

केन्द्रीय माध्यमिक शिक्षा बोर्ड, दिल्ली
Central Board of Secondary Education, Delhi

Fictitious Roll No.
(To be entered by Board)

(परीक्षार्थी भरें To be filled in by the candidate)

परीक्षार्थी प्रश्न-पत्र के ऊपर लिखे कोड को दर्शाये गये बाक्स में ही लिखें
Candidate should write code no. as written on the top of the question paper in this box

⇒ 31/3

अतिरिक्त उत्तर-पुस्तिका (ओं) की संख्या
No. of supplementary answer-book (s) used

⇒ Nil

परीक्षा का नाम Name of the examination AISSE-2011

कक्षा Class X

विषय Subject Science (086)

परीक्षा का दिन एवं तिथि
Day & Date of the Examination Wednesday 23.03.2011

उत्तर देने का माध्यम Medium of answering the paper English

किसी शारीरिक अक्षमता से प्रभावित हो तो सम्बन्धित वर्ग में ✓ का निशान लगाये।

B	D	H	S	C
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B=Blind, D=Deaf & Dumb, H=Physically Handicapped, S=Spastic, C=Cerebral Palsy

If Physically challenged, tick the category

B=Blind, D=Deaf & Dumb, H=Physically Handicapped, S=Spastic, C=Cerebral Palsy

क्या लेखन - लिपिक उपलब्ध कराया गया है / नहीं
Whether writer provides : Yes / No

Section B

6 (A) II, III, IV, I

27 (C) II, III, IV, I

28 (D) two times - before soaking and after soaking for three hours.

29 ~~(A) white~~ (C) dark brown

30 (B) II, I, IV, III

31 (C) CD

32 (D) IV

33 (A) III, I, II, IV

34 (A) towards the screen

35 (D) A screen, a mirror, holders for them and a scale.

36. (B) blue to light green

37. (A) aluminium is more reactive than zinc

38. (A) pungent like vinegar

39. (B) vigorously with effervescence.

40. (C) III

41. (B) only oval.

Section A

23. (a) The ability of a lens to converge or diverge light rays is the power of the lens. It is ~~defined~~ defined as the reciprocal of focal length taken in metres.

Power, $P = \frac{1}{\text{focal length (m)}}$

- (b) The S.I. unit of power of a lens is Diopetre (D).
A lens is said to have a power of +1 Diopetre if it has a focal length of +1 metre.
- $$+1 \text{ D} = \frac{1}{+1 \text{ m}}$$

23. (c) Focal length of convex lens = +25 cm
= $\frac{25}{100}$ m
= 0.25 m.

∴ Power of convex lens

$$P_1 = \frac{1}{+0.25} = +4D$$

Focal length of concave lens = -10 cm
= $\frac{-10}{100}$ m

$$= -0.1 \text{ m}$$

∴ Power of concave lens

$$P_2 = \frac{1}{-0.1} = -10D$$

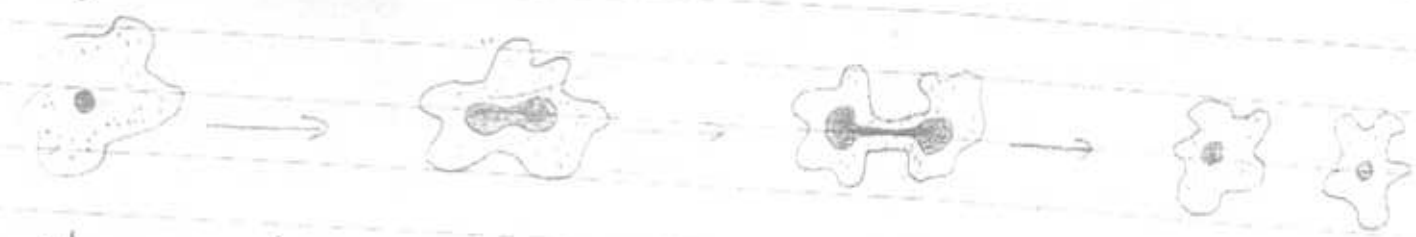
∴ The resultant power,

$$P = P_1 + P_2 = +4D - 10D = -6D$$

∴ The lens power of this combination is $\boxed{-6D}$.

