Strictly Confidential: (For Internal and Restricted use only)
Secondary School Examination-2020
Marking Scheme – SCIENCE
(SUBJECT CODE: 086) (PAPER CODE : 31/4/2)

General Instructions: -

1. You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.**Evaluation is a 10-12 days mission for all of us. Hence, it is necessary that you put in your best effortsin this process.**
2. Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one's own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. **However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and marks be awarded to them. In class-X, while evaluating two competency based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, marks should be awarded.**
3. The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
4. Evaluators will mark(√) wherever answer is correct. For wrong answer 'X"be marked. Evaluators will not put right kind of mark while evaluating which gives an impression that answer is correct and no marks are awarded. **This is most common mistake which evaluators are committing.**
5. If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left-hand margin and encircled. This may be followed strictly.
6. If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
7. If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out.
8. No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
9. A full scale of marks 0-80 has to be used. Please do not hesitate to award full marks if the answer deserves it.
10. Every examiner has to necessarily do evaluation work for full working hours i.e. 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines).
11. Ensure that you do not make the following common types of errors committed by the Examiner in the past:-
    - Leaving answer or part thereof unassessed in an answer book.
    - Giving more marks for an answer than assigned to it.
    - Wrong totaling of marks awarded on a reply.

- Wrong transfer of marks from the inside pages of the answer book to the title page.
- Wrong question wise totaling on the title page.
- Wrong totaling of marks of the two columns on the title page.
- Wrong grand total.
- Marks in words and figures not tallying.
- Wrong transfer of marks from the answer book to online award list.
- Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.)
- Half or a part of answer marked correct and the rest as wrong, but no marks awarded.

12. While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0)Marks.

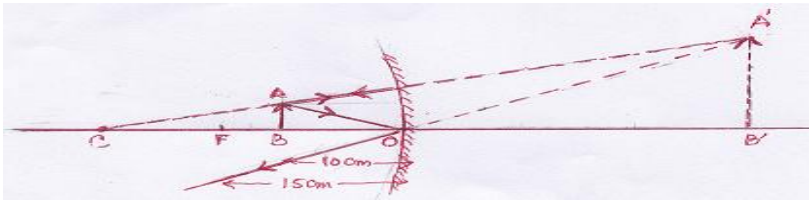
13. Any unassessed portion, non-carrying over of marks to the title page, or totaling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.

14. The Examiners should acquaint themselves with the guidelines given in the Guidelines for spot Evaluation before starting the actual evaluation.

15. Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.

16. The Board permits candidates to obtain photocopy of the Answer Book on request in an RTI application and also separately as a part of the re-evaluation process on payment of the processing charges.

MARKING SCHEME –CLASS X SCIENCE (2019-20)			
QUESTION PAPER CODE : SET 31/4/2			
S.NO	**VALUE POINTS/EXPECTED ANSWER**	**MARKS**	**TOTAL MARKS**
	SECTION A		
1.	Oils containing unsaturated fatty acids/name of any edible oil.	1	1
2	The electric current generated / induced in a conductor by changing magnetic field around it.	1	1
3.	(a) The properties of elements are the periodic functions of their atomic masses. (b) To fill with undiscovered elements. (c) (ii)/RH_4, RO_2 (d) (i)/Atoms of an element with similar chemical properties but different atomic masses.	1 1 1 1	4
4.	(a) Use of separate bins for plastic and paper ; separation of biodegradable and non biodegradable waste or any other. (b) • Packaging of articles like water , food, milk, biscuits etc. • Disposable utility items- bowls, tumblers, plates, leaves etc. (c) By providing cloth /jute /earthern pots and utensils/ paper or any other material for the similar purposes. (d) • Yes • The action of microbes is tested in the laboratory creating the same conditions as in the landfill.	½+ ½ ½ + ½ 1 ½ ½	4
5.	(B) /fusion of nuclei of male and female gamete.	1	1
6.	(B) / Nephron OR (B) / False feet developed in some unicellular organisms.	1	1
7.	(C) / Valves ensure that the blood does not flow backwards.	1	1
8.	(B) / The nucleus of Uranium is bombarded with high energy neutrons. OR (A) / Biomass	1	1
9.	(A) /1 Ω OR (B) / half	1 1	1
10.	(C) /direction of the induced current.	1	1
11.	(B) 10 %	1	1
12.	**Note: Treat all answers as correct. Give full credit even if not attempted.**	1	1
13.	(c) / (A) is true, but (R) is false.	1	1
14.	(a) / Both (A) and (R) are true and (R) is the correct explanation of assertion (A).	1	1
	SECTION B		
15.	(a) Double displacement reaction. (b) Due to the formation of colourless sulphuric acid in the solution.	1 ½	

