

Science

Date of Exam ...I.D.....

INSTRUCTIONS

1. DO NOT WRITE ON THE BACK OF THE TITLE PAGE.
2. Write on both the sides of the paper leaving margin in left hand side only.
3. Do not tear /remove any page of this book.
4. Do not write anything on question paper, foot-rule.
5. This book must be returned to the Supervisor before leaving the examination-hall, even if no question has been attempted.

TO BE FILLED IN BY THE EXAMINER ONLY

TOTAL

Q.No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Marks																
Q.No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Marks																
Q.No.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
Marks																

Grand Total

190/80

Signature of Checker

Signature of Examiner

1. The technique used by totally hearing impaired (deaf) to communicate with others effectively is sign language.

1. 2. The gas produced at

a) Positive graphite electrode (Anode) - Oxygen $\frac{1}{2}$

b) Negative graphite electrode (Cathode) - Hydrogen $\frac{1}{2}$

1. 3. Duralumin is the alloy having aluminium in it, used for making aircraft bodies.

1. 4. The two major sources of water pollution are:-

i) Sewage $\frac{1}{2}$

ii) Industrial waste $\frac{1}{2}$

1. 5. The type of combustion which takes place when sodium is exposed to air is spontaneous combustion.

1. 6. Pituitary gland controls the secretion of testosterone from testes.

1. 7. Viruses show the characteristics of living organisms when they come in contact with suitable plant, animal or bacteria. They infect the cell and quickly multiply inside it.

30.

8. A disease called 'Late Blight' was caused by a fungus in the Irish Famine of 1740-41.

9. The ray of light bends towards the normal because when a ray of light goes (obliquely) from an optically rarer medium to an optically denser medium (water) it bends towards the normal. It is one of the two rules of refraction of light.

b)

ii)b

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10. The rods help in vision in dim light conditions (scotopic vision) and the cones enable colour vision or vision in bright light conditions.

b)

11. a) Jupiter has largest number of natural satellites. $\frac{1}{2}$

b) Halley's comet visits the earth every 76 years. $\frac{1}{2}$

c) Alpha Centauri is the third brightest star in the night sky. $\frac{1}{2}$

d) Cassiopeia is a constellation shaped like a distorted form of W or M. $\frac{1}{2}$

12. → Geostationary satellites receive a microwave signal from the ground stations on earth (the up link).

→ The amplifiers then amplify it. The transmitters transmit the amplified signal back to earth (the down link).

→ The geostationary satellites have a revolution period of 24 hours. They have made global audio-visual communication possible. The satellites are fixed with respect to a location on earth so the ground receiving station can not lose contact with receiver.

13. a) The fibre 'x' is rayon, also called 'artificial silk'.

b) Two uses of fibre 'x' (rayon) are:

→ It is used in surgical implements and tyro cords. Also used for making apparels.

2 → Rayon fibers are often mixed with wool, linen, cotton etc. It is mixed with cotton (to make bed sheets) and wool (to make blankets).

14. a) If the clothes of a person catch fire, the person should be immediately wrapped in a thick blanket to cut off the supply of air/oxygen. Oxygen is a supporter of combustion (coal and diesel)

b) Burning of coal and diesel causes acid rain because they produce sulphur dioxide gas. It is a highly poisonous gas. When it mixes with rain water, it forms sulphuric acid which causes acid rain.

15. a) Name - Mycoplasma / PPLO (Pleuro pneumonia like organism)

Size: 0.1 micron

b) Name: Astrich egg

Size: 170 mm in diameter.

16. a) The type of asexual reproduction in above case is budding.

b) Hydra and yeast reproduce by this method.

30.

17. a) Vaccine produces immunity to a disease by stimulating the production of antibodies.

2 b) The most common method of administering vaccines is by inoculation but some are given orally also.

18. Three precautions to take care of eyes are -

→ Have a regular check-up. If advised, use the right spectacles.

i) b)
ii) b

3 → Do not stare continuously at the television or computer screen. It causes eye strain.

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b)

→ Frequently wash your eyes with clean water. Eat a balanced and nutritious diet. Lack of vitamin A is the cause of many eye disorders like night blindness.

19. a) i) The process of getting the coating of a desired metal on another ~~sub~~ material through the passage of electric current (electrolysis) is called electroplating.

i) ii) The process of getting a pure metal from an impure one by the passage of electric current (Electrolysis) is called electrorefining. It is a process of purification of metal.

b) The cathode is the pure copper rod and anode is the impure copper rod in electrorefining of copper.

