Strictly Confidential- (For Internal and Restricted Use Only) **Secondary School Examination**
SUMMATIVE ASSESSMENT - II
March 2015

Marking Scheme – Science (Vocational) 531/2

1. The Marking Scheme provides general guidelines to reduce subjectivity in the marking. It carries only suggested value points for the answer. These are only guidelines and do not constitute the complete answer. Any other individual response with suitable justification should also be accepted even if there is no reference to the text.

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.

3. If a question has parts, please award marks in the right hand side for each part. Marks awarded for different parts of the question should then be totalled up and written in the left hand margin.

4. If a question does not have any parts, marks be awarded in the left hand side margin.

5. If a candidate has attempted an extra question, marks obtained in the question attempted first should be retained and the other answer should be scored out.

6. Wherever only two/three of a 'given' number of examples/factors/points are expected only the first two/three or expected number should be read. The rest are irrelevant and should not be examined.

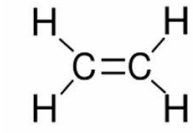
7. There should be no effort at 'moderation' of the marks by the evaluating teachers. The actual total marks obtained by the candidate may be of no concern of the evaluators.

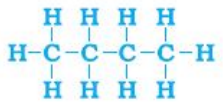
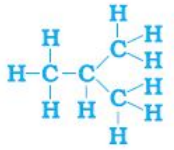
8. All the Head Examiners / Examiners are instructed that while evaluating the answer scripts, if the answer is found to be totally incorrect, the (X) should be marked in the incorrect answer and awarded '0' marks.

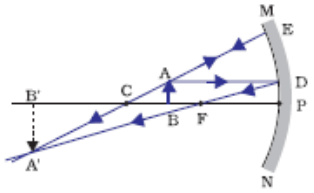
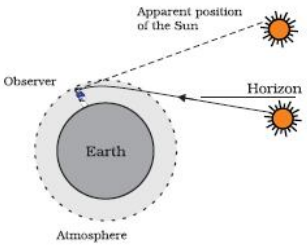
9. ½ mark may be deducted if a candidate either does not write units or writes wrong units in the final answer of a numerical problem.

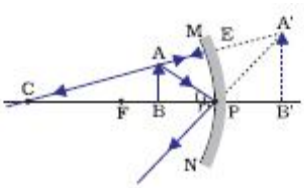
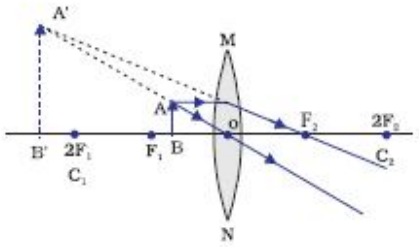
10. A full scale of mark 0 to 100 has to be used. Please do not hesitate to award full marks if the answer deserves it.

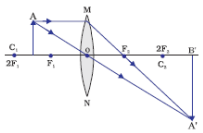
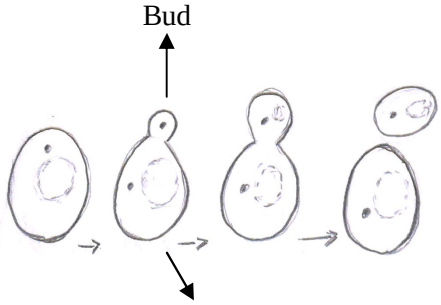
11. As per orders of the Hon'ble Supreme Court the candidates would now be permitted to obtain photocopy of the Answer Book on request on payment of the prescribed fee. All Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points given in the marking scheme.

