
3. What types of bonds are present in the following molecules and why? Explain
(i) MgF_2
(ii) BrCl
(iii) CBr_4
4. Find out the percentage ionic character of a diatomic molecule having a dipole moment of 1.98 D and bond length of 0.92 Å
5. o-hydroxy benzaldehyde is less soluble in water than p-hydroxy benzaldehyde. Explain.
6. HF forms stronger H-bonds than H_2O . Still, ΔH_{vap} of HF is lower than that of pure water. Explain
7. Sulphide of phosphorus, P_4S_3 , is a well-known chemical used in match industry. Phosphorus lies in trivalent and sulphur in divalent state. Draw the shape of the compound.
8. In trimethylamine, the nitrogen has a pyramidal geometry whereas in trisilylamine $\text{N}(\text{SiH}_3)_3$ it has a planar geometry. Account for this fact.
9. Compare the stabilities of H_2 , H_2^+ and H_2^-
10. Which of the following pairs of molecule have bond order three and are isoelectronics?
(a) CN^- , CO
(b) NO^+ , CO^+
(c) CN^- , O_2^+

BIOLOGY

1. How gymnosperms are more evolved than pteridophytes? Explain.
2. What do you understand by the term 'seed habit' used in pteridophytes? Explain.
3. Mention the role of peristomial teeth in the dehiscence of moss capsule.

4. How do you distinguish Isogamy, Anisogamy and Oogamy?
5. Match the following column I with column II

Column I	Column II
A. <i>Chlamydomonas</i>	1. Moss
B. <i>Cycas</i>	2. Pteridophyte
C. <i>Selaginella</i>	3. Algae
D. <i>Sphagnum</i>	4. Gymnosperm

6. Comment on the life cycle and nature of a fern prothallus.
7. Gametophyte is a dominant phase in the life cycle of a bryophyte. Explain
8. Water is essential for fertilization in bryophytes and pteridophytes. How gymnosperms cope without the use of water in fertilization? Justify.
9. Define:
 - i) Gemma cup
 - ii) Rhizoids
10. Draw the structure of prothallus of fern.

