

2012
PI SCIENCE
MOCK. MARCH 2019
MARKING SCHEME

1. a) i. Ask learners to describe how smoke from a fire moves. (2 marks)
- ii. The introduction should be:-
- Relevant
 - Interesting
- b)
- Is teacher centred/learners are passive;
 - Skills like manipulation are not developed
 - Many attitudes are not developed e.g co-operation, self confidence, responsibility.
(Any 3 x 1 = 3 marks)
- c)
- Setting up the experiment/assembling the materials
 - Observing the experiment/making observations
 - Recording the observations
 - Asking and answering questions/discussing the observations.
2. a) By the end of the lesson, the learner should be able to observe weeds in the locality. (1 mark)
- b) Collect different types of weeds, identify and pre-visit a site with weeds; prepare guiding questions.
(3 x 1 =3 marks)
- c)
- Collecting weeds
 - Observing and identifying weeds
 - Describing weeds
 - Drawing/mounting different types of weeds in their books
 - Going for a nature walk to observe weeds.
(2 x 1 = 2 marks)
- d) Mounding weeds/pictures
Drawing diagrams
(2 x 1 = 2 marks)
3. a.
- Go out and pour water on the ground/soil and observe what happens to the soil
 - Fan the soil/ground using the cardboard and observe the soil.

- Discuss agents of soil erosion from the observations. (3 x 1 = 3 marks)

b.

c.

d. Skills

- Observation
- Formulation of hypothesis
- Drawing conclusion (2 x 1 = 2 marks)

Attitudes

- Genuine interest
- Curiosity
- Open mindedness (2 x 1 = 2 marks)

4. a)

- Making weather instruments takes a long time
- Making weather observations requires a long time.

b)

- Functionalism; workmanship/neatness/creativity
- Originality; suitability of materials used/quality of products
- Durability; safety of the materials used.

c) Borrowing; purchasing, collecting from the environment. (2 x 1 = 2 marks)

d)

- When the apparatus are expensive
- If the apparatus are not available. (2 x 1 = 2 marks)

5. a) Reasons for preparing a lesson plan.

- Present concepts and skills in a systematic manner; manage time well; to know which points to emphasize; when and how to use teaching/learning resources
- Collect teaching/learning resources ahead of time
- Achieve confidence in content delivery

- b) i. Social effects of drug abuse
- Marital conflicts
 - Drug induced accidents
 - Dropping out of school
 - Truancy
 - Fighting
 - Loss of income
 - Rape

ii. Health effects of drug abuse

- Poor health
- Lack of concentration
- Impaired judgement
- Loss of consciousness (blackout)
- Addiction, fits, withdrawal
- Coma/death
- Poor health of unborn babies

c)

- Most learners were able to state effects of drug abuse.
- Some learners were unable to differentiate between social and health effects of drug abuse

(2 x 1 = 2 marks)

d)

- Drug abuse leads to impaired judgment which may result in persons engaging in unprotected sex
- Some drug addicts share syringes, blood which is one way of HIV transmission.

6. a) i. A – Upwards and outwards

B – Upwards and inwards

C – Downwards and inwards

D – Downwards and outwards

(4 x 1 = 4 marks)

ii. Recall of knowledge

(1 mark)

c) Disadvantages of essay tests to the learners

- Marking is subjective
- Can present problems to learners with difficulties in language

- A small content area of the syllabus is assessed/evaluated
(3 x 1 = 3 marks)

SECTION B

7. a) i.

- Suitable scale; 1
- Labeling; 1
- Correctly plotted points; 1
- Smooth curve; 1

ii. $\frac{34.5(0.5) - 13.5(0.5)}{19 - 12} = 2.857\text{cm/day}$
 $= 3.143\text{cm/day};$
 Deny 1 mark if units not indicated

- iii. Between day 10 and day 15; (1 mark)
 iv. Mixing with ash; dust with insecticide; smoking; drying (2 x 1 = 2 marks)

8. a) The plastic materials are non biodegradable (1 mark)

- b) Prevent oxygen from entering the water making it unsuitable for plant and animal life. (1 mark)
 c) Damage to the eardrum (1 mark)

9. a) Air occupies space.

- b) Air in the bottle will escape; water will flow into the bottle to replace the air. (2 marks)
 c) Air exerts pressure: Air expands when heated: Air has weight: Air has no definite shape (1 mark)
 d) When filling containers with liquids. (1 mark)

10. a) Meteors and comets

b) Characteristics of amphibians

- Cold blooded
- Have no scales
- Moist skin
- Lay eggs in shallow water
- Adult amphibians breath by lungs, moist skin and mouth cavity
- Young amphibians (tadpoles) breath by gills
- Live partly in water and partly on land.

(3 x 1 = 3 marks)

11. a) Disadvantages of vegetative propagation.

- Breeding of new varieties is difficult
- Cannot be stored for long without losing viability
- Bulky and difficult to handle, store and transport
- Diseases/pests are easily transmitted to the new plants
- It gradually reduces the strength and vigour of succeeding generations of plants.

(3 x 1 = 3 marks)

b) i. Inclined plane

It makes work easier by reducing the effort used to do the work but through a longer distance.

(1 mark)

ii. Uses of inclined planes

- To lift/transport heavy objects
- Split objects(cut)
- Fasten objects together

12. a)

- Temperature – increase in temperature increases speed of sound and vice versa
- Humidity – increase in humidity increases speed of sound and vice versa.
- Direction of wind.

b) Advantages of hard water

- Contains magnesium and calcium which are essential for strong bones
- It is tasty

13. i. Adrenal gland

ii. Antidiuretic hormone

14. a) Physical properties of CO₂

- It is denser than air
- It sublimes at 78°
- It is poisonous
- It turns moist blue litmus paper red
- It has a pleasant taste

(2 x 1 = 2 marks)

b) Carbonate: Chalk dust

Magadi

Baking powder

(1 x 1 = 1 mark)

Acid; Lemon juice

Car battery acid

Vinegar

(1 x 1 = 1 mark)