FOR CLASS – 10 STUDENTS

PREPARED FOR THE YEAR 2021-22

AND

FOR THE SYLLABUS CONSIDERED FOR EVALUATION

EXAM PACKAGE

. . . . WAY TO SUCCESS

10TH SCIENCE

PREPARED BY:

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VISIT: https://Karnataka-scienceteam.blogspot.com

Prepared for the year 2021-22 and Reduced syllabus

EXAM PACKAGE

Target -50

Prepared by: SHASHIKUMAR B.S.

Sl. no.	Ch.no	Chapter name
01	01	Chemical reactions and equations
02	02	Acids, Bases and Salts
03	03	Metals and non metals (concpts 3.4 and 3.5 will not be considered for evaluation)
04	06	Life processes
05	07	Control and coordination
06	12	Electricity
07	13	Magnetic effect of electric current
08	15	Our environment
09	04	Carbon and its compounds (concepts 4.3, 4.4 and 4.5 will not be considered for evaluation)
10	05	Periodic classification of elements
11	08	How do organisms reproduce (concepts 8.1 and 8.2 will not be considered for evaluation)
12	09	Heredity and Evolution
13	10	Light: Reflection and Refraction
14	11	The Human eye and the colourful world (complete chapter will not be considered for evaluation)
15	14	Sources of Energy
16	16	Sustainable management of natural resources (complete chapter will not be considered for evaluation)

Smart work formula: how to prepare for target 50

1. Drawings - 16 marks
2. Electron dot structure/Hydrocarbon mol. Formula, str. formula and naming the compounds by using functional groups: 4 marks
3. Formulas for problem solving and important physical terms and SI units 4 marks
4. Balancing the equation- 2 marks
5. Differences of concepts- 4 marks
6. Remembering reactivity series of metals for various type questions: 2 marks
7. Listing out uses of chemical compounds: 2 marks
8. Important selected VSAs: 4 marks
9. Knowledge or understanding level-based answering min. five questions in 1or 2 or 3-mark questions: 12 marks

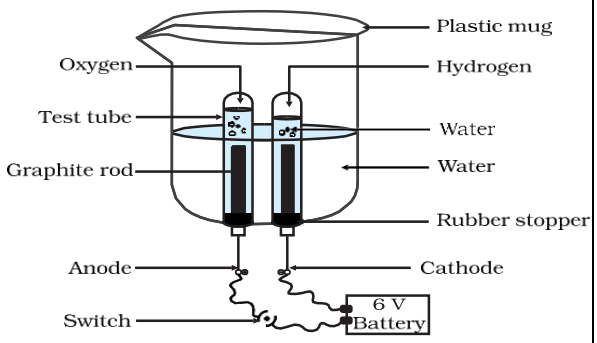
Total: 50

TYPES OF QUESTIONS

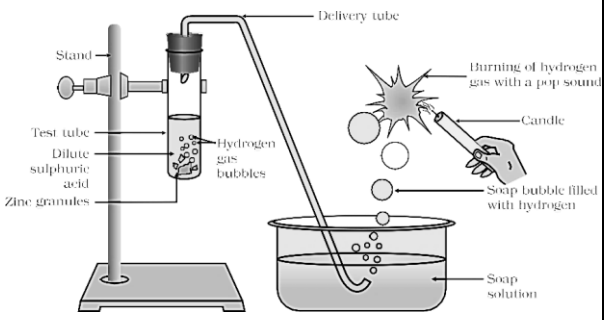
SL.NO	QUESTION TYPE	NO. OF QUESTIONS VS MARKS	TOTAL MARKS
1	Multiple Choice questions	8 x 1	8
2	One-mark questions	8 x 1	8
3	2-mark questions	8 x 2 (2 INTERNAL CHOICES)	16
4	3-marks questions	9 x 3 (4 INTERNAL CHOICES)	27
5	4-mark questions	4x4 (1 INTERNAL CHOICE)	16
6	5-mark question	5x1	5
Total		38 Questions	80 marks

1. Diagrams for practice

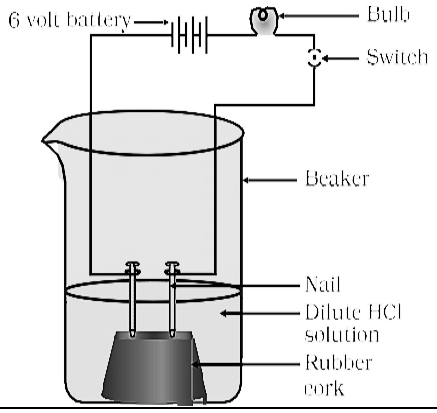
1. Electrolysis of water



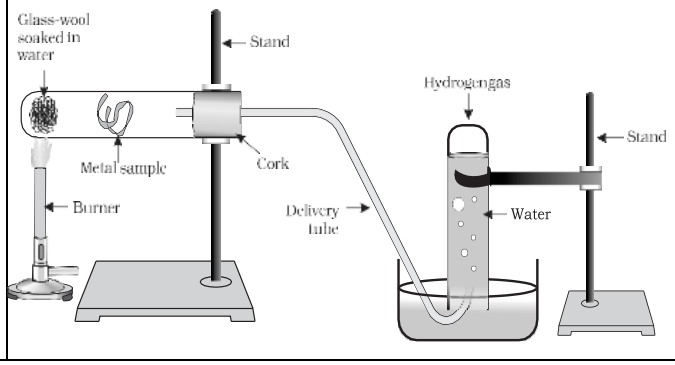
2. Reaction of zinc granules with dilute sulphuric acid and testing hydrogen gas by burning



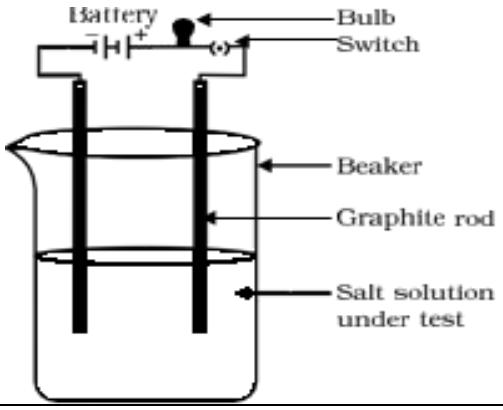
3. Acid solution in water conducts electricity:



