

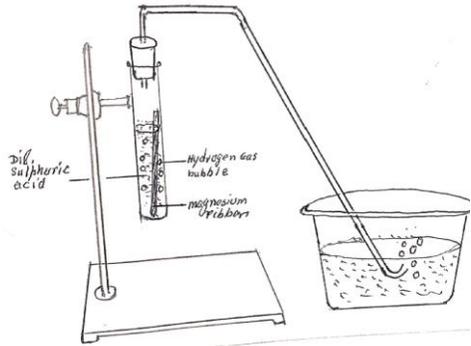
Strictly Confidential: (For Internal and Restricted use only)
Secondary School Examination-2020
Marking Scheme – SCIENCE
(SUBJECT CODE :086) (PAPER CODE –31/2/3)

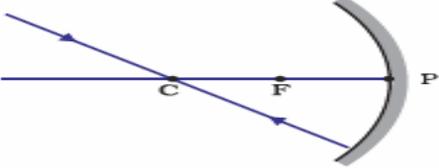
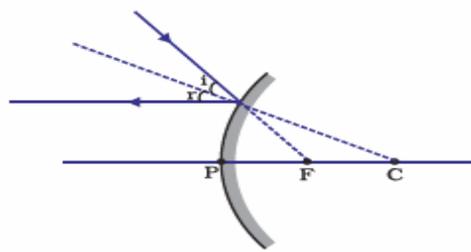
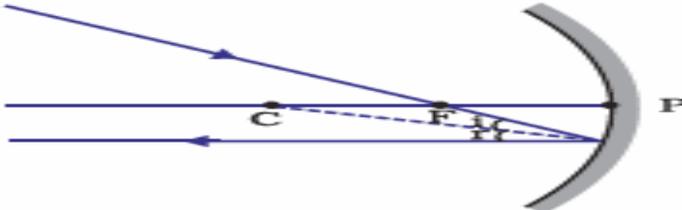
General Instructions: -

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 efforts in 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).

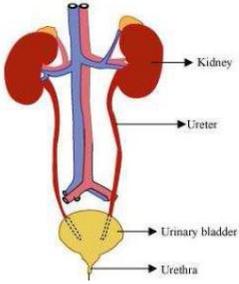
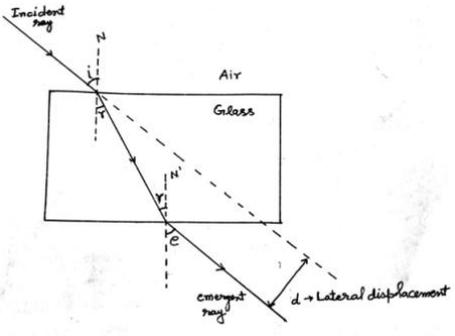
11. Ensure that you do not make the following common types of errors committed by the Examiner in the past:-
- Leaving answer or part thereof unassessed in an answer book.
 - Giving more marks for an answer than assigned to it.
 - Wrong totaling of marks awarded on a reply.
 - Wrong transfer of marks 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.

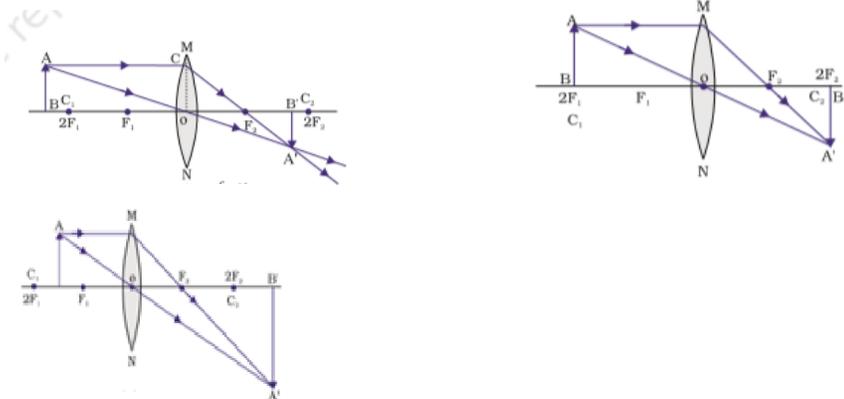
MARKING SCHEME- CLASS X SCIENCE (2019-20)			
QUESTION PAPER CODE : 31/2/3			
S.NO	Value Points/Expected Answer	MARKS	TOTAL MARKS
SECTION - A			
1.	(a) / Both (A) and (R) are true and (R) is the correct explanation of the assertion.		1
2.	(d) / (A) is false, but (R) is true.		1
3.	Due to weak intermolecular forces.		1
4.	Two / Lithium and Beryllium		1
5.	(c) / 8Ω		1
6.	(d) / $R_2 > R_1 > R_3$		1
7.	(b) / B,C and D OR (d) / Opaque eye lens		1
8.	(b) / Group 13 period 2 OR (b) / X_2Y		1
9.	(b) / Clove oil		1
10.	(d) / x= Physical state of $KClO_3$ and KCl y = Reaction condition z= Physical state of O_2		1
11.	(b) / Maharashtra		1
12.	(c) / Sugarcane and rice OR (c) / Carbon monoxide		1
13.	(a) Are deeper hot regions of earth's crust where molten rocks are formed. (b) New Zealand / United States of America / China/Indonesia, Philippines / Turkey/ New Mexico. (Any two) (c) Electromagnetic Induction. (d) In case of A.C. transmission of power/electricity takes place without much loss of energy.	1 $\frac{1}{2} + \frac{1}{2}$ 1 1	4
14.	(a) In the neck region (b) Thyroxine regulates carbohydrate, proteins and fat metabolism in the body./ It promotes growth of body tissue. (c) Excess of secretion of thyroxine in the body /overactivity of the thyroid gland (d) Can be controlled by including iodised salt in our diet. (or any other relevant answer)	1 1 1 1	4
SECTION-B			
15.	(a) A (b) D	$\frac{1}{2}$ $\frac{1}{2}$	

