

1031 Science(E) -0

726509

Subject Code	S-1031	
Subject	SCIENCE	
Date	15/03/2025	
Supplements attached		
Main Answer Book	No. of supplements	Total
1	+	0 = 1
Specific remarks of centre conductor regarding malpractices (in Red Ink)		

- Mobile Phones and other electronic gadgets are strictly prohibited inside the examination hall.
- Use of non-programmable calculator is allowed ONLY in some subjects.
- Writing in any form on the Hollow craft sticker and Bar code sticker is strictly prohibited.
- Only blue ink/ball pen is to be used for writing the answers. Black lead pencil may be used for drawing figures, diagrams and graphs. Use of any other Colour pencil/pen is strictly prohibited..
- Disclosing of identity on the answer book (except in the space provided) in any form is strictly prohibited.
- Candidate should check that the printed seat number is correct and verify that the answer book has all pages serially numbered before filling all other details.

Pg No	Examiner	Moderator	Chief Moderator
03	11.0		
04 & 05	15.0		
06 & 07	11.0		
08 & 09	10.0		
10 & 11	11.0		
12 & 13	6.0		
14 & 15	6.0		
16 & 17			
18			
Sup. 1			
Sup. 2			
Sup. 3			
Sup. 4			
Sup. 5			
Sup. 6			
TOTAL	70.0	70.0	
Total in words	Seventy	Seventy not zero	

Marks Pg. 03	E	M	CM
	11-0	11-0	

Q. No.

1.

Radiation that is highly damaging to organisms and is known to cause skin cancer in human beings is Ultraviolet radiations.

2.

The decomposition of vegetable matter into compost is an example of exothermic reaction.

3.

Salivation and vomiting is controlled by Hind brain.

4.

The first member of alkyne homologous series is Ethyne.

5.

Gustatory receptors detect taste.

6.

The opening and closing of the stomatal pore depends on water in guard cells.

7.

The growth of tendril in pea plants is due to rapid cell divisions in tendrillar cells that are away from the support.

8.

The apparent flattening of the sun's disc at sunrise and sunset is due to atmospheric refraction.

9.

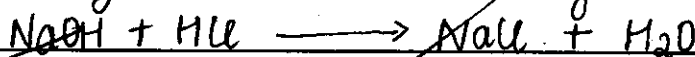
Metals like sodium, magnesium and calcium are obtained by electrolysis of the molten chloride.

10.

Enzyme that converts starch into sugar is amylase.

11.

Neutralization reaction among the following is



Q. No.

12.

Multi-cellular organisms like hydra and planaria can be cut into any ~~part~~ number of pieces and each piece grows into a complete organism.

13.

The ~~refractive index~~ of glass is 1.5, velocity of light in glass is ~~2×10^8 m/s~~ $n = 1.5 \times 10^8$ m/s

14.

When an iron nail is immersed in the copper sulphate solution, the ~~iron~~ nail becomes brownish and copper sulphate fades in colour and forms a pale green solution. The pale green solution left in the test tube is Iron sulphate.

15.

Biological magnification

16.

Electromagnetic induction

17.

1 Dioptre : focal length 1 metre :: -2 Dioptre : focal length -0.5 metre

18.

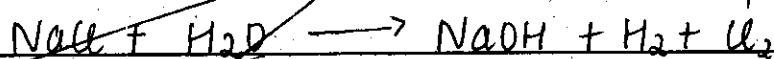
$\frac{Q}{t}$: Current I :: $\frac{W}{Q}$: Potential Difference V

19.

When ~~to~~ gypsum is heated at 373K, it loses water molecules and forms calcium sulphate hemihydrate ($\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$) which is known as Plaster of Paris.

20.

When electricity is passed through an aqueous solution of sodium chloride it forms sodium hydroxide (NaOH), and liberates Hydrogen gas and Chlorine gas. This process is known as chlor-alkali process.