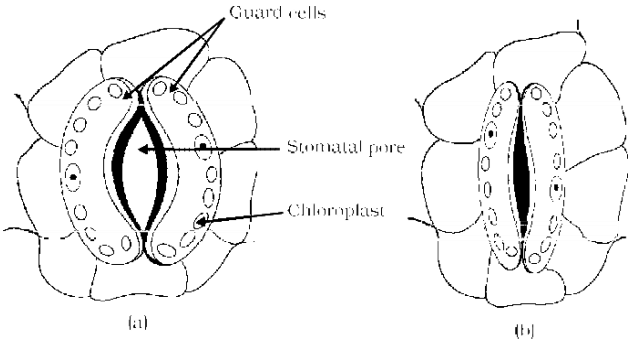
4. Action of steam on a metal:



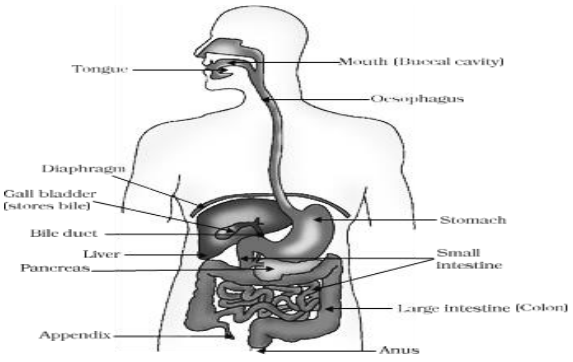
5. Testing the conductivity of a salt solution



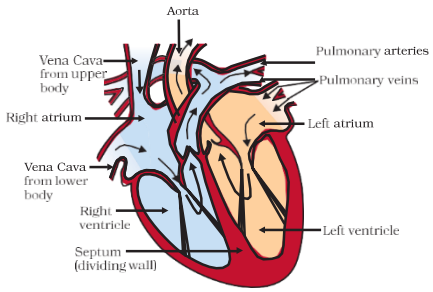
6. Open and closing of stomata



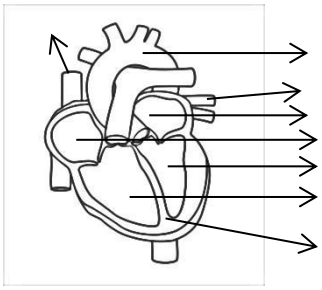
7. Human alimentary canal



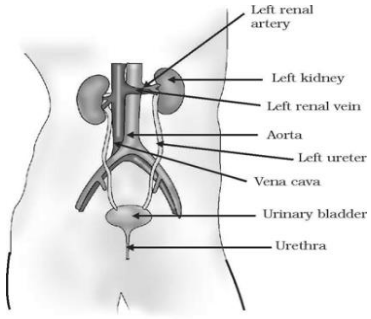
8. Schematic sectional view of the human heart

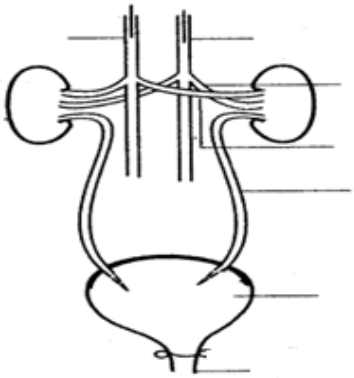


label the parts:

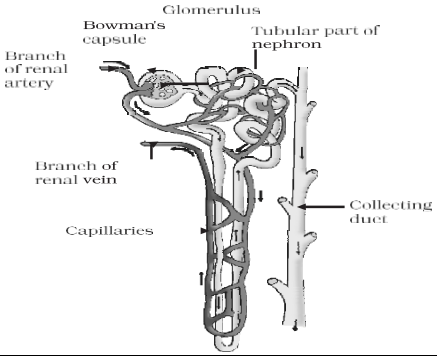


9. Excretory system in human beings

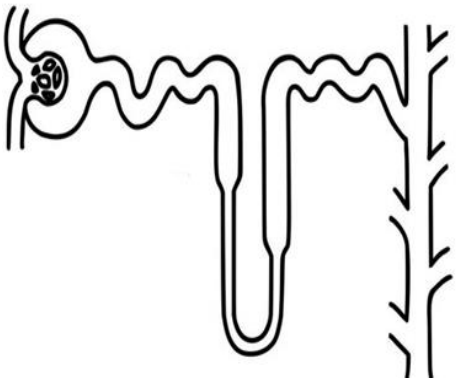




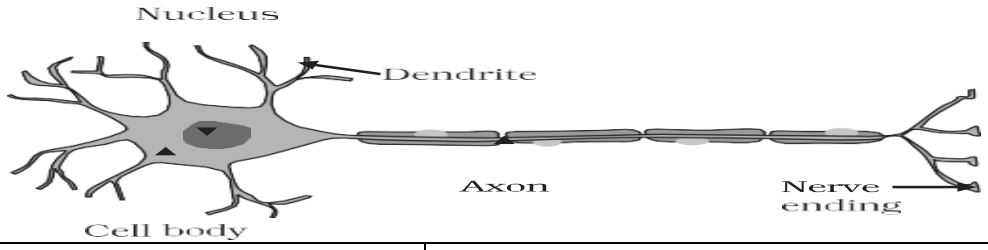
10. Structure of a nephron:



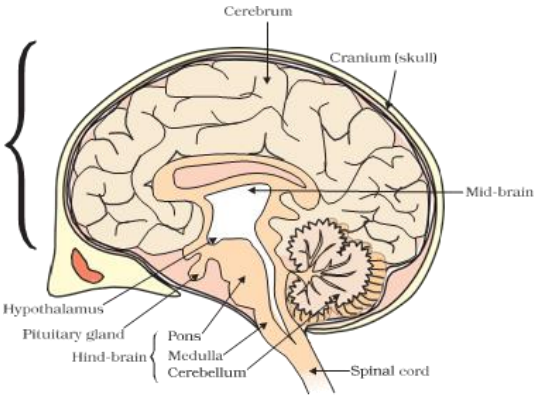
labell the parts



11. Structure of a Nephron:

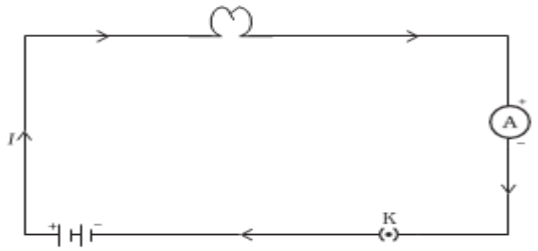


12. L.S. of human Brain



labell the parts.