	(c) Copper Sulphide / CuS (d)$CuSO_4 + H_2S \rightarrow CuS + H_2SO_4$ OR (a) Electrolysis of water. (b) Carbon electrodes / Graphite rod (c) $2H_2O \xrightarrow[\text{Current}]{\text{Electric}} 2H_2 + O_2$ (d) Pure water is a non conductor of electricity /electric current is carried through the acidic solution by ions.	½ 1 1 ½ 1 ½	3
16.	(a) Behind the mirror (b) Magnified (c) Virtual and erect Labelled ray diagram  	½ ½ ½ 1½	3
17.	• Evolution – Gradual change in living organisms with time since the beginning of life resulting in the formation of a new species/ Evolution is simply the generation of diversity and the shaping of diversity by environmental selection. • Evolution cannot be equated with progress because more and more complex body designs have emerged and evolved over time but this does not mean that older designs are inefficient.Foreg. Bacteria are simpler organisms but some inhabit the most inhospitable habitats like hot springs, deep sea, thermal vents and the ice in Antartica. OR **Examples of feathers :** - Feathers can start out as providing insulation in cold weather but later they might become useful for flight. - Some dinosaurs have feathers but they could not fly. - Birds later adapted the feathers for flight . - This shows that birds are closely related to reptiles.	1 2 ½ 1 1 ½	3
18.	<table><tr><th>Glands</th><th>Location</th><th>Function</th></tr><tr><td>a) Pituitary gland</td><td>Brain</td><td>Stimulates growth in all organs.</td></tr><tr><td>b) Thyroid</td><td>Neck/ Larynx</td><td>Regulates metabolism of fats, proteins & carbohydrates.</td></tr><tr><td>c) Pancreas</td><td>Below Stomach</td><td>Regulates blood sugar</td></tr></table>	½ × 6	3

19.

Galvanisation	Alloying
1. Coating a layer of zinc metal on the metal.	1. Mixing of a metal with metal or non-metal.
2. Not a homogeneous mixture.	2. Homogeneous mixture.
3. No change in physical properties of metals takes place.	3.Change in physical properties of metals takes place.
4. The process is an outcome of the reactivity of metals.	4. Reactivity of metals do not play any role in it.
5. Prevents rusting only.	5. Some alloys may prevent rusting and also used for other advantages.

(Any Three) — 1 × 3 — 3

OR

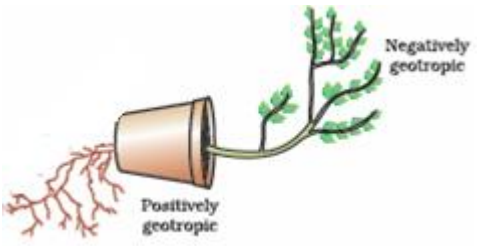
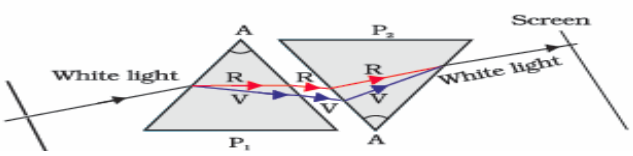
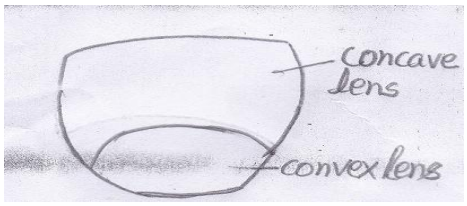
	Cold Water	Hot Water
Sodium	• Reacts violently • Heat is evolved.	• React more violently • More heat is evolved. (Any one point)
Calcium	• Reacts less violently as compared to sodium.	• Reacts violently with hot water and sticks to surface of metal and floats on surface of water.
Magnesium	• Does not react with cold water	• React with hot water and floats on surface of water.