Marks	E	M	CM
Pg. 04 & 05	15.0	15.0	

05

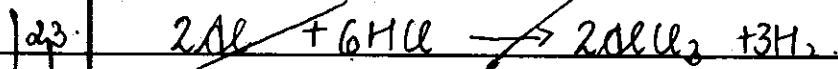
Q. No.

21.

The molecular formula is $MgCl_2$ and the compound is magnesium chloride which is an electrovalent compound.

22i. In the solid state the movement of ions is not possible due to rigid structure.

ii. But in the molten state the electrostatic forces of attraction between the oppositely charged particles is overcome due to heat. So the ions can move freely and conduct electricity.



24i. To follow the 'law of conservation of mass' the total mass of the elements present in the products has to be equal to the total mass of the elements present in the reactants.

ii. So the chemical reaction will be balanced.

25i. Milk of magnesia ($Mg(OH)_2$) is a mild base.

ii. It neutralises the excess acid in the stomach which is produced due to indigestion. Hence it reduces pain and irritation.

26i. If the saliva in the mouth has a pH below 5.5 then it can cause the corrosion of the tooth enamel which leads to tooth decay.

ii. As a result if the concentration of H^+ ions increases the pH in mouth will decrease causing tooth decay.

Q. No.

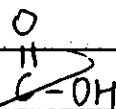
27.

Ethanone :-

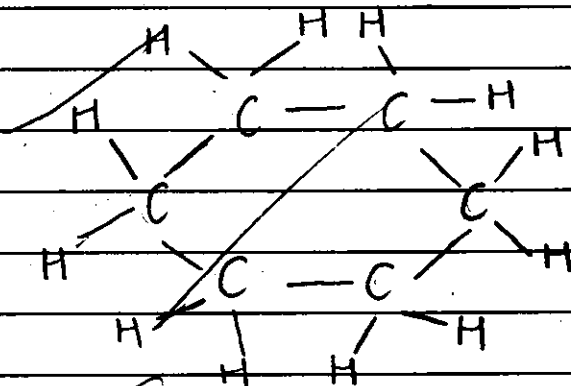
Functional group: ketone $\text{C}-\overset{\text{O}}{\parallel}-\text{C}$

Butanoic acid :-

Functional group: Carboxylic acid



28.

Cyclohexane (C_6H_{12})

29.

i. condoms

ii. surgical method (blocking of vas deferens)

30.

Placenta provides a large surface area for glucose and oxygen to pass from mother to embryo.

ii.

The developing embryo will generate waste substance that can be passed in the mother's blood through placenta.

31.

(a) starch

(b) glycogen

32.

Absorption of light energy by chlorophyll.

ii.

Conversion of light energy into chemical energy and splitting of water molecules into hydrogen and oxygen.

iii.

Reduction of carbon dioxide into carbohydrates.

Marks Pg. 06 & 07	E	M	CM
	11.0	11.0	

07

Q. No.

33.

- i. It is used as an oxidising agent in chemical factories.
- ii. Disinfecting ~~dring~~ drinking water to make it free from germs.

34i. Nitric acid (HNO_3) is a strong oxidising agent.

- ii. It oxidises the hydrogen gas produced to water and itself gets reduced into oxides of nitrogen (N_2O , NO_2 , NO).
 $\therefore$ Hydrogen gas is not evolved.

35i. In the field 'A' white flowers were produced for consecutive generations which shows the white ~~ft~~ colour was dominant trait which was expressed, it was F_1 generation.

ii. In field 'B' yellow flowers were produced but majority of the plants showed variation because ~~ma~~ both the dominant as well as recessive traits were expressed which indicates that it was the F_2 generation.

iii. It also shows that each trait can ~~be~~ inherit independently. So in field 'A' only dominant trait was expressed and in 'B' both ~~was~~ traits were expressed as in F_2 generation.