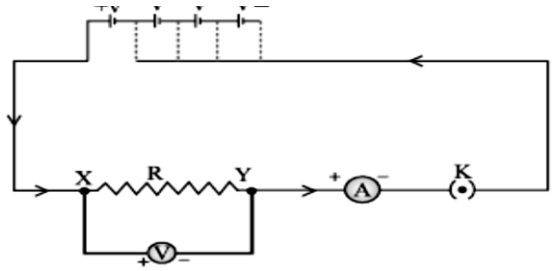
13. Schematic diagram of an electric circuit:



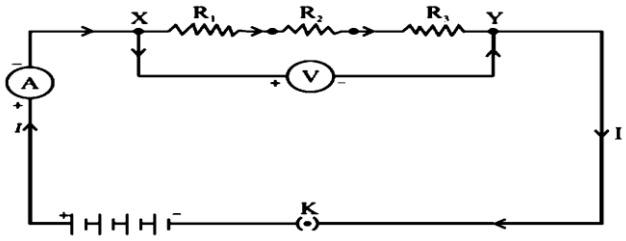
14. Symbols of some commonly used components in circuit diagrams

Sl. No.	Components	Symbols
1	An electric cell	
2	A battery or a combination of cells	
3	Plug key or switch (open)	
4	Plug key or switch (closed)	
5	A wire joint	
6	Wires crossing without joining	
7	Electric bulb	or
8	A resistor of resistance *R*	
9	Variable resistance or rheostat	or
10	Ammeter	A
11	Voltmeter	V

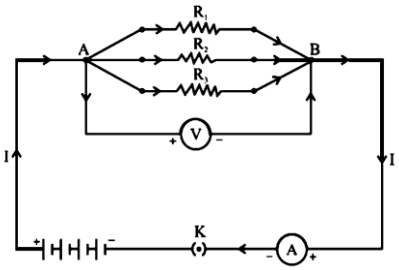
15. Electric circuit for studying Ohm's law



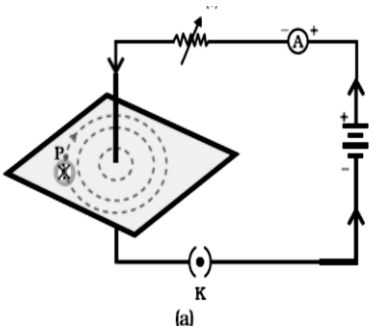
16. Resistors in series



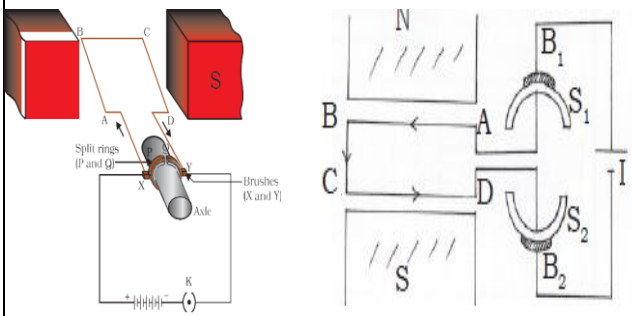
17. Resistors in parallel



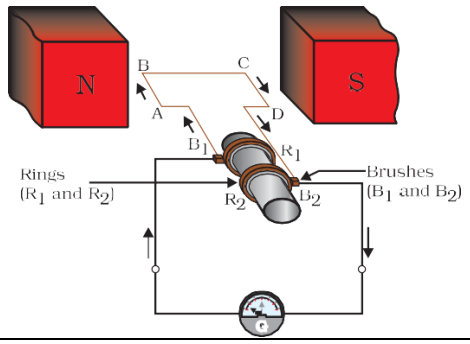
18. A pattern of concentric circles indicating the field lines of a magnetic field around a straight conducting wire.

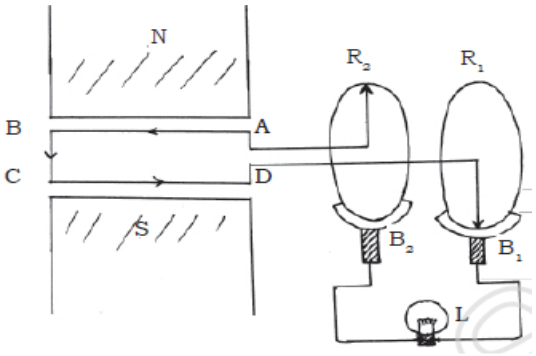


19. A simple electric motor:



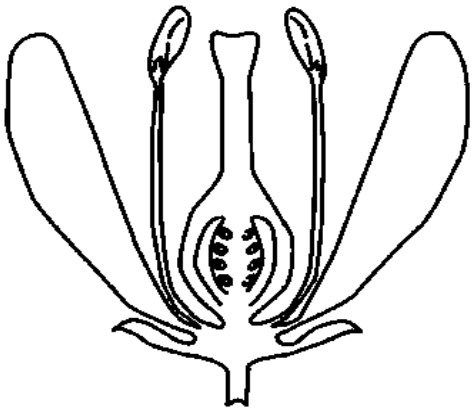
20. Illustration of the principle of electric generator