	Expected Answer/ Value point **SECTION – A**	Marks	Total
Q1.	Propanoic acid, C_2H_5COOH	½, ½	1
Q2.	Because in sexual reproduction variations are created in the species which promote survival chances.	1	1
Q3.	To save time and energy spent in the segregation of waste.	1	1
Q4.	i. To reuse the plastic / glass containers, etc., ii. To switch-off fans, lights when not in use, iii. To reuse the garbage of kitchen as manures, iv. Rain water harvesting v. To use cycle for short distances vi. To use recycled paper Or any other suitable activity (any four)	½ x 4	2
Q5.	i) Recharges ground water ii) Increases the life of the downstream dams and reservoirs iii) Reduces mismanagement and exploitation of resources (any two) with suitable explanation.	1 x 2	2
Q6.	i) Wider field of view, erect image ii) Produce intense, parallel beam of light	½, ½ ½, ½	2
Q7.	A series of carbon compounds having same functional group and similar structures / same general formula. i) C_nH_{2n} ii) C_nH_{2n-2}  **ethene**  **ethyne** ***Note:*** – marks are to be awarded for structure only.	1 ½ ½ ½, ½	3
Q8.	• The phenomenon of existence of two or more compounds having same molecular formula but different structures. • Propane has only three carbon atoms in its molecule, hence more than one structure is not possible.	1 1	

	• 	½	
		½	3
Q9.	i) K, 2,8,8,1	½ , ½	
	ii) Be and Ca, as they have same number of electrons in their outermost shell.	½, ½	
	iii) Be and F, Be		
	OR		
	K and Ca, K	½, ½	
Q10.	• Seven	½	
	• Valency first increases from 1 to 4 and then decreases from 4 to 0	1	
	Metallic character decreases.	½	
	• No variation in valency.	½	
	Atomic size increases in a group	½	3
Q11.	The main difference: Sexual reproduction involves both sexes, males and females but this does not take place in asexual reproduction.	1	
	Features of asexual reproduction :		
	i. Single parent is involved		
	ii. Gametes are not formed		
	iii. No fertilization		
	iv. No variation		
	v. Daughter organisms are identical to the parents (any four)	½ x 4	3
Q12.	In sexual reproduction fusion of male and female germ cells (gametes) takes place. These germ cells contain half the number of chromosomes or haploid number of chromosomes compared to non-reproducing body cells.	1 ½	
	When male and female gametes fuse at the time of fertilization, it restores the original /diploid number of chromosomes of the parents, ensuring the stability of the species.	1 ½	3
Q13.	Placenta – It is a specialized tissue embedded in the uterine wall with the help of which the embryo gets its nutrition from the mother's blood.	1	
	Function –		
	i. To provide large surface area for glucose and oxygen to pass through mother's blood to the embryo.	1	
	ii. To remove the metabolic waste generated by the embryo through placenta into mother's blood.	1	3
Q14.	Yes	½	
	In one of the Mendel's experiment when a tall pea plant was crossed with a dwarf pea plants, the F1 generation pea plant were all tall.	½	
	When F1 pea plants were selfed, the F2 generation pea plants were not all tall, they were tall and dwarf plants.	1	
	From this experiment it may be concluded that the F1 plants had inherited both parental characters or traits, but did not express dwarfness which is a recessive character in the presence of trait for tallness which is a dominant character.	1	

Q15.	Example – Weight gain / loss / reading / dancing, etc. (any two) Reasons – Because such changes can not pass on to the DNA of the germ cells. Traits – Acquired traits	½, ½ 1 1	3
Q16.	i) Concave mirror ii) $v = -36$ cm; $u = -12$ cm $m = -\frac{v}{u}$; $m = -\frac{(-36\,\text{cm})}{(-12\,\text{cm})} = -3$ iii)  BB′ = 24 cm	½ ½, ½ 1 ½	3
Q17.	• Due to atmospheric refraction, the sun is visible to us about two minutes before the actual sun-rise and about two minutes after the actual sun-set •  	1 2	3
Q18.	Ozone (O_3) is a molecule formed by three atoms of oxygen. / contains 3 atoms of oxygen Ozone is formed at the higher levels of the atmosphere. Ozone is formed by the UV radiation acting on oxygen molecule (O_2) which splits O_2 into free oxygen atoms that combine again with the molecular oxygen (O). OR $O_2 \xrightarrow{UV} O + O$ $O + O_2 \rightarrow O_3$ (Ozone) Effect on the life – It protects earth from the most harmful UV radiations from the sun that are injurious to the life on earth.	½ ½ 1 1	3
Q19.	• $u = -9$ cm; $f = -18$ cm; $v = ?$ $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ $\therefore \frac{1}{v} = \frac{1}{f} - \frac{1}{u}$ $= \frac{1}{(-18)} - \frac{1}{(-9)}$	½ ½ ½	