36i. The trait that is ~~not~~ expressed is called a recessive trait.

ii. The traits that are expressed are dominant traits. So the recessive traits that are not expressed in a generation can be expressed in the next generation.

iii. But ~~it~~ may also not be expressed in the next generation as all the traits are inherited independently.

37. ~~Trophic level~~ Trophic level

38i. The decomposers convert the complex ^{organic} substances into simpler

Q. No.

☐

inorganic substances that go into the soil and are used again by plants.

ii. They decompose the dead remains and the waste products of the organisms.

iii. Hence ~~Decomposers~~ are essential in an ecosystem.

39. The Female has XX chromosome while the male has XY chromosome.

ii. If the ^{new born} ~~child~~ genetically inherits X chromosome from mother and Y chromosome from father then it is a baby boy.

iii. If the ^{new born} ~~child~~ genetically inherits X chromosome from mother and X chromosome from father then it is a baby girl.

iv. Therefore genetic inheritance determines sex in human beings whether it will be a girl or a boy.

40.

X chromosome

Y chromosome

i. X chromosome has a normal size

i. Y chromosome has a size smaller than the normal size.

ii. It is present in both males and females.

ii. It is present only in males.

iii. It cannot alone determine whether the new born is girl or boy.

iii. It ^{can alone} will determine whether the new born is girl or boy.

41. Right hand Thumb rule: It is used to determine the direction of the magnetic field associated with the current carrying conductor.

42. By ~~not~~ increasing the degree of closeness of the field lines.

↳

Marks Pg. 08 & 09	E	M	CM
	10.0	10.0	

Q. No.

- ii. By increasing the current
 iii. By increasing the number of turns of the wire (coil)
 the magnitude of the magnetic field can be increased.

43. $R = 200 \text{ ohms}$

$I = 1 \text{ A}$

$V = IR$

$V = 1 \times 200$

$V = 200 \text{ V}$

∴ The potential difference is 200 V.

$P = V \times I$

$P = 200 \times 1$

$P = 200 \text{ W}$

∴ Power of bulb is 200 W.

44. Heat produced by an electric current depends on/directly ^{proportional} to:
- the square of the current for a given resistor.
 - the resistance for a given current
 - the time taken by the current flowing in the resistor. $[H = I^2 R t]$

45. The plant hormone is abscisic acid and its function is to inhibit growth. Wilting of leaves is an example.

46. The shoot is negatively geotropic to the pull of earth's gravity and the root is positively geotropic.

47. The fuse prevents damage to the appliances and the electric circuit when the current higher than the specified value flows through the circuit.
- The fuse wire melts and breaks the circuit if there is an unduly high current flowing.

Q. No.

48.

strength of magnetic field
around solenoid

i. The strength of the magnetic field is maximum inside the solenoid where it can be used to magnetise a piece of magnetic material.

ii. The strength can be increased by increasing the no. of turns of the coil.

strength of magnetic field around bar magnet.

i. The strength of magnetic field is maximum at the poles as they are crowded.

ii. The strength can be increased by increasing the degree of closeness of the field.

49. i. The green wire is the earth wire which is used as a safety measure especially for the metallic body apparatus.

ii. It provides a low-resistance & conducting path for the current.

iii. And ensures that any-leakage to the of current in the appliance keeps its potential to that of the earth and prevents further shocks.

50. site of fertilization: 1 - Oviduct

site of implantation: 4 - Uterus

51. i. There is an illegal sex-selective abortion of only female foetuses.

ii. This has decreased the ratio of females.

iii. There is ~~recess~~ reckless female foeticide causing an imbalance in the ratio of the male-female ratio.

This way it is misused to ~~kill~~ kill only females so it is banned.

LP

Marks Pg. 10 & 11	E	M	CM
	11.0	11.0	

Q. No.

52. i

The placenta provides a large surface area for glucose and oxygen to pass from mother to embryo.

ii. The developing embryo may release waste substances which can be removed through the mother's blood with the help of placenta.