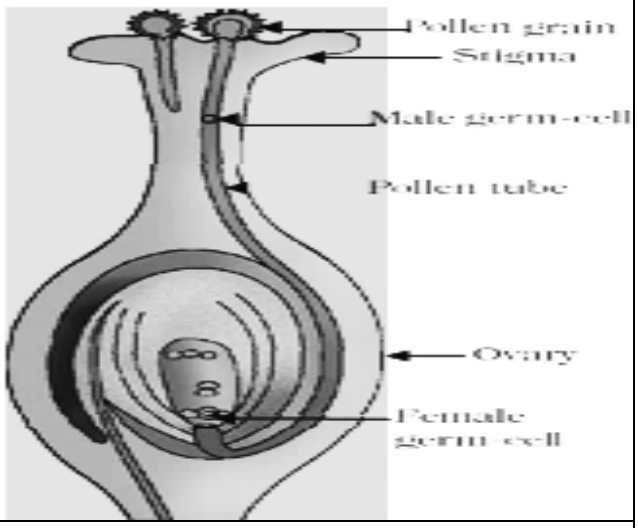


21. Longitudinal section of flower

Label the parts.

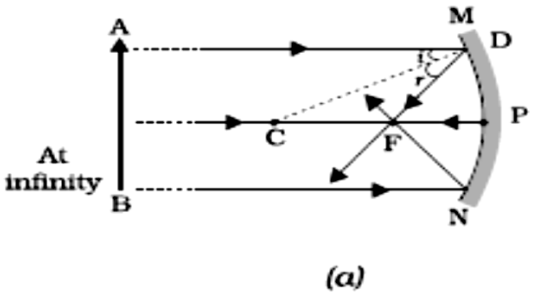


22. Germination of pollen on stigma

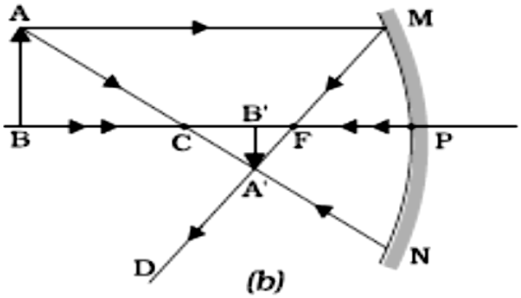


23. Ray diagrams for the image formation by a concave mirror

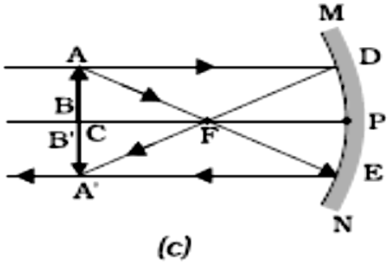
A	**At infinity**
B	**Beyond C**
C	**At C**
D	**Between C and F**
E	**At F**
f	**Between P and F**



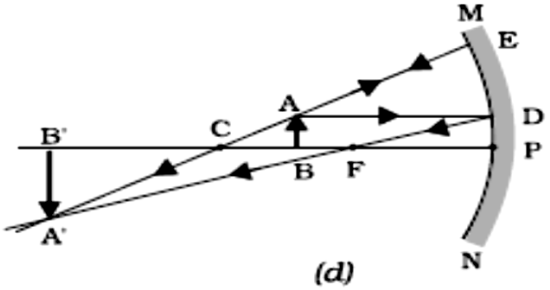
(a)



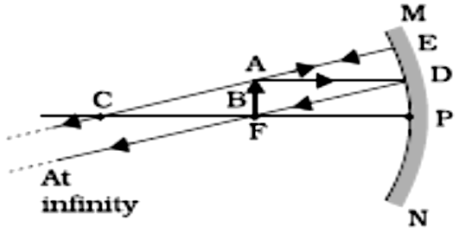
(b)



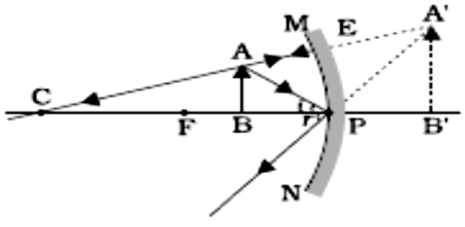
(c)



(d)



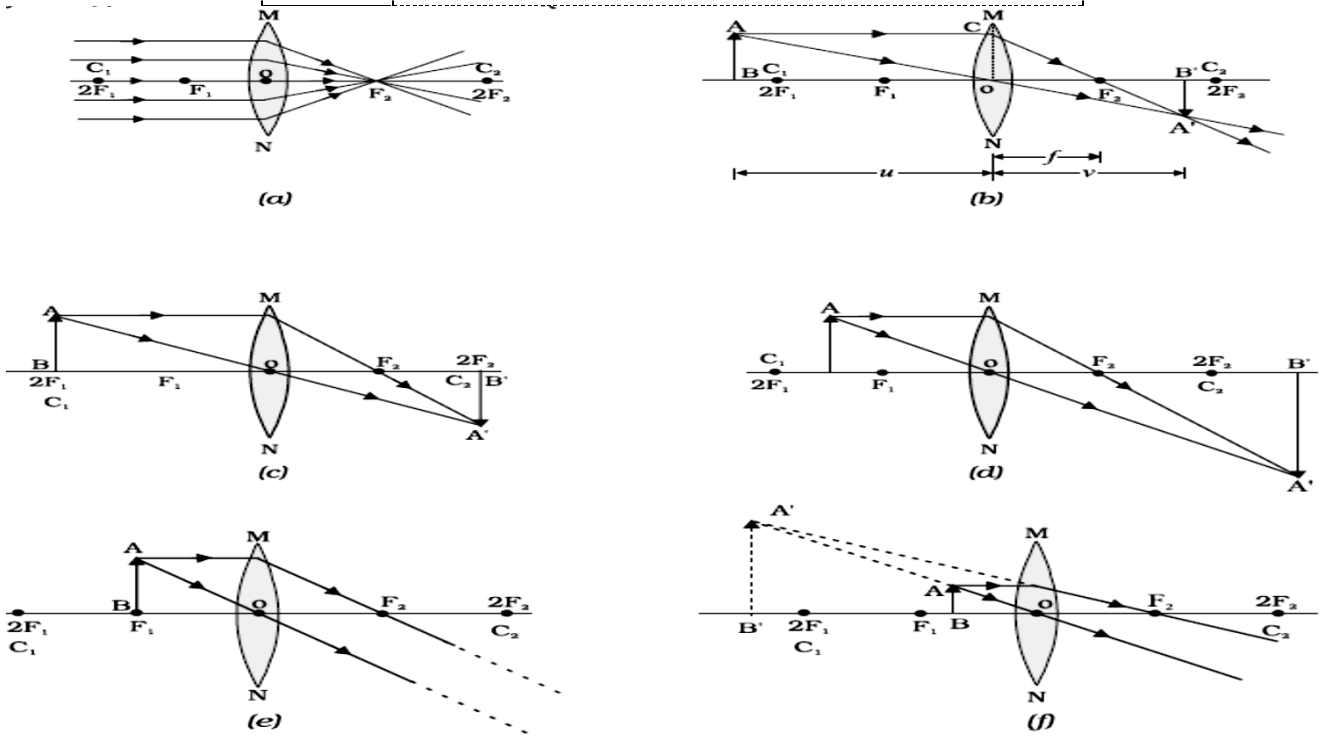
(e)