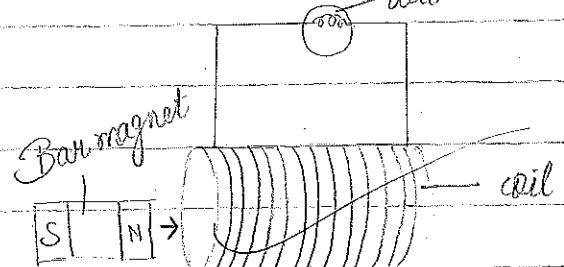
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- 20 → Take a hollow iron cylindrical pipe.
- Wind a large number of ^{turns of} insulated copper wire on the pipe. Take the two clean ends of the wire and connect it them to an LED / bulb.
- Introduce a bar magnet into the pipe. The bulb glows up momentarily. Remove the magnet outside the pipe. The bulb again glows up momentarily but stops glowing as soon as magnet and coil are at rest with respect to each other. This shows that we can get electrical energy using a magnet.

3



Electromagnetic induction

21. a) Metals in increasing order of reactivity:
~~Pt, Al, Cu, Na~~ Pt, Cu, Al, Na * In reaction i) colourless
^{brown} solution and deposits of copper

- b) Reaction i) can take place in actual practice | it is found on Mg.

Magnesium is higher ^{than Cu} in the reactivity series, so it is more reactive. In a displacement reaction, a more reactive metal displaces a less reactive metal in the aqueous solution of its salt. (The reactivity series is the series of metals arranged in decreasing order of their reactivity). The ii) reaction will not take place at all as it is Cu is less reactive than Mg. *

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K
Na
Ca
Mg
Al
Zn
Fe
Sn
Pb
Cu
Hg
Ag
Au
Pt

30.

22. Three changes in the normal properties of water, which can be used to recognise presence of pollutants in it are -

→ Bad taste of drinking water. Different odour of water in rivers and lakes.

3 → Oil or grease floating on the surface of water.

→ Decrease in the number of fish in rivers, lakes and oceans.

b)

23. Three conditions that are necessary for combustion are -

→ There must be a combustible substance.

2) → There must be continuous supply of air/oxygen.

3) → The temperature of combustible substance should be greater than its ignition temperature
be careful while examining 1/2

b)

24.

Plant Cell

→ Cell wall is present, therefore its shape is fixed.

3) → Plastids are present.

→ Large-sized vacuoles are present.

Animal Cell

→ Cell wall is absent, therefore shape is irregular/not fixed.

→ Plastids are absent.

→ Vacuoles are either too small or are not present.

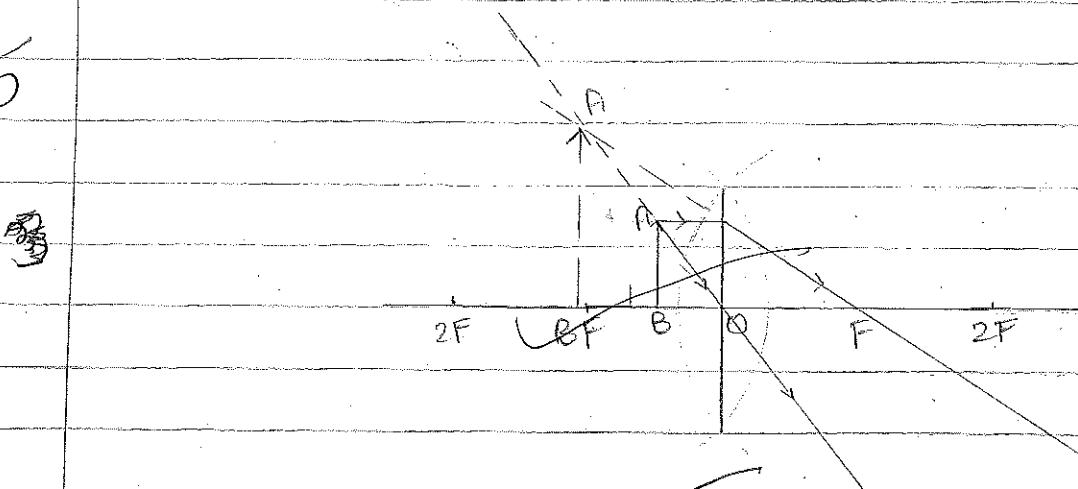
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25. a) Jams and jellies are usually preserved using a high concentration of sugar because sugar inhibits the growth of microorganisms. 1
- b) Milk is boiled before its use or storage as the high temperature during boiling kills many microorganisms. 1
- 3 c) Foods from puffed or enlarged cans should not be consumed as such cans indicate the spoilage of food and if consumed can cause diseases like food poisoning. 1