53. Transpiration

i. The process of evaporation of water in the form of vapour is called Transpiration.

Translocation

i. The process of ^{transport} transfer of soluble products of photosynthesis is called Translocation.

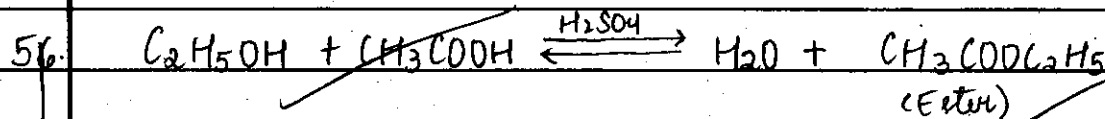
54. i. Plants are stationary, they don't move.

ii. The Plant tissues contain a ^{large} number of dead cells. Therefore plants have low energy needs.

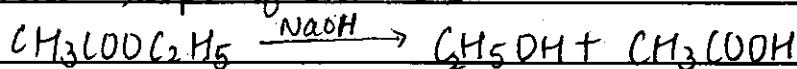
55. i. The ~~waste~~ waste products in plants are stored as cellular vacuoles.

ii. They are also stored as gums and resins in the old xylem.

iii. Or, in the leaves that fall off.



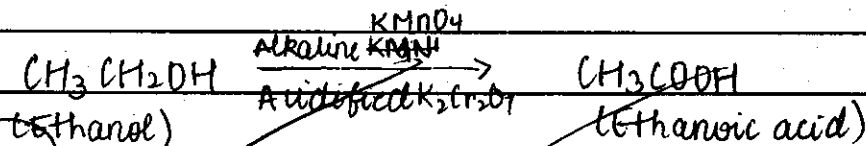
57. The reaction in which an acid or a base is used to convert the ~~ester~~ esters into ~~alcohol~~ alcohol and ethanoic acid is called saponification.



58. Conc. H_2SO_4 acts as a dehydrating agent that removes water from ethanol to make an ethene.

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56.



57.

Soaps:

Soaps

i. Soaps are made of sodium and potassium salts of long chain carboxylic acid.

Detergents

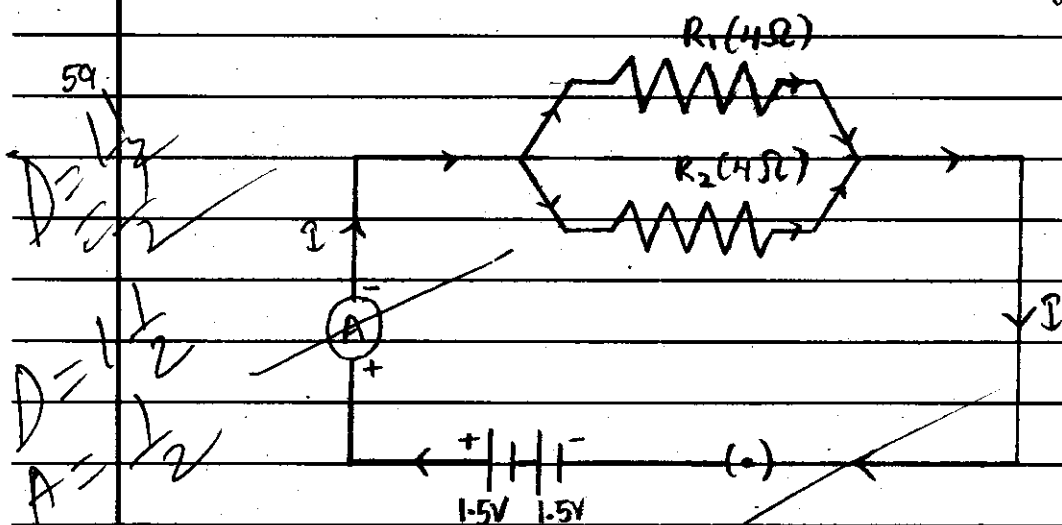
i. Detergents contain ammonium or sulphonate salts of long chain carboxylic acids.