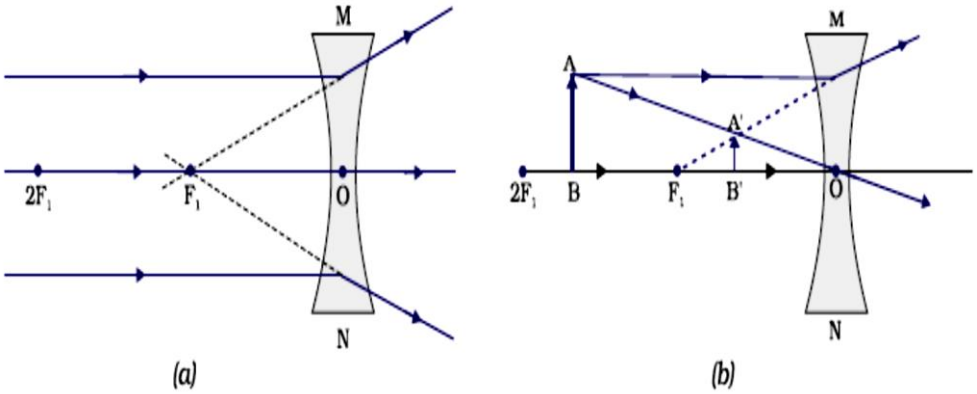
(f)

24. Ray diagrams for the image formation by a convex lens

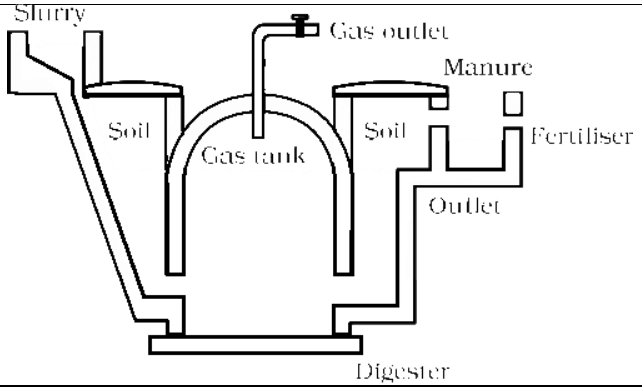
A	At infinity
B	Beyond $2F_1$
C	At $2F_1$
D	Between F_1 and $2F_1$
E	At focus F_1
f	Between focus F_1 and optical centre O



25. Nature, position and relative size of the image formed by a concave lens



26. Schematic diagram of a bio-gas plant



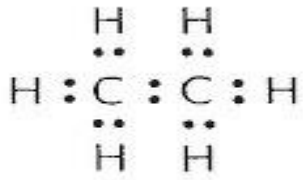
2. Electron dot structures (2 marks)

Practice the electron dot structures of the following:

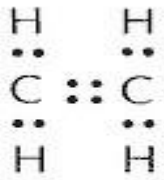
Hydrogen H• H•

Carbon •Ċ• •Ċ•

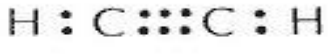
- Electron dot structure of **Ethane: C_2H_6, Ethene: C_2H_4** and **Ethyne: C_2H_2**



ethane

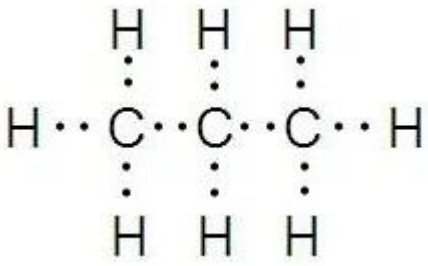


ethene

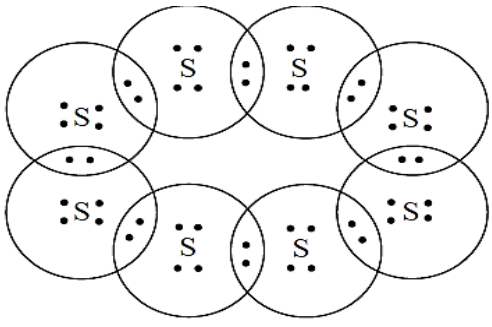


ethyne

- Electron dot structure of **propane: C_3H_8**

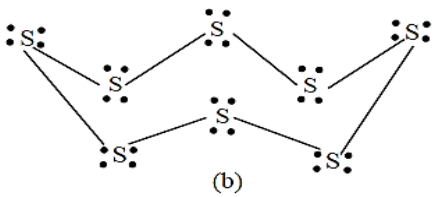


Electron dot structure of S_8 molecule (Sulphur-8 molecule):



(a)