4. Binary fission in organisms is defined as the process of reproduction in which an organism divides into two equal parts that grow to become separate individuals. Amoeba, Euglena, Leishmania etc show this type of reproduction.

Binary fission in Amoeba :-



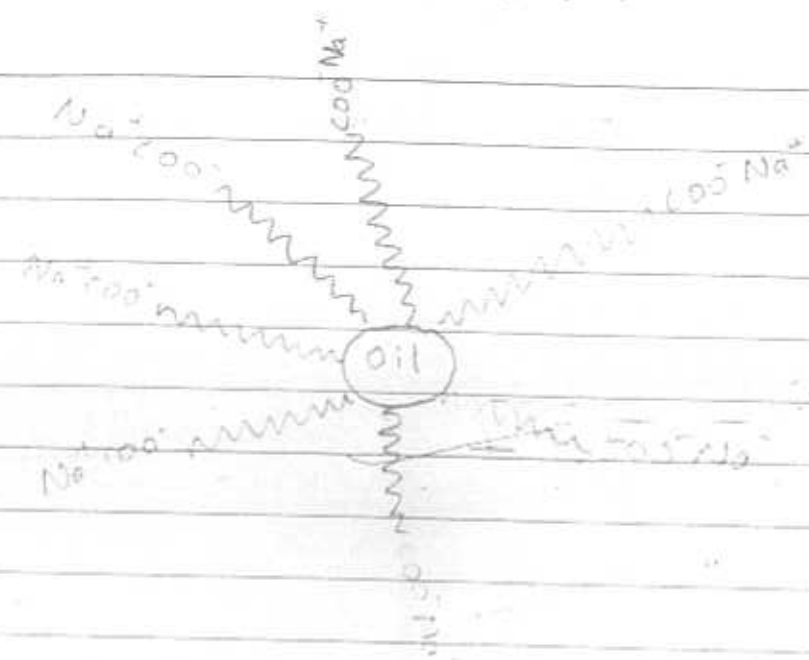
- Amoeba performs binary fission. The process takes place in the following steps :-
- DNA copying is done along with the division of nucleus.
 - Nuclear division is followed by cytoplasmic division.
 - The cell membrane forms a constriction and ultimately two new daughter cells are formed.
 - As amoeba is irregular, division can occur along any axis without any specification.

25. (a) Two properties of carbon leading to a wide variety of carbon compounds are :-

- Catenation :- Carbon has a unique property to link with other carbon atoms by single, double or triple bonds to form long chains, branches and cyclic ~~struc~~ structures. This is known as catenation.

- Tetravalency :- The valency of carbon is 4. Hence, each carbon atom in a carbon compound can link with 4 other atoms of carbon, hydrogen or any other element. This leads to ~~a~~ the formation of a wide variety of compounds.

(b) Soap has a hydrophobic end and a hydrophilic end. The hydrophobic end dissolves in oil and the hydrophilic or ionic end dissolves in water. This makes a link ~~to~~ between oil and water leading to ~~o~~ formation of structures known as micelles.



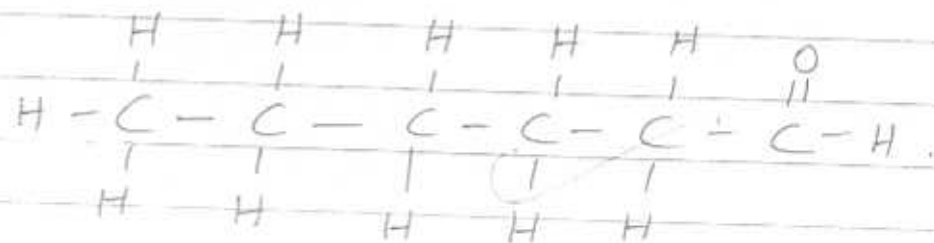
micelle

Ethanol is less polar than water and does not dissolve the ionic end. Hence, micelles are not formed when soap is ~~so~~ added to ethanol.