	(c) B (d) C (e) A ₂ C (f) B & D	1/2 1/2 1/2 1/2	3
16.	(i) A = CaO / Quick lime/ Calcium oxide B = Ca(OH) ₂ / Slaked lime / Calcium hydroxide (ii) CaO + H ₂ O → Ca(OH) ₂ + heat or energy (iii) Combination reaction Exothermic reaction	1/2 1/2 1 1/2 + 1/2	3
17.	(a) Water of crystallization is the fixed number of water molecules present in one formula unit of salt. (b) (i) $\text{NaHCO}_3 \xrightarrow{\text{Heat}} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$ Baking Soda Sodium Carbonate (ii) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O} \xrightarrow{373\text{K}} \text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O} + 1\frac{1}{2}\text{H}_2\text{O}$ Gypsum Heat Plaster of Paris OR •  • $\text{Mg} + \text{H}_2\text{SO}_4 \rightarrow \text{MgSO}_4 + \text{H}_2 \uparrow$	1 1 1 Diagram 2 1	3
18.	(a) It shields the earth from the harmful ultraviolet (UV) radiations from the sun. (b) • By the action of UV radiations on oxygen molecule which splits to form free oxygen atoms. • These free oxygen atoms combine with oxygen molecule to form ozone. (If the student writes in equation form credit marks) (c) Chlorofluorocarbon (CFC) OR	1 1/2 1/2 1	

	<ul style="list-style-type: none"> Decomposers : Micro-organisms which break up the dead complex organic matter into simpler form. Example Fungi, Bacteria Consequences: <ul style="list-style-type: none"> (i) No nutrient recycling (ii) Natural cleaning will not occur (Natural scavenger) 	1 1+1	3								
19.	<table border="1"> <thead> <tr> <th>Secretions</th> <th>Functions</th> </tr> </thead> <tbody> <tr> <td>(a) mucus</td> <td>(d)Protects the inner lining of stomach from the acid / softening of food</td> </tr> <tr> <td>(b) HCl(Hydrochloric acid)</td> <td>(e)Provides the acidic medium for action of enzyme / Kill the germs.</td> </tr> <tr> <td>(c) Pepsin</td> <td>(f) Digest proteins</td> </tr> </tbody> </table> <p>(Note : a,b and c may in any order but there function must match / be given along with the secretion.</p>	Secretions	Functions	(a) mucus	(d)Protects the inner lining of stomach from the acid / softening of food	(b) HCl(Hydrochloric acid)	(e)Provides the acidic medium for action of enzyme / Kill the germs.	(c) Pepsin	(f) Digest proteins	$\frac{1}{2} \times 6$	3
Secretions	Functions										
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(c) Pepsin	(f) Digest proteins										
20.	<ul style="list-style-type: none"> Chromosomes are thread like structures present in nucleus containing genetic material / DNA Number of chromosomes are reduced to half during gametes / germ cell formation . <p>After fertilization of germ cells the number of chromosomes is maintained in progeny.</p>	1 1 1	3								
21.	<p>(i) Homologous organs: Mammals have forelimbs as do birds, reptiles and amphibians .The basic structure of the limbs is similar though it has been modified to perform different functions in various vertebrates. Therefore these are homologous organs.</p> <p>(ii) Fossils: Study of fossils of Archeopteryx / Dinosaurs show the presence of feathers used for insulation in cold weather but later became useful for flight. So birds have evolved from reptiles.</p>	1 $\frac{1}{2}$ 1 $\frac{1}{2}$	3								
22.	<p>(i)</p>  <p>(ii)</p>  <p>(iii)</p> 	1 1 1	3								

