Candidates are required to write their answers according to the instructions given.
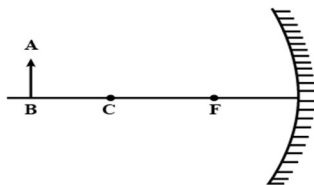
Attempt all questions.

(Group "A" Physics)

1. a. Write any two differences between derived unit and fundamental unit. [2]
   b. Define acceleration.A car starts to move from rest, after 5 seconds its velocity becomes 10 m/s. Calculate the acceleration of the car.   (1+2=3)
2. a. What is mechanical advantage? Efficiency of a simple machine is always less than 100%. Why?   [1+1=2]
   b. Define density. The speed of water at the tap of lower storey is more than that in upper storey, why?   [1+2=3]
3. a. Calculate the energy required to lift an object of mass 25 kg to the height of 10 m. (Acceleration due to gravity (g)=9.8 m/s^2).   [2]
   b. Write two differences between heat and temperature. Very high temperature cannot be measured by alcohol thermometer, why? (2+1=3)
4. a. Complete the ray diagram and write two nature of the image formed. (2+1=3)

   b. What is echo? Write any two conditions required for reverberation? (1+1=2)
5. a. What is magnetic field? Write any two cause of demagnetization. (1+1=2)
   b. What is fuse? Write full form of MCB. Write a method to remove polarization in a simple cell.   (1+1+1=3)

(Group "B" Chemistry)

6. a. What is compound? Why is an atom electrically neutral?   (1+2=3)
   b. Convert the following word equation into a balanced formula equation. 2

   Sodium + Chlorine $\longrightarrow$ Sodium chloride

7. a. What is chromatography? What types of mixture can be separated from it?   (1+1=2)
   b. Give one reason behind making body of aeroplane with aluminium metal. Write one ore of copper and silver. Write one use of sulphur. (1+1+1=3)
8. a. What is meant by indicators? All alkalis are bases but all bases are not alkalis, why?   (1+2=3)
   b. What is meant by hardness of water? Write down molecular formula for glycerol?   (1+1=2)

(Group "C" Biology)

9. a. What is meant by dispersal of seed? Mention any two methods of dispersal of seed?   (1+1=2)
   b. What is zygote? Draw a neat and labeled diagram of bacteriophage virus?   (1+2=3)
10. a. Write two main functions of epithelium tissue. A plant does not grow when its tip is cut. Why? (2+1=3)
    b. What type of asexual reproduction takes place in following organism.   [2]
       i. Amoeba   ii. Hydra   iii. Begonia   iv. Potato
11. a. Write two differences between auricle and ventricle.   2
    b. What is photosynthesis? List factors are required for photosynthesis. (1+2=3)

(Group "D" Astronomy and Geology)

12. a. What is meant by phase of the moon? In which date are days and nights equal in all parts of the earth?   (1+1=2)
    b. What is synodic month? Differentiate between dark half and bright half.   (1+2=3)

(Group "E" Environment Science)

13. a. What is a wildlife reserve? Write any four medicinal plants found in Nepal. (1+2=3)
    b. Define endangered animals. Name the only hunting reserve of Nepal. (1+1=2)

14. a. What is acid rainfall? Write any one effect of acid rain. (1+1=2)
    b. What is pollution? Mention two reasons of the increase of greenhouse gases in the atmosphere. (1+2=3)

15. a. What is sustainable development? Write any two importance of sustainable development. (1+2=3)
    b. Write any four things that you can do to conserve the environment of your surrounding? (2)

Best Wishes