58.

The carbon compound with the molecular formula C_4H_8 which is butene is most likely to show addition reaction. Because addition reaction is the reaction in which unsaturated hydrocarbon in the presence of hydrogen is converted into a saturated hydrocarbon.

ii. Butene (C_4H_8) is an unsaturated hydrocarbon.

59.



60.

If area of cross section is doubled then resistance becomes $\frac{1}{2}$ (half)

$$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{R_p} = \frac{1}{2} + \frac{1}{2}$$

$$\frac{1}{R_p} = \frac{2}{2} = 1$$

$$R_p = 1\Omega$$

$$V = IR \quad \therefore I = \frac{V}{R}$$

$$I = \frac{1.5}{1}$$

$$\therefore I = 1.5\text{A}$$

Q. No.

61.

$$H = 100 \text{ J}$$

$$t = 1 \text{ sec}$$

$$R = 4 \text{ ohm}$$

$$H = I^2 R t$$

$$100 = I^2 \times 4 \times 1$$

$$\frac{100}{4} = I^2$$

$$25 = I^2$$

$$\sqrt{25} = I$$

$$\therefore I = 5 \text{ A}$$

$$P = \frac{V}{R} \quad V = IR$$

$$V = 5 \times 4$$

$$V = 20 \text{ V}$$

$\therefore$ Potential difference is 20 V.

62i. When the image of the object is not formed on the retina and it is formed in front of retina then the person suffers from myopia or hypermetropia if the image is formed behind retina or beyond retina.

ii. A myopic person cannot see ~~that~~ distinct objects clearly due to elongation of eye ball, and excessive curvature of eye lens.

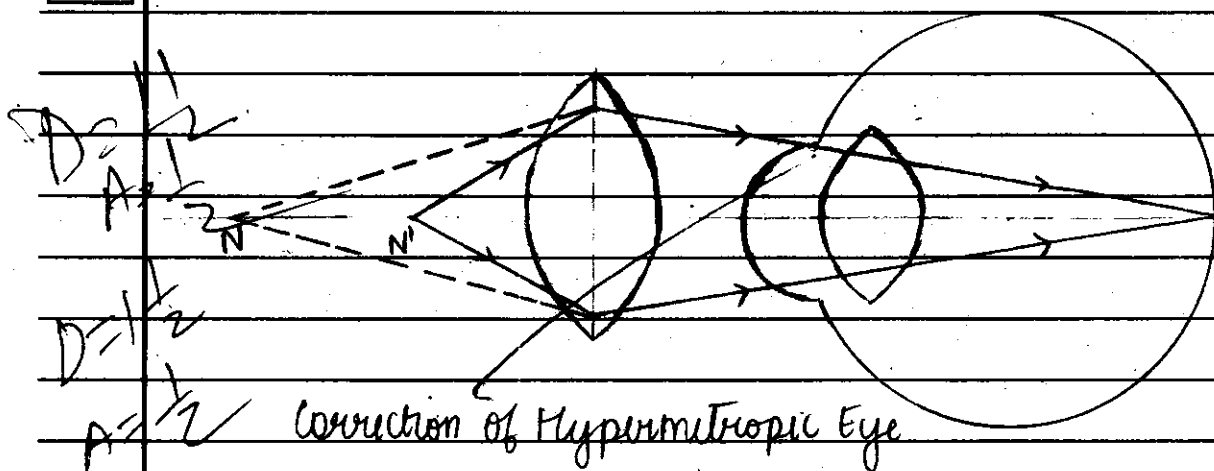
iii. A hypermetropic person cannot see nearby objects clearly when ~~due to~~ the focal length is too long and eyeball is too small.