26. a) The type of lens is convex lens. 1
- b) The object is placed between the focus and optical centre of the lens. It is placed on the same side as the image (where it appears to be formed). 1

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3

Virtual, real, magnified image formed between F and 2F

27. a) The voice box or larynx is present in the throat. It is a tube-shaped organ which is the main organ for production of sound.
- It has two vocal cords stretched across it in such a way that there is a narrow gap or slit between them. Air can pass through this slit.
- The lungs force the air through this slit which cause the vocal cords to vibrate and produce sound.
- b) → The maximum displacement of a vibrating body on either side of its mean position is called amplitude.
- The characteristic of sound which depends on amplitude is loudness. Higher the amplitude, louder is the sound produced.

Property	Metals	Non-metals
a) Thermal conductivity	Metals are good conductors of heat and allow heat to pass through them with ease.	Non-metals are usually poor conductors of heat and do not allow heat to pass through them with ease.
b) Boiling point	Metals generally have high boiling points.	Non-metals usually have low boiling points.
c) Reaction with oxygen	Metals react with oxygen to form metallic oxides which are basic in nature. For e.g.: $Mg + O_2 \rightarrow MgO$	Non-metals react with oxygen to form non-metallic oxides which are acidic in nature.

Property	Metal	Non-metals
d) Reaction with water	Metals react with water to form their oxides/hydroxides and liberate hydrogen gas.	Non-metals generally do not react with water. Hence they are stored in water.
e) Reaction with acids	Metals react with acids to form metal salts and hydrogen gas.	Non-metals generally do not react with acids. Exception: Sulfur
29. a)	The full form of PET is Poly(ether terephthalate).	
b)	The type of plastic used in making handles of frying pan are thermosetting plastic (esp. melamine). Thermosetting plastic (melamine) is flame resistant and can tolerate heat better than other plastics. They cannot be remoulded on heating and are poor conductors of heat and electricity.	
c)	Thermoplastic: Polythene, Polyvinyl chloride Thermosetting plastic: melamine, bakelite.	$\frac{Y_2}{2} + \frac{Y_2}{2}$ $\frac{Y_2}{2} + \frac{Y_2}{2}$

S

30. a) i) The fusion of gametes (sperm and egg) takes place inside the female body in the oviduct.
- The resultant single cell formed after fertilization is zygote. Over the next couple of days, the zygote divides and thus this cluster of cells makes its way to the uterus. It gets embedded in the lining of the uterus for further embryonic development.
- Therefore fertilization in humans is an example of internal fertilization.
- b) Three changes that take place in tadpole
- i) Earthworm is a hermaphrodite animal because it produces both types of gametes (sperm, male and female gametes). A single organism produces both types of gametes.
- 5
- b) Three changes that take place in the tadpole during its metamorphosis are -
- The tadpole initially has gills and a small circular mouth. As it undergoes metamorphosis, it develops hind legs followed by the front legs.
- Then the lungs develop and tadpoles start coming to the surface of water to breathe.
- The intestine shortens to adapt the organism to a carnivorous diet. The tail gets absorbed in the body and it changes into a tail-less frog.

31. a) A male plays an important role in determining sex of the child because → There are 46 chromosomes in the human body. The last pair is the sex chromosome. Gametes contain half the number of chromosomes as that of chromosomes occurring elsewhere in the body.

→ This means that an egg ~~which have~~^{will} have (22+X) chromosome and a sperm will have either (22+X) or (22+Y) chromosome. If the egg fuses with a (22+X) sperm, then resultant zygote will develop into female child and if it fuses with (22+Y) sperm, resultant zygote will develop into male child.

b) Three events that occur in the reproductive phase in human females if fertilization does not take place are -

→ One egg becomes mature in about 28 days. The uterus is a pear shaped organ present between the ovaries. It can grow, stretch & expand many times when fetus grows in it.

→ It prepares a lining of blood vessels to receive the egg. If fertilisation does not take place, the egg disintegrates and the blood lining is washed off.

→ This is termed as menstrual flow and the process is called menstruation. The first menstrual flow that begins in a girl at puberty, is called menarche.