1. Two decomposers operating in our environment are bacteria and fungi.

2. Biodegradable wastes refer to the ~~wat~~ wastes that can be acted upon and decomposed by the decomposers present in soil. Ex- paper, jute etc.

3. $C_5H_{11}CHO$:-



4. Water droplets suspended in the air act as prisms in the formation of rainbow in the sky.

5. Four disadvantages of using fossil fuels for the production of energy are :-

- It is They are limited in quantity. So, they may get exhausted in the future days.
- Burning of fossil fuels leads to the formation of carbon dioxide which is responsible for ~~po~~ global warming.
- Incomplete combustion of fossil fuels leads to their wastage along with the emission of carbon monoxide which is toxic for humans.
- Burning of traces of sulphur and nitrogen present in fossil fuels results in the formation of oxides of sulphur and nitrogen which lead to acid rain.

6. (i) Wind energy and tidal energy are two renewable sources of energy.

(ii) Coal and petroleum are non-renewable sources of energy.

7. Size of atoms of elements increasing increases down a group in the periodic table.

As we go down the group, new shells are added. This addition of new shells is responsible for the increase in atomic size down the group.

8. Elements with atomic number 12 (Magnesium) and 38 (Strontium) have physical and chemical properties similar to those of Calcium (at. number 20).

This is because they are present in the same group and have the same number of valence electrons.

9. Four characteristics of image formed by a plane mirror are :-

- The image is virtual and erect.
- The image has the same size as the object.
- Image Distance of the image from the mirror

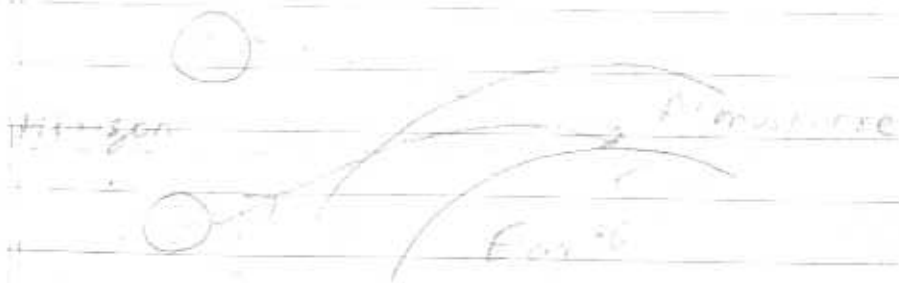
is the same as the object.

- The image formed by a plane mirror is laterally inverted.

10. Spectrum is defined as the band of different colours formed by the splitting up of light into its component colours.

Different colours of light have different wavelengths. ~~with~~ The refractive index of a medium is different for different wavelengths of light. Therefore, different coloured rays deviate differently on passing through a glass prism.

11.



We are able to observe the sun about two minutes before the sun gets above horizon.

Before reaching the earth's surface, the sun rays pass through the atmosphere that has gradually changing refractive index. Hence, the light rays bend towards normal and appear to come from a point above horizon, even though the sun remains below the horizon.

12. Four reasons for vegetative propagation being practised in the growth of some types of plants are :-
- Some plants have lost their ability to form seeds. Vegetative propagation forms the reason as a method for reproduction for these plants.
 - Some methods like tissue culture provide a disease free environment for the growth of the plants.
 - There is no chance of any variations in plants reproduced by vegetative propagation.
 - By vegetative propagation, plants like grapes, banana

rose and ornamental plants can be successfully grown.

13

An ~~embro~~ embryo gets its nourishment inside the mother's body with the help of the link known as placenta. Placenta is a disk like structure ^{with projections} in the side of the embryo ~~and~~ to increase the ~~the~~ surface area. This disc has a rich supply of blood from the mother for providing nutrition oxygen and nutrition to the embryo. Even, the excretory wastes of the embryo is transferred through placenta.