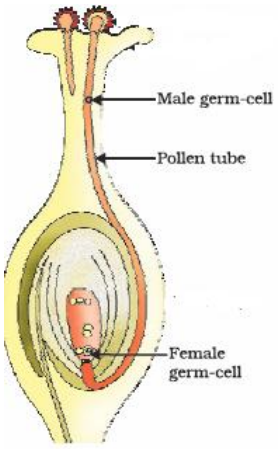
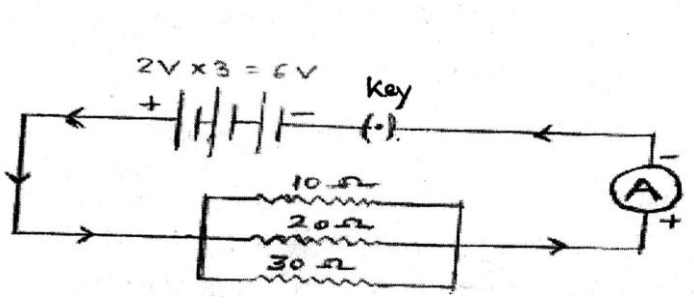
1 × 3

20.

- Carbon atom, the first member of group 14 has the **<u>smallest size</u>** in the group and highest inter-atomic force of attraction.
- It has four valence electrons and requires four more electrons to attain stable configuration.
- Due to its small size, nucleus of carbon is able to hold the shared pairs of electrons strongly.
- The bonds formed by other elements of the same group are weaker due to bigger size of their atoms.

(Any Three) — 1×3 — 3

21.	The movement of the growth of the roots downwards and the shoots upwards under the stimuli of **gravity** is called geotropism./ The movement of the part of the plant towards or away from the stimulus gravity. -  Diagram Labelling	1 1 ½+ ½	 3
22.	(a) Medium P is optically denser than Q because in it the ray is bending more towards the normal as $\angle r_P < \angle r_Q$ (b) 1 dioptre is the power of a lens whose focal length is 1 metre. (c) f (m) $= \frac{1}{P(D)}$ $= \frac{1}{+0.5D}$ = + 2m	 1 1 ½ ½	 3
23.	By placing second (identical) prism in an inverted position with respect to the first prism.  Diagram Labelling	1 1 ½ ½	 3
24.	(a) Presbyopia (b) Gradual weakening of the ciliary muscles of the eye / diminishing flexibility of the eye lens. (c) Bifocal lens  	½ 1 ½ 1	 3
	SECTION C		
25.	• Homogeneous mixture of two or more metals, or a metal and a non-metal. • By first melting the primary metal,and then, dissolving the other	1	

	elements in it in definite proportions. It is then cooled at room temperature. • Stainless steel- Iron, Nickel, Chromium • Hard, does not rust.	2 1 1	5
26.	•  Labelling Diagram • Process of fertilization : Pollen tube is formed from the pollen grain . Fusion of male germ cell with female germ cell to form zygote. • Ovary- Changes into fruit • Ovule- Changes into Seed OR (a) The period during adolescence is called puberty/age of males and females at which reproductive organs become functional. (b) (i) Testes – Production of sperms /Secretion of male sex hormone testosterone. (ii) Seminal vesicle – secretes a fluid which makes the transport of sperms easier/ the fluid secreted gives nutrition to sperms. (iii) Vas deferens- carries the sperms to the seminal vesicle. (iv) Urethra- forms a common passage for both the sperms and urine. (Any one) (c) because the sperm formation requires a lower temperature than the normal body temperature. (d) With the help of a long tail.	1 ½ 1 ½ 1 ½ ½ 1 ½ × 4 1 1	5
27.		2	