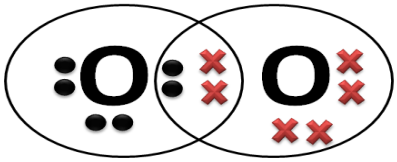
OR



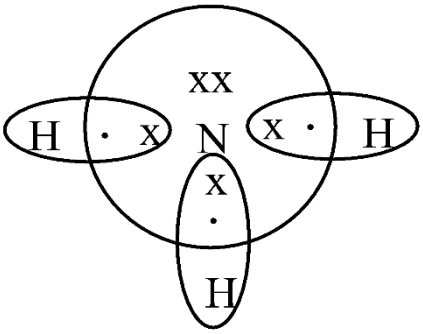
(b)

Sulphur (S_8) molecule

- **Electron dot structure of oxygen atoms and oxygen molecule (O_2):**

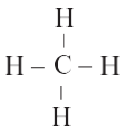
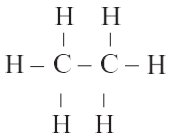
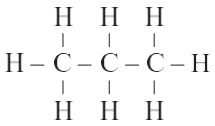
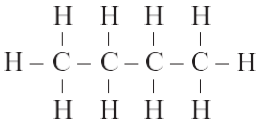
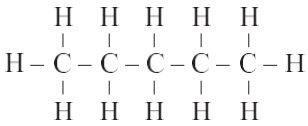
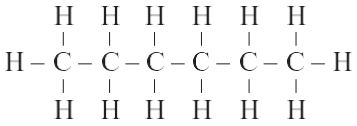


- **Electron dot structure of ammonia molecule: (NH_3)**



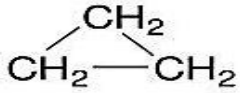
3. Hydrocarbons molecular formula and structures: min. 4 marks

Formulae and structures of saturated compounds of carbon and hydrogen

No. of Carbon atoms	Name	Mol. Formula	Structure
1	Methane	CH_4	
2	Ethane	C_2H_6	
3	Propane	C_3H_8	
4	Butane	C_4H_{10}	
5	Pentane	C_5H_{12}	
6	Hexane	C_6H_{14}	

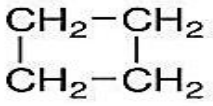
Structures of cyclic alkanes

Alkanes can also form cyclic structures



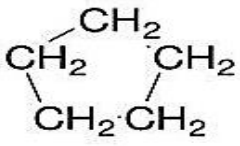
Cyclopropane

C_3H_6



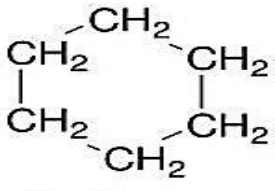
Cyclobutane

C_4H_8



Cyclopentane

C_5H_{10}

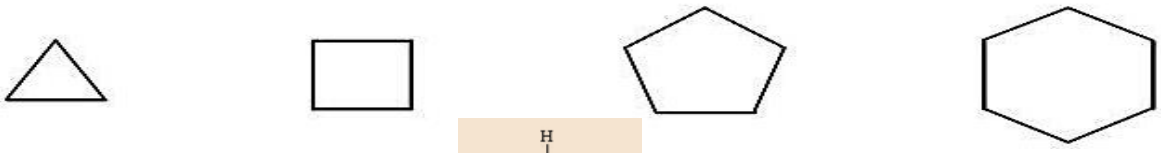


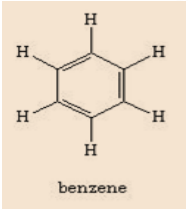
Cyclohexane

C_6H_{12}

General formula for cycloalkanes: C_nH_{2n}

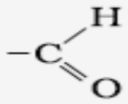
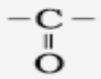
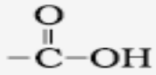
Can be conveniently represented using line segment formulae



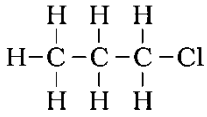
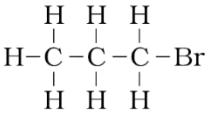
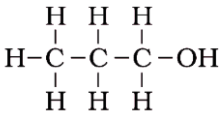
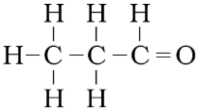
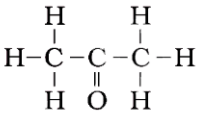
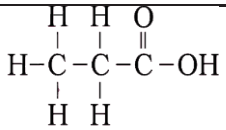
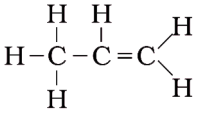
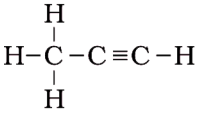


benzene

C_6H_6

Hetero atom	Class of compounds	Formula of functional group
Cl/Br	Halo- (Chloro/bromo) alkane	—Cl, —Br (substitutes for hydrogen atom)
Oxygen	1. Alcohol	—OH
	2. Aldehyde	
	3. Ketone	
	4. Carboxylic acid	

Naming of organic compounds- 2 marks

Class of compounds	Prefix/suffix	Example
1. Halo alkane	Chloro or Bromo	 Chloropropane
		 Bromopropane
2. Alcohol	OH- ol	 Propanol
3. Aldehyde	CHO – al	 Propanal
4. Ketone	C=O, one	 Propanone
5. Carboxylic acid	COOH, acid	 Propanoic acid
6. Alkenes	C=C, enes	 Propene
7. Alkynes	C≡C, ynes	 Propyne

4. Formulas for problem solving questions: (4 marks)

Chapter 12. Electricity:

1. To find electric charge: **Q = I t**,
I-electric current, t-time taken

2. To find our Electric current: **I=** $\frac{Q}{t}$

3. . To find out Potential difference between two points: **V=** $\frac{W}{Q}$
W= work done, Q=charge

3. potential difference across its ends: **V=IR**

4. To find out resistance: **R** $= \frac{V}{I}$

5. To calculate Equivalent Resistance in series connection**: Rs=R_1+R_2+R_3. . . .**

6. To calculate Equivalent Resistance in parallel connection**:** $\frac{1}{Rp} = \frac{1}{R1} + \frac{1}{R2} + \frac{1}{R3}$