14. The experiment conducted by Miller and Urey and the contribution of J.B.S. Haldane provide evidence of life from inanimate matter.

- J.B.S. Haldane suggested this theory of origin of life from non-living matter. He asserted that condition of atmosphere in the Earth millions of years ago was far from today. In such a situation, life could be formed.

- In the experiment of Miller and Urey, they prepared a vessel ~~containing~~ containing the assumed gases and, temperature and pressure conditions millions of years ago. Within a ~~week~~ week, traces of amino acid ~~was~~ were formed which are basic units of protein.

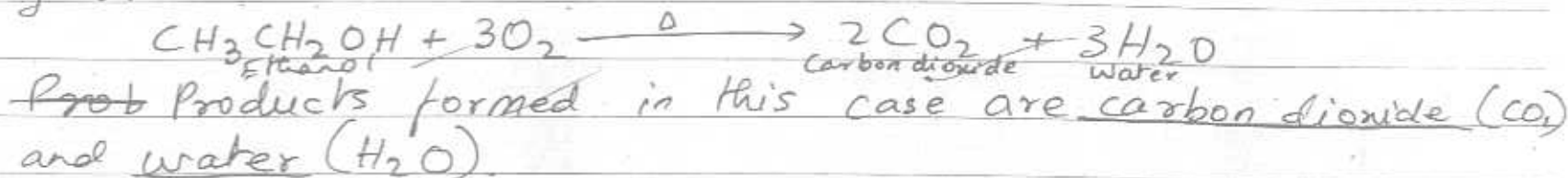
15. Homologous organs are the organs of different organisms having similar structure and origin, but different functions. Ex - limbs of man, lizard, horse and whale.

Winds wings of butterfly and bats have a different structure. Wings of butterfly are like a membrane, whereas ~~to~~ wings of bats are stretched skin folds between fingers. But, they have a similar function of flight. Hence, the wing of a butterfly and the wing of a bat cannot be regarded as homologous, rather, they are analogous.

16. There can be two types of oxidation of ethanol:-

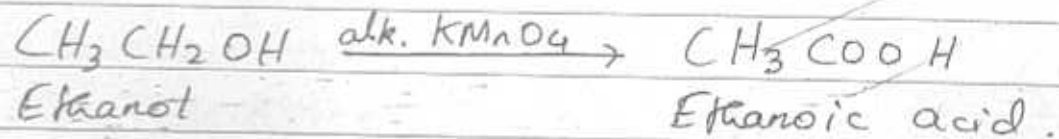
- Complete oxidation -

This involves combustion ~~with~~ with the help of oxygen gas.



• Partial combustion :-

In this reaction, ethanol is oxidised by an oxidising agent.



Hence, ethanoic acid (CH_3COOH) ~~are~~ is formed as a product.

17. Atomic number of the given element is 16.
Hence, its electronic configuration is 2, 8, 6.

(i) ~~(a)~~ the number of valence electrons in its atom ~~is~~ are 6.

(ii) ~~(b)~~ Valency of the element is 2.

(iii) ~~(c)~~ Its group number is 16.

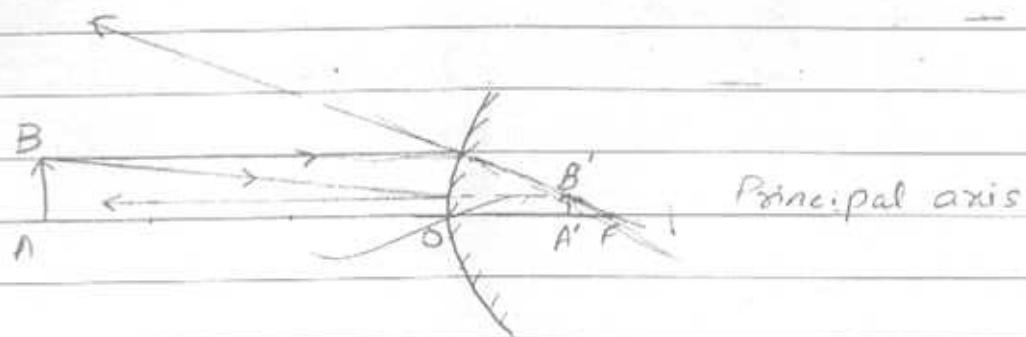
(iv) It is a non-metal.

