

ST ARNOLD'S CENTRAL SCHOOL, PUNE
PERIODIC TEST - 3, 2018-19
SUBJECT: SCIENCE

STD :X

MM : 50

General Instructions:

- (i) The question paper comprises of five sections – A, B, C, D and E. You are to attempt all the sections.
 - (ii) All questions are compulsory.
 - (iii) Internal choice is given in sections B, C, D and E.
 - (iv) Question number 1 in Section-A is one mark question. It is to be answered in one word or in one sentence.
 - (v) Question numbers 2 to 6 in Section- B are two marks questions. These are to be answered in about 30 words each.
 - (vi) Question numbers 7 to 12 in Section-C are three marks questions. These are to be answered in about 50 words each.
 - (vii) Question numbers 13 to 15 in Section-D are 5 marks questions. These are to be answered in about 70 words each.
 - (viii) Question numbers 16 to 18 in Section- E are based on practical skills. Each question is a two marks question. These are to be answered in brief.
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SECTION A

1. Why is sexual reproduction considered to be superior to asexual reproduction in terms of evolution?(1)

SECTION B

2.a. the radius of curvature of a spherical mirror is 20 cm. What is its focal length?

b. Why do we prefer a convex mirror as a rear view mirror?(2)

3.a. State the Snell's law of refraction.

b. The refractive index of diamond is 2.42. What is the meaning of this statement?

OR

a. Define absolute refractive index.

b. Light enters from air to glass having refractive index 1.50. What is the speed of light in the glass? (2)

4. An atom has electronic configuration 2, 8, 7.

i. Identify the element and write its atomic number.

ii. Name any one element which shows similar chemical properties with the above element.(2)

5. Lithium, Sodium, Potassium are all metals that react with water to liberate hydrogen gas.

Is there any similarity in the atoms of these elements? Explain your answer.

OR

Name any two elements you would expect to show chemical reaction similar to that of Magnesium. What is the basis of your choice? (2)

6. List any four reasons for vegetative propagation being practised in the growth of some type of plants.

OR

State the role of placenta in the development of embryo. (2)

SECTION C

7. a. State a cause of refraction of light.

b. For which position of the object, a convex lens forms a virtual and erect image? Explain with the help of a ray diagram. (3)

8. a. Define power of lens.

b. A convex lens forms a real and inverted image of a needle at a distance of 50 cm from it.

Where is the needle placed in front of the convex lens if the image is equal to the size of the object? Also find the power of the lens.

OR

An object 5 cm in length is placed at 25 cm away from a converging lens of focal length 10 cm.

Find the position, size and nature of the image formed. Draw a ray diagram for the same. (3)

9. Identify the element in the following:-

a. It has two shells, both of which are completely filled.

b. It has a total of three shells, with four electrons in its valence shell.

c. It has thrice as many electrons in its second shell as in its first shell. (3)

10. a. How does the electronic configuration of an atom relate to its position in the modern periodic table?

b. Explain Dobereiner's law of triads with suitable example.

OR

How do the following change?

- i. Number of shells of elements as we go down a group?
- ii. Number of valence electrons of elements on moving from left to right across a period?
- iii. Atomic radius on moving from left to right across a period? (3)

11. Name the two types of germ-cells present in human beings. How do they structurally differ from each other? Give two differences.

OR

- a) List the reasons for adopting contraceptive methods.
- b) If a woman is using Copper-T, will it help in protecting her from sexually transmitted diseases? If Yes/No, Why? (3)

12. Mr. R. Sharma was suffering from various types of diseases presently. He went for thorough health checkups and was diagnosed as HIV+ve. Soon this news spread in his neighborhood and on account of this, he faced social isolation.

Comment upon:-

- i. Do you think people's indifference towards HIV+ve people is justifiable?
What kind of approach should we have towards the persons suffering from AIDS.
- ii. How can one protect oneself from these diseases? (3)

SECTION D

- 13.a. If the image formed by a lens is diminished in size and erect, for all positions of the object,
What type of lens is it?
- b. Name the point on the lens through which a ray of light passes undeviated.
- c. A doctor has prescribed a corrective lens of power + 1.5 D. Find the focal length of the lens.
Is the prescribed lens converging or diverging?

OR

a. Name the type of mirror used in the following situation:-

i. Headlights of the car.

ii. To see a full-length image of a tall building.

iii. Solar furnace.

b. An object 4 cm in size, is placed at 25 cm in front of a concave mirror of focal length 15 cm. At what distance from the mirror should a screen be placed in order to obtain a sharp image ? Find the nature and size of the image (5)

14 a. Why did Mendeleev have gaps in his periodic table?

b. State any three limitations of Mendeleev's classification.

c. Why do you think the noble gases are placed in a separate group?

OR

a. State Modern periodic law.

b. An element X of group 15 exists as diatomic molecule and combines with hydrogen at 373 K in presence of the catalyst to form a compound ammonia, which has a characteristic pungent smell.

i. Identify the element X.

ii. Write its electronic configuration.

iii. How many valence electrons does it have?

iv. Identify the period in which it is placed in modern periodic table. (5)

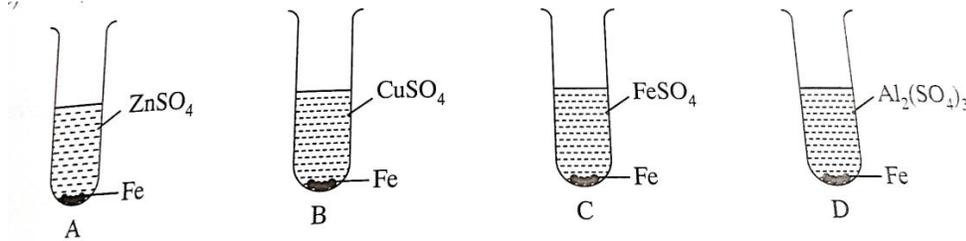
15. Define the terms pollination and fertilization. Draw a diagram of a pistil showing pollen tube growth into the ovule and label them.

OR

Describe in brief the role of (i) testis (ii) seminal vesicle, (iii) vas deferens (iv) urethra and (v) prostate gland in human male reproductive system (5)

SECTION E

16. Iron filings are added in four test tubes containing aqueous solution of A) ZnSO_4 , B) CuSO_4 , C) FeSO_4 and D) $\text{Al}_2(\text{SO}_4)_3$ as shown below. In which test tube(s) reaction will not occur and why?



(2)

17. a. A ray of light is passing through the principal focus of a convex lens. How will it emerge after refraction through the lens.

b. What is the nature of an image formed by a thin convex lens for a distant object?

OR

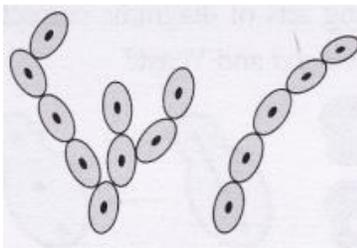
An optical device has been given to a student and he determines its focal length by focusing the image of the sun on a screen placed at 24 cm from the device on the same side of the sun.

a. Name the optical device

b. Find its focal length.

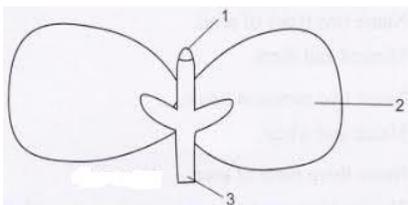
(2)

18. Write any four comments about the figure observed in the slide.



OR

What does the following diagram illustrate? Name the parts labeled as 1, 2 and 3 in the diagram.



(2)