	<p>(b)</p> <ul style="list-style-type: none"> • AlCl_3 • Ionic compound <p>(c)</p> <p>i. Hard and solid- Due to strong force of attraction between the positive and negative ions.</p> <p>ii. High melting and boiling points- Because high amount of energy to break the strong inter-ionic attraction.</p> <p>iii. Good conductor of electricity in molten state- It contains ions.</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2} \times 6$</p>	<p>5</p>
26.	<p>(a)</p> <ul style="list-style-type: none"> • Homologous series is a group of compounds which have the same functional group, same general formula and where successive members differ by $-\text{CH}_2$ in the molecular formula <p>Example : $\text{CH}_3\text{-OH}$, $\text{CH}_3\text{-CH}_2\text{-OH}$ Functional group : $-\text{OH}$, General Formula : $\text{C}_n\text{H}_{2n}\text{OH}$</p> <p>(b) Esterification : The reaction of carboxylic acid with an alcohol in the presence of H_2SO_4 yields an ester.</p> $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \xrightarrow[\text{Heat}]{\text{Conc. H}_2\text{SO}_4} \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$ <p style="text-align: center;">Ester</p> <p>(If word equation given award full marks)</p> <p>Addition Reaction : A reaction in which two or more atoms are added across a double or triple bond in presence of catalyst is called addition reactions.</p> $\text{CH}_2=\text{CH}_2 + \text{H}_2 \xrightarrow{\text{Pt./Pd or Ni}} \text{CH}_3\text{-CH}_3$	<p>1</p> <p>1</p> <p>$1 \frac{1}{2}$</p> <p>$1 \frac{1}{2}$</p>	<p>5</p>
27.	<p>(a)</p> <ul style="list-style-type: none"> • Chemical Method • Barrier Method • Surgical Method <p>(b) Increase in female foeticide / Declining child sex ratio (Any One) Benefit : Maintaining male-female sex ratio for a healthy society</p> <p>(c) Bacterial \rightarrow Gonorrhoea Syphilis</p> <p>Viral \rightarrow Warts AIDS</p> <p style="text-align: center;">OR</p> <p>(a) (i) Ovary \rightarrow Production of female germ cell/egg Production of hormone – estrogen (Any one)</p> <p>(ii) Oviduct \rightarrow Site of fertilization</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>1</p>	

	<p>(b) (i) Thickening of the uterus lining (ii) Wall of uterus breaks/Menstruation occurs.</p> <p>(c) Providing the nutrition / O₂/to the developing embryo /foetus or removal of waste from the fetus.</p>	1 1 1	5
28.	<p>(a)</p>  <p style="text-align: right;">Diagram Labelling</p> <p>(b) Functions :</p> <p>Kidney → Filtration of blood Ureter → Transports urine from kidney to bladder Urinary Bladder → Stores Urine Urethra → Throws out urine/Excrete Urine</p>	1 ½ × 4 ½ × 4	5
29.	<p>(a)</p>  <p>(b) Ratio of speed of light in air/vacuum to speed of light in the given medium.</p> $n = \frac{c}{v}$ <p>(c)</p> <ul style="list-style-type: none"> • Mirror -1 is Concave • <u>Uses</u> : By dentists/Shaving Mirror/Torch search light/Vehicle headlight /solar furnace. • Mirror-2 is convex mirror. • <u>Uses</u> : Rear view mirror in vehicles/ for security purpose. <p style="text-align: center;">OR</p> <p>(a)</p> <ul style="list-style-type: none"> • Ability of a lens to diverge or converge light ray. • SI unit of Power – diopter (D) • Concave lens <p>(b) Position of object:</p>	2 ½ ½ ½ ½ ½ ½ ½	

	<p>(i) Beyond $2F_1$ (ii) At $2F_1$ (iii) Between $2F_1$ and F_1</p> <p>(c) Any one of these diagram.</p> 	<p>$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$</p> <p>2</p>	<p>5</p>
<p>30.</p>	<p>(a) $R = \rho \frac{l}{A}$</p> $R_x = \rho \frac{l_x}{A_x} = \frac{30}{\pi \times 2 \times 2}$ $R_y = \rho \frac{l_y}{A_y} = \rho \frac{10}{\pi \times 1 \times 1}$ $\frac{R_x}{R_y} = \frac{\rho \cdot l_x}{A_x} \times \frac{A_y}{\rho \cdot l_y}$ $= \frac{30}{\pi \times 2 \times 2} \times \frac{\pi \times 1 \times 1}{10}$ $\frac{R_x}{R_y} = \frac{3}{4}$ <p>$R_x : R_y = 3:4$</p> <p>(b) Here $I = 500 \text{ mA}$; Resistance of lamp = R_1 Resistance of the conductor (R_2) = 10Ω Pot. Difference (V) = 6 volt Net resistance of the circuit $R = R_1 + R_2 = \frac{V}{I}$ $R_1 + 10 \Omega = \frac{6}{0.5}$</p>	<p>$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$</p>	<p>1 $\frac{1}{2}$</p>

	$R_1 + 10 \Omega = 12 \Omega$ $R_1 = (12 - 10) \Omega$ $= 2 \Omega$	1	5
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