Joule's Law of Heating: H = I^2 Rt

Chapter10. Light : Reflection and Refraction

- **Snell's Law:** $n = \frac{\sin i}{\sin r}$ **= constant**
- **Mirror formula:** $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$
- **lens formula:** $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$
- **focal length: f=** $\frac{R}{2}$
- **magnification:** $m = \frac{h'}{h} = -\frac{v}{u}$ **(for Mirror)**
- **magnification:** $m = \frac{h'}{h} = \frac{v}{u}$ **(for lens)**
- **power:** $p = \frac{1}{f(m)}$ or $-\frac{100}{f(cm)}$

Chapter 5: Periodic classification of elements:

Dobereiners' triad:

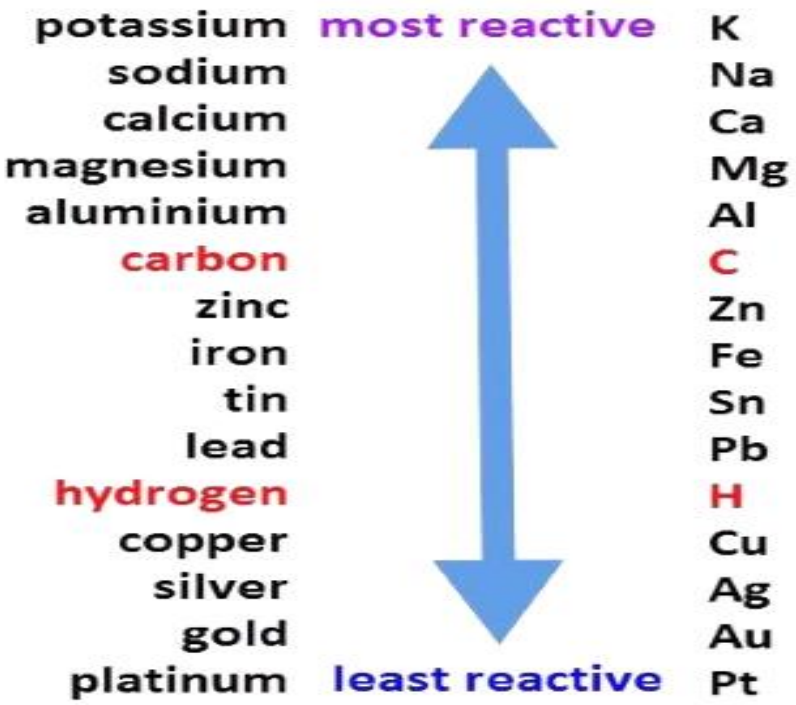
B $= \frac{A+C}{2}$, A= 2B − C, C=2B – A,

5. Important Physical terms and SI units

1. **Electricity**	**: Kilo Watt Hour**	**KWh**
2. **Electric current**	**: Ampere**	**A**
3. **Electric potential Difference**	**: Volt**	**V**
4. **Electric Resistance**	**: Ohm**	**Ω**
5. **Electric Charge**	**: Coulomb**	**C**
6. **Electric Power**	**: Watt**	**W**
7. **Power of a lens**	**: Diopter**	**D**

6. Reactivity series (2 marks)

Keep on practicing reactivity series according to their increasing reactivity and decreasing reactivity, you may get min. 2 marks.



7. Equations balancing: 2 marks

Collect all the reactions given in first 3 chemistry chapters (select simple reactions) and keep on practice to balance the equations.

Ex:

- $2Mg + O2 \rightarrow 2MgO$
- $Mg + H_2SO_4 \rightarrow H_2 + MgSO_4$
- $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2\uparrow$
- $4Fe + 3H_2O \rightarrow Fe_3O_4 + 4H_2\uparrow$
- $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq) + Heat$
- $2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$
- $CH_4(g) + 2O_2\ (g) \rightarrow CO_2\ (g) + 2H_2O\ (g)$
- $6CO_2 + 6H2O \rightarrow C6H12O6$
- $Na_2CO_3(s) + 2\,HCl\,(aq) \rightarrow 2NaCl\,(aq) + H_2O(l) + CO_2(g)$
- $NaHCO_3\,(s) + HCl\,(aq) \rightarrow NaCl(aq) + H_2O\,(l) + CO_2\,(g)$
- $NaOH + HCl \rightarrow NaCl + H_2O$
- $CH_3COOH + NaOH \rightarrow CH_3COONa + H_2O$
- $2Cu + O_2 \rightarrow 2CuO$
- $4Al + 3O_2 \rightarrow 2Al_2O_3$
- $Mg + 2HCl \rightarrow MgCl_2 + H_2$

8. Some important concepts for differences type question min. 2 marks

Model differences type questions:	
Exothermic reactions • The reaction in which heat is liberated during chemical reaction • Ex: Digestion of food	Endothermic reactions • The reaction in which heat is utilized or absorbed during chemical reaction • Ex: Melting of ice
Oxidation • Addition of oxygen is oxidation • Loosing of electrons • Increase in oxidation no.	Reduction • Removal of oxygen is reduction • Gaining of electrons • Decrease in oxidation no.
Corrosion • The process in which metal with atmospheric moisture and chemicals result in the formation of rust • Ex: Rusting of iron	Rancidity • condition in which food has become un desirable • ex: oxidation of oils and fats
Aerobic respiration • Glucose breaks down into complete oxidation into carbon dioxide and water • Takes place in the presence of oxygen	Anaerobic respiration • Glucose breaks down into ethyl alcohol, carbon dioxide, and energy • Take place in the absence of oxygen
Arteries • Carry blood away from the heart • Outer coat is thin and middle coat is thick • Blood flow is rapid through arteries	Veins • Carry blood towards the heart • Outer coat is thick and middle coat is thin • Blood flow is slow through veins
Veins • Carry blood towards the heart • Outer coat is thick and middle coat is thin	Capillaries • They carry blood from tissues to veins • Outer and middle coats are absent
Geotropism • The growth of plants towards gravity Ex: Roots grow towards soil	Phototropism • The growth of plants towards light • Ex: The growth of stem
Motor • Converts electrical energy into mechanical energy • It uses electricity	Dynamo • Converts mechanical energy into electrical energy • It generates electricity
Saturated hydrocarbons • These having only single bond between the carbon atoms • Ex: Alkanes and cyclic alkanes	Unsaturated hydrocarbons • These having double and triple bonds between carbon atoms along with single bonds • Ex: alkenes, alkynes and Aromatic hydrocarbons.