(v) It forms acidic oxides.

(vi) Let the element be X.

Its formula of chloride is XCl_2 .

18.

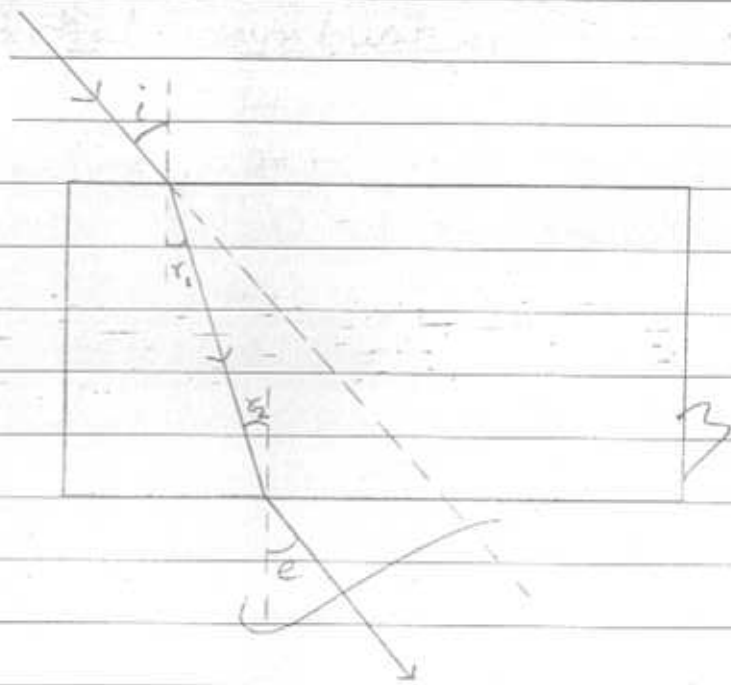


Position :- The image is formed behind the mirror between pole and focus.

Relative size :- The image is smaller than the object.

Nature :- The image formed is virtual and erect.

19.



Here, the emergent ray is parallel to the incident ray.

As the sides of glass slab are parallel, the angle of ~~refra~~ refraction in the first surface is equal to angle of incidence of the second.

$$r_1 = r_2$$

From Let the R.I. of the glass slab = μ .

By Snell's law,

$$\frac{\sin i}{\sin r_1} = \mu \quad [\text{For first surface}]$$

$$\text{Again, } \frac{\sin r_2}{\sin e} = \frac{1}{\mu} \quad [\text{For second surface}]$$

$$\text{or } \frac{\sin i}{\sin r_1} \times \frac{\sin r_2}{\sin e} = \mu \times \frac{1}{\mu} = 1$$

$$\text{or } \frac{\sin i}{\sin r_1} \times \frac{\sin r_1}{\sin e} = 1 \quad [r_1 = r_2]$$

$$\text{or } \sin i = \sin e$$

$$\Rightarrow i = e$$

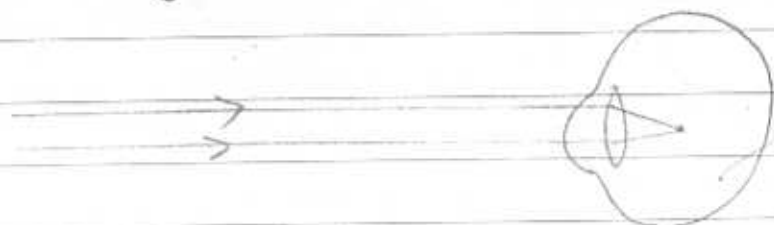
\therefore Angle of incidence = Angle of emergence.

Therefore, incident ray is parallel to emergent ray in a glass slab.