63i. In the bifocal lenses the upper lens is concave which facilitates distinct vision and the lower portion is convex lens ~~and~~ which facilitates nearby vision.

ii. The bifocal lens form the image on the retina and person with presbyopia can see nearby as well as ~~farther~~ distinct objects clearly.

Q. No.

64.



65. $m = -2$ $u = -$
 $v = 30 \text{ cm}$ $v = -30$
 $u = ?$ $f = -$
 $h' = -$
 $h'' = +$

The mirror is Concave

$$m = -\frac{v}{u}$$

$$-2 = -\frac{(-30)}{u}$$

$$u = -15$$

$$u = -15 \text{ cm}$$

$\therefore$ The object is placed at 15 cm from the mirror

66. i. Shaving mirror and mirror used by the dentist both are concave mirrors.

ii. Both are used to get a larger view of ^{face} mouth for shaving and teeth for dental checkup.

iii. Both the mirrors function the same way as they are concave mirrors.

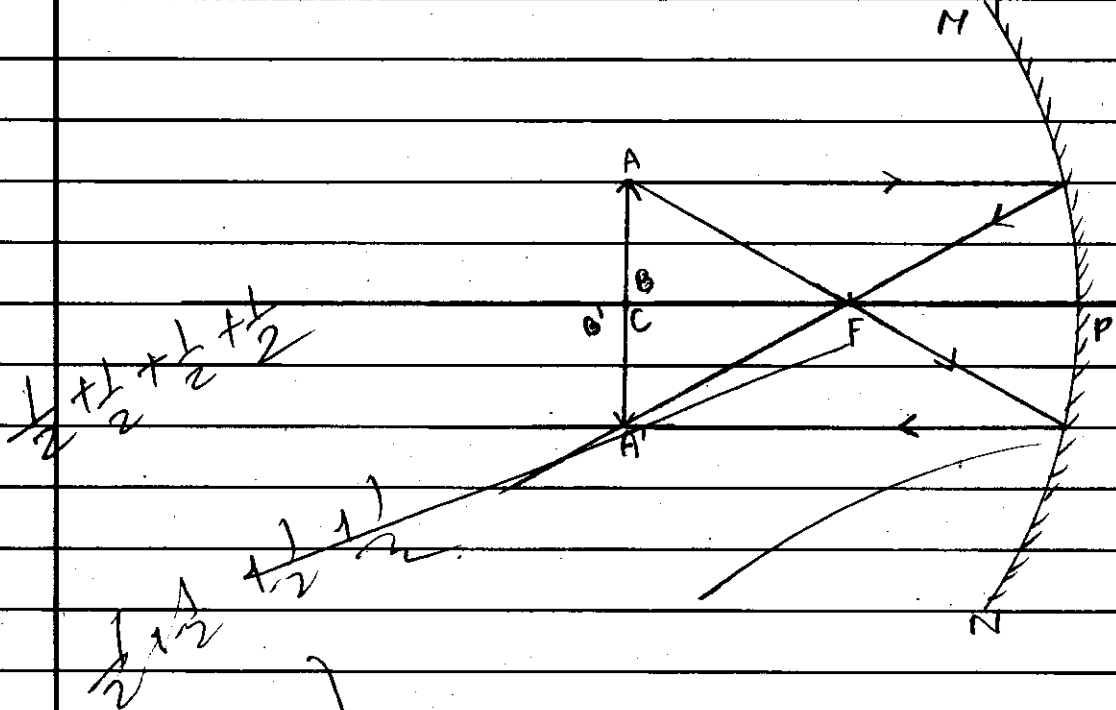
Marks	E	M	CM
Pg. 14 & 15	6.0	6.0	

15

Q. No.

67.

Position of the object	Position of the image	Size of the image	Nature of the image
At C	At C	same size	Real and inverted



2

Q. No.

Marks Pg. 16 & 17	E	M	CM

Q. No.

Marks Pg. 18	E	M	CM

Q. No.