	$= -\frac{1}{18} + \frac{1}{9}$ $= \frac{-1+2}{18} = \frac{+1}{18}$ $\therefore v = +18$ cm	1 ½	
	•  PB = 9 cm and PF = 18 cm		
	Diagram	1	
	Marking of Object distance and focal length	1	5
Q20.	i) Converging lens/ Convex lens; as it can form real image.	½, ½	
	ii) a) Between 10 cm and 20 cm from the lens/ more than 10 cm but less than 20 cm from the lens.	½	
	b) More than 20 cm from the lens.	½	
	iii) Image will not be formed on the wall as the image will be actual.	1	
	 	2	5
Q21.	i) Iris – Controls the size of the pupil of the eye.		
	ii) Pupil – Regulates and controls the amount of light entering the eye.		
	iii) Cornea – Maximum refraction of light, falling on the eye, takes place at the cornea.		
	iv) Ciliary muscles – Modify the curvature of the eye lens/ hence helps in adjusting the focal length of the eye lens to enable us to see nearby as well as far objects.	½ × 4	
	• How: By creating social awareness through street plays, posters, banners, door to door campaign etc.	1	
	Why: To develop cooperative working etc.	1	
	Reason for creating awareness: Donation of our pair of eyes can give vision to two people; Noble cause	1	5
Q22.	Carbon has 4 electrons in its outermost shell .It cannot lose 4 electrons to form C^{4+} because very high energy is required to remove 4 electrons.	1 ½	
	It cannot gain 4 electrons to form C^{4-} ions because it is difficult for 6 protons to hold on to 10 electrons.	1 ½	
	• Ionic / Electrovalent Bonds ,	½	
	• Covalent bonds.	½	
	• There are no charged particles in carbon compounds and hence poor conductors of electricity.	1	5

Q23.	Unisexual flower (eg.) - Papaya / Water melon	½	
	Bisexual flower (eg.) - Mustard / Hibiscus	½	
	Pollination – Transfer of pollen grains from anther to stigma of a flower	1	
	Types – Self pollination	½	
	Cross pollination	½	
	Significance – It helps in fertilization.	1	
	After fertilization the zygote divides several times to form an embryo, ovule develops a tough coat and gradually gets converted into seeds.	1	5
Q24.	Fossils are preserved remains or impressions of pre-historic organism in the different strata of the earth's crust.		
	Or		
	Fossils are dead remains of animals and plants from remote past.	1	
	Fossils are formed when dead organism are not completely decomposed. The organism may get trapped in resins of tree, lava of volcanoes or hot mud, which when hardens retains the animal's parts thus forming fossils.	1	
	Role of fossils – By determining the age of fossils we come to know the type of earth strata present at that time/ We can also know the type of animals and plants present on the earth at that time/ and also helps in establishing evolutionary relationships by providing connecting links.	2	
	Examples: Archeopteryx/ fossils of some dinosaurs with feathers, fossils of invertebrates in sea bed. (or any other suitable example)	1	5
	SECTION – B		
	25) C 26) B 27) C 28) B 29) C 30) A 31) B 32) A 33) B	1x9	9
Q34.	• Brisk effervescence	½	
	• CO_2 / Carbon-di-oxide	½	
	• Lime water will turn milky when this gas is passed through it.	1	2
Q35.			
	Labeled diagram showing of the object, object distance and focal length	1 ½	
	Length of the image – (Actual measured length)	½	2
Q36.			
	Drawing	1	
	Labeling	1	2