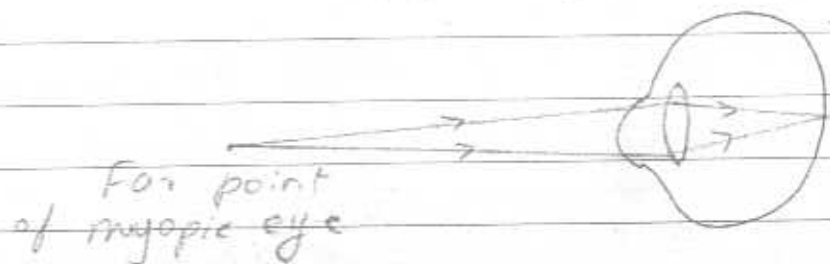
A virtual image is obtained by producing light ray backward. This is known as principle of reversibility of light.

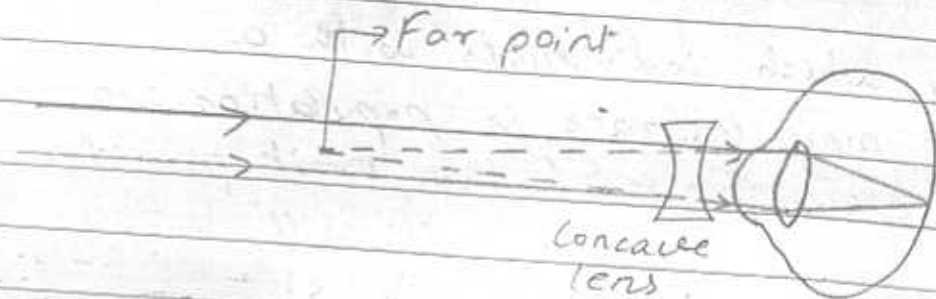
20. (a) Value of near point = 25 cm
Value of far point = Infinity,
for a normal adult eye.

(b) A student has difficulty in reading the blackboard while sitting in the last row. He must be suffering from myopia or short-sightedness.



Myopic eye





Correction for myopic eye

21. HIV stands for Human @ Immuno Virus. It is responsible for spreading AIDS. AIDS is an infectious infectious disease.

Four methods of spreading AIDS are :-

- By sexual contact between a healthy and an infected individual.
- By transfer of blood from an infected person @ to a healthy person.
- By body fluid contact between healthy and infected person.
- @ Through the use of infected syringes, scissors etc.

22. Three ways by which individuals with a particular trait may increase in population are:-

- By natural selection - If the trait provides better survival ~~adv~~ advantage, it will survive and the others will perish more easily.
- By accidents - Even if a trait does not provide any survival advantage, its frequency can increase in population. Accidents such as floods can kill most of the population and the few organisms living may have a common trait.
- By environmental factors :- Environment factors ~~are~~ also influence the frequency of a trait in a population. Reduction in the availability of prey can reduce the weight of organisms in a population temporarily. It is also a trait.

Instructions to Candidates

1. Make sure that the answer book contains 25 pages. (10)

2. Do not write anything on the question paper.

3. Do not use a calculator.

4. Do not use a ruler.

5. Do not use a compass.

6. Do not use a protractor.

7. Do not use a set square.

8. Do not use a pair of compasses.

9. Do not use a pair of dividers.

10. Do not use a pair of forceps.

11. Do not use a pair of tweezers.

12. Do not use a pair of pliers.

13. Do not use a pair of scissors.

14. Do not use a pair of nail clippers.

15. Do not use a pair of nail polish.

16. Do not use a pair of nail brushes.

17. Do not use a pair of nail files.

18. Do not use a pair of nail buffers.

19. Do not use a pair of nail polish removers.

20. Do not use a pair of nail polish strengtheners.

21. Do not use a pair of nail polish top coats.

22. Do not use a pair of nail polish base coats.

23. Do not use a pair of nail polish primers.

24. Do not use a pair of nail polish dehydrators.

25. Do not use a pair of nail polish cleansers.