DIRECTORATE OF GOVERNMENT EXAMINATIONS – CHENNAI - 06
SSLC EXAMINATIONS – MAY 2022
SCIENCE – ANSWER KEY   Marks : 75

Use **Blue** or **Black** ink to write and underline and pencil to draw diagrams.

	PART – I		
		ANSWER	**MARKS**
Q. No.	Answer **all** the questions. Choose the most appropriate answer from the given **four** alternatives and write the option code and the corresponding answer.		
1.	(c)	2f	1
2.	(c)	homo atomic	1
3.	(a)	2	1
4.	(c)	2.4 A	1
5.	(a)	95.5%	1
6.	(b)	stem	1
7.	(c)	2	1
8.	(a)	Generative cell	1
9.	(b)	Pituitary gland	1
10.	(d)	Wheat	1
11.	(b)	(1) - (iii), (2) - (iv), (3) - (i), (4) - (ii)	1
12.	(b)	Waldeyer - Chromosomes	1
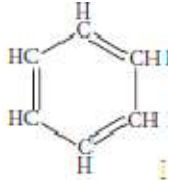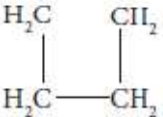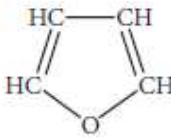
PART – II
Answer any SEVEN questions . Question No. 22 is Compulsory   **(7 X 2 = 14)**

Q.No.	ANSWER	Marks
13.	The force acting on a body is directly proportional to the rate of change of linear momentum of the body and the change in momentum takes place in the direction of force. F = ma	2
14.	**Give any two points** (1) Animals can communicate with each other over long distances. (2) It is used to create real-time visual images of the developing embryos. (3) It is used to determine the velocity of sound waves in any medium.	2
15.	When temperature is kept constant, volume of fixed mass of gas is inversely proportional to pressure. (or) $P \, \alpha \, \frac{1}{V}$	2
16.	<table><tr><td>Class of Compound</td><td>Functional group</td><td>suffix used</td></tr><tr><td>Alcohol</td><td>- OH</td><td>- ol</td></tr><tr><td>Aldehyde</td><td>- CHO</td><td>- al</td></tr><tr><td>Ketone</td><td>- CO</td><td>- one</td></tr><tr><td>Carboxylic acid</td><td>- COOH</td><td>- oic acid</td></tr></table>	$4 \times \frac{1}{2} = 2$

17.	a) To overcome the rapid depletion of ground water level b) To meet the increase demand of water c) Reduces flood and soil erosion d) water stored in ground, hence can be used for drinking purpose.	2 **(any two points)**
18.	A – Capsule B – Cortex C – Medulla D – Blood vessels	$4 \times \dfrac{1}{2} = 2$
19.	Evolution is the gradual change occurring in living organisms over period of time. Lamarck and Darwin	1 1
20.	Protina, Shakti and Rathna	2 **(any two)**
21.	a) Regulate the flow of blood. b) Allow blood in a single direction. c) Prevent back flow of blood.	2 (any two points)
22.	Given: $\quad$ x = 4m $\quad$ y = 20m $\quad f = \dfrac{xy}{x-y}$ $\quad\quad = \dfrac{4 \times 20}{4-20} = \dfrac{80}{-16} = -5\text{m}$	1 formula 1

PART – III

Answer any **SEVEN** questions. Question No. **32** is **Compulsory**   **(7 X 4 = 28)**

Q. No.	ANSWER	Marks
23.	Differentiate Mass and Weight:<table><tr><td>Mass</td><td>Weight</td></tr><tr><td>1. It is the quantity of matter contained in the body.</td><td>1. It is the gravitational force exerted on it due to the Carth's gravity.</td></tr><tr><td>2. Its S.I. unit is kilogram.</td><td>2. Its S.I. unit is Newton.</td></tr><tr><td>3. It is a Scalar quantity</td><td>3. It is a vector quantity.</td></tr><tr><td>4. Does not vary from place to place</td><td>4. Varies from place to place</td></tr></table>	4x1=4
24.	<u>Properties of light :(any four)</u> 1. Light is a form of energy. 2. It always travels along a straight line. 3. It does not need any medium for its propagation. It can even travel through vacuum. 4. The speed of light in vacuum or air is $c=3\times10^{8}$ ms^{-1} 5. Different coloured light has different wavelength and frequency 6. Among the visible light, violet light has the lowest wavelength and red light has the highest wavelength. 7. When light is incident on the interface between two media, it is partly reflected and partly refracted.	4x1=4

25.	1. Ceilings of concert halls are curved so that the sound after reflection reaches every corner of the concert hall and the audience can listen sound clearly. 2. When the sound waves are reflected from the curved surfaces, the intensity of the reflected waves is changed. 3. It is due to the multiple reflections of sound waves from the curved walls.	4
26.a)	An alloy is a homogenous mixture of two or more metals.	2
b)	(i) To modify appearance and colour. (ii) To modify Chemical activity. (iii) To lower the melting point. (iv) To increase resistance to electricity	2 (any two points)
27.	(i) $CH_3\text{-}CH_2\text{-}CH_3$ Propane	1
	(ii) Benzene	1
	(iii) Cyclobutane	1
	(iv) Furan	1
28.a)	Respiratory quotient is the ratio of volume of carbondioxide liberated, and the volume of oxygen consumed during respiration. (or) $$RQ = \frac{\text{Volume of } CO_2 \text{ liberated}}{\text{Volume of } O_2 \text{ consumed}}$$	2
b)	$$6CO_2 + 12H_2O \xrightarrow[\text{chlorophyll}]{\text{Light}} C_6H_{12}O_6 + 6H_2O + 6O_2\uparrow$$ (or) $$\text{carbondioxide} + \text{water} \xrightarrow[\text{chlorophyll}]{\text{Light}} \text{Glucose} + \text{water} + \text{oxygen}$$	2