	(a) Three resistors are connected in parallel hence voltage across each is same i.e. 6V.		
	$I_1 = \frac{V}{R_1} = \frac{6}{10} = 0.6$ A	½	
	$I_2 = \frac{V}{R_2} = \frac{6}{20} = 0.3$ A	½	
	$I_3 = \frac{V}{R_3} = \frac{6}{30} = 0.2$ A	½	
	b) $I = I_1 + I_2 + I_3 = 1.1$ A	½	
	c) $R_{eff} = \frac{V}{I}$	½	
	$= \frac{6}{1.1} = 5.4\Omega$	½	
	OR		
	$R_1 = R_2 = 15\Omega$ V= 6V		
	i) In series : $R_s = R_1 + R_2 = 15\Omega + 15\Omega = 30\Omega$	½	
	$I = \frac{V}{R_3} = \frac{6V}{30\Omega} = 0.2$ A	½	
	$\therefore P_1 = VI = 6V \times 0.2\ A = 1.2$ W	1	
	ii) In parallel		
	$R_p = \frac{R_1 \times R_2}{R_1 + R_2} = \frac{15 \times 15}{15 + 15} = \frac{225}{30} = 7.5\Omega$	½	
	$I = \frac{V}{R_p} = \frac{6V}{7.5\Omega} = 0.8$ A	½	
	$P_2 = VI = 6V \times 0.8\ A = 4.8W$	1	
	Ratio of power $= \frac{P_1}{P_2} = \frac{1.2W}{4.8W} = \frac{1}{4}$	½	
	$\therefore P_1 : P_2 = 1 : 4$	½	5
28.	Olfactory indicator	1	
	(a) Colourless and Odourless gas is evolved with bubbles .	1	
	$Zinc + Acid \rightarrow Zinc\ Salt + H_2 \uparrow$		

	(or by using any example of acid e.g. HCl/ H_2SO_4) (b) Brisk effervescence/ colourless and odourless gas is evolved. Sodium carbonate + Acid ⟶ Sodium salt of Acid + Water + Carbon dioxide ↑ (or by using any example of acid like HCl/ H_2SO_4) OR • Water of crystallization is the fixed number of water molecules present in one formula unit of a salt. • Examples $CuSO_4 .5H_2O$ $Na_2CO_3.10\ H_2O$ (or Any other) • Heat a few crystals of hydrated copper sulphate(bluecolour) in a dry boiling tube. Water droplets are seen in the boiling tube. Colour : The colour of copper sulphate changes to white . State : The blue crystal changes to white powder.	1 1 1 1 ½ ½ ½ ½ 1 1	5
29.	(a) For providing energy for various metabolic processes / Formation of new cells / Repair of damaged or worn out cells & tissues / Developing resistance against diseases. (Any Two) (b) Peristaltic movement / Peristalsis/ Rhythmic contraction and relaxation of the muscles in the lining of alimentary canal. (c) Herbivores eat plant matter which is rich in cellulose and takes longer time to digest and hence longer small intestine. (d) The inner lining of the stomach will not be protected from the action of the acid /HCl	1+1 1 1 1	5
30 .	(a) Mode : Parallel arrangement Reasons : • Voltage across each appliance is same. • Selective operation of devics is possible /separate switch can be provided in the circuit for each appliance. • If one device is defective or non-operational, working of others is not affected. (Any Two) (b) 5A 15 A Due to difference in power rating of appliances used in household. (c) When live wire and neutral wire come in direct contact/ overloading. Prevention : By the use of fuse/ using good quality cables.	½ 1 × 2 ½ ½ ½ ½ ½	5