Some other models difference type questions are:

Self – pollination	Cross pollination
• occurs when the pollen from the anther is deposited on the stigma of the same flower, or another flower on the same plant.	• the transfer of pollen from the anther of one flower to the stigma of another flower on a different individual of the same species.
Homology • structurally similar and functionally different • ex: An arm of a human, the leg of a dog or a flipper of a whale are all homologous structures	Analogy • functionally similar and structurally different • ex: wings in birds, bats and insects to fins in penguins and fishes are all analogous structures
Bio degradable substances • substances that degrade or break down naturally • ex: plants and animal wastes, paper, cotton, leaves, etc.	**Non - biodegradable substances** • substances that do not degrade easily • ex: Plastics, glass, DDT, Detergents wastes

9. listing out the uses of the following chemical compounds: (2 marks)

1. Sodium carbonate (washing soda):

- It is largely used in production of detergents and soaps.
- It is used in the manufacturing of glass.
- It is used in the production of rayon polymers.
- It is used in water softening

2. Sodium hydrogen carbonate (baking soda):

- Leavening- In cooking, people use baking soda in baking as a leavening agent. ...
- Pest Control- Sodium bicarbonate is an effective way to control fungal growth. ...
- Fire extinguisher- People use Sodium bicarbonate to extinguish small grease or electrical fires by throwing it over the fire.

3. Calcium oxychloride (Bleaching powder):

- Used as an oxidising agent in chemical industries.
- Used for disinfection of drinking water.
- Used for bleaching of washed clothes in the laundry.
- Used for bleaching wood pulp in the paper manufacturing industry.
- Used as a bleaching agent in the textile industry for bleaching cotton and linen.

4. Plaster of Paris:

- Used in making casts and patterns for molds and statues.
- Used as the cement in ornamental casting and for making decorative materials.
- Used as a fireproofing material and for making chalks.
- Used in hospitals for immobilizing the affected part in case of bone fracture or sprain.

10. Important ONE- or TWO-mark questions? (Min.5 to 10 marks.)

1. What is exothermic reaction? Give an example.
2. What is endothermic reaction? Give an example.
3. Define: Rancidity, oxidation, reduction, and corrosion with an example
4. What is pH value of a substance?
5. Properties of pH scale. (like acidic, basic, neutral, less acidic, more acidic, less basic, more basic)
6. What is neutralization reaction? Give an example.
7. Uses of Bleaching powder, Sodium hydrogen carbonate, plaster of Paris.
8. Write the reactivity series of metals according to their increasing order of their reactivity.
9. Write the Electron dot structure of sodium, magnesium and oxygen
10. What is ionic bond?
11. Write the properties of ionic compounds.
12. Sodium and potassium metals are stored in kerosene. Why?
13. What are amphoteric oxides? Give example
14. How will you protect metals from corrosion?
15. What are the excretory products of the plants?
16. Write the chemical equation of photosynthesis.
17. What is saliva? State its important role in digestion.
18. What are the functions of lymph?
19. What is reflex arc?
20. List out the different tropic and nastic movements in plants?
21. Write the Location, secretion and functions of the following glands:

Pituitary, thyroid, pancreas, adrenal, testis and ovaries.

22. What is the function of fuse
23. Define resistance and resistivity
24. What are the properties of a conductor that resistance depends?
25. Define electrical circuit.
26. What is a dynamo?
27. What is a motor?
28. State Flemings' right hand thumb rule.
29. State Flemings' left hand thumb rule.
30. What is the function of earthling wire.
31. What is a tropic level?
32. Define bio magnification.
33. What is food web?

34. What is global warming?
35. How is ozone is formed? What is the importance of ozone layer? What are the causes of ozone layer depletion?
36. What is catenation?
37. List out the unique property of carbon
38. Write the electronic configuration of carbon in normal state and excited state.
39. What is isomerism? Give example
40. What is homologous series? Give example
41. State Mendeleev periodic law
42. State modern periodic law
43. Write the merits of Mendeleev's' periodic table
44. Define: electro negativity, electro positivity and atomic radius
45. Define different types of asexual reproduction with an example.
46. What is self-pollination?
47. What is cross pollination?
48. What is the function of prostate gland?
49. What is menstrual cycle?
50. Write the flow chart of sex determination in humans.
51. Define speciation.
52. What is the phenotypic ratio of monohybrid and dihybrid crosses?
53. What is the genotypic ratio of monohybrid cross?
54. What are the evidences for evolution of life?
55. What is homology and analogy? Give examples
56. What are fossils? Give an example.
57. State the laws of reflection?
58. Define diopter.
59. List out the uses of concave mirror and convex mirror.
60. What is refractive index? The refractive index of a diamond is 2.24. What it means that?
61. The power of plane mirror is +1. What is the meaning of this statement?
62. What are the properties of a good source of energy?
63. Define bioenergy. How do you get bio energy?
64. What are fossil fuels? Name it.
65. What are solar cells? What is the principle involved in conversion of solar energy into electrical energy?
66. What are advantages and disadvantages of utilization of nuclear energy?
67. How will you manage garbage produced at home?

Ministry of Health and Family Welfare Government of India

Help us to help you

To protect yourself and your loved ones/ co-workers,

Follow the FIVE

COVID Appropriate Behaviours even after vaccination

Use mask correctly

Wash hands with soap and water frequently and thoroughly or use hand sanitizer

Maintain 6 feet (2 gaj) physical distance

If you see any symptom, prompt self-isolation

If you see any symptom, promptly get yourself tested

When we are safe, nation is safe!

Helpline No.: 1075 (Tollfree)

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