29.a)	Transparation:	**2**
b)	Granulocytes : (i) Neutrophils: (ii) Eosinophils: (iii) Basophils:	**1 + 1** **(Draw** **any two)**
30.a)	Origin of Life theories: (i) Special creation (ii) Spontaneous generation (iii) Biogenesis (iv) Extra terrestrial or Cosmic origin. (v) Chemical Evolution of Life.	**3 (any** **three)**
b)	J.W.Harshberger	**1**
31.	**Importance of Biotechnology in field of Medicine** : (i) Insulin production. (ii) Human growth hormone production. (iii) Development of Vaccines for diseases like Rabies and Hepatitis B. (iv) Blood clotting factors are developed.	**$4 \times 1 = 4$**
32.	$$CuSO_4 \cdot 5H_2O \underset{\text{Cooling}}{\overset{\text{Heating}}{\rightleftharpoons}} CuSO_4 + 5H_2O$$ (Copper sulphate pentahydrate) (Anhydrous copper sulphate) Blue colour colourless (A) (B)	**2**
	A – Blue – Copper Sulphate pentahydrate	**1**
	B – Colourless – Copper Sulphate	**1**

PART- IV

*Answer **all** the questions.   Draw diagrams wherever **necessary***   *(3 X 7 = 21)*

33. a)	i.	Electric current is defined as the rate of flow of charges in a conductor. (or) $I = \frac{Q}{t}$	**2**
	ii.	unit: ampere (or) A	**1**
		when a charge of one coulomb flows across any cross – section of conductor, in one second	**2**
	iii.	Instrument: Ammeter	**1**
		It is connected in a circuit by series connection	**1**

b) (i) Henri Becquerel	**1**

(ii)

Natural radioactivity	Artificial radioactivity
1. Emission of radiation due to self – disintegration of nucleus.	1. Emission of radiation due to disintegration of nucleus. Through induced process.
2. Aipha, beta and gamma radiations are emitted	2. Mostly elementary particles such as neution, positron, etc, are emitted.
3. It is a Spontaneous	3. It is an induced process.
4. Exhibited by elements with atomic number more than 83	4. Exhibited by elements with atomic number less than 83
5. This cannot be controlled	5. This can be controlled

3 (any three)

iii)

1. The radio isotope of phosphorus (P -32) helps to increase the productivity of crops.
2. The radiations from the radio isotopes can be used to kill the insects and parasites.
3. The radiations can be used to prevent the wastage of agricultural products.
4. Certain perishable cereals exposed to radiations remain fresh beyond their normal life, enhancing the storage time.
5. very small doses of radiation prevent sprouting and spoilage of onions, potatoes and gram.

3 (any three)

34 .a) (i)	The number of atoms present in one molecule is called its atomicity. **2**
	Eg: Hydrogen **1**

(ii)

Atom	Molecule
a) It is the smallest particle of an element.	a) It is the smallest particle of an element or compound
b) It doesnot exist in free state. (except noble gas)	b) Exists in free state.
c) It is highly reactive	c) It is less reactive
d) It doesnot have chemical bond	d) It is held by chemical bond

4x1 =4

34.b.i)	A Combination reaction is reaction in which two or more reactants combine to form a compound.	**2**
ii)	$H_{2\ (a)} + Cl_{2(a)} \Rightarrow 2HCl_{\ (aq)}$	**1**

iii)

Reversible reaction	Irreversible reaction.
a) can be reversed under suitable conditions	a) cannot be reversed
b) Both forward and backward reaction take place.	b) Forward reaction only take place.
c) Equilibrium is attained	c) Equilibrium is not attained
d) Reactants cannot be converted completely into products	d) completely converted into products
e) Relatively slow	e) Relatively fast

4x1 =4

35.a)	(i) Artificially synthesized auxins that have the properties of natural auxins.	**2**
	Eg. : 2, 4D	**1**
	(ii) One sperm fuses with the egg and forms a diploid Zygote. The other sperm fuses with the secondary nucleus called Triple fusion.	**2**
	(iii) Vas deferens Epidydymis Seminal vesicle Prostate gland Penis.	**2** **(any two)**
b. i)	(1) It is naturally self-pollinating and so is very easy to raise pure breeding individuals. (2) It has a short life span as it is an annual and so it was possible to follow several generations. (3) It is easy to cross-pollinate. (4) It has deeply defined contrasting characters. (5) The flowers are bisexual.	**3** **(any 3)**
ii)	**Measures to overcome the problems of alcoholic** **1. Education counselling** Providing proper education and proper counseling will help the alcoholics to overcome their problems and stress **2. Physical activity** Individuals undergoing rehabilitation should be channelized into healthy activities like reading, music, sports, yoga and meditation. **3. Seeking help from parents and peer groups** Providing proper guidance from parent and peer group. This would help them to share their feeling of anxiety, wrong doing and get rid of the habit. 4. **Medical assistance** Individual should seek help from psychologists and psychiatrists to lead a relaxed and peaceful life.	**4x1=4**

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