

Secondary School Examination
SUMMATIVE ASSESSMENT - II, 2012
MARKING SCHEME
SCIENCE
Class - X

General Instructions :

1. The Marking Scheme provides general guidelines to reduce subjectivity and maintain uniformity. The answers given in the marking scheme are the best suggested answers.
2. Marking be done as per the instructions provided in the marking scheme. (It should not be done according to one's own interpretation or any other consideration). Marking Scheme be strictly adhered to and religiously followed.
3. Alternative methods be accepted. Proportional marks be awarded.
4. If a question is attempted twice and the candidate has not crossed any answer, only first attempt be evaluated and 'EXTRA' written with second attempt.
5. In case where no answers are given or answers are found wrong in this Marking Scheme, correct answers may be found and used for valuation purpose.

- | | | |
|----|---|-----------------------------|
| 1. | 0.02% | 1 |
| 2. | Regulates and controls the amount of light entering the eye. | 1 |
| 3. | Temperature, rainfall, soil, minerals (any two) | 1 |
| 4. | They break down the dead remains and waste product of organisms. | 1/2+1/2 |
| 5. | (a) Mg - 2,8,2 Al-2,8,3 | 1 |
| | (b) 3 rd period because electrons in these atoms are filled in K,L,M shells. | 1 |
| 6. | (a) Properties of elements are a periodic function of their atomic number. | 1 |
| | (b) Periods 7 and groups 18 | 1 |
| 7. | (i) Plants raised by vegetative propagation can bear fruits and flowers earlier than those produced from seeds. | 1 |
| | (ii) Plants that have lost the capacity to produce seeds propagate by this method. | 1 |
| 8. | Binary – Splitting into two daughter cells e.g Amoeba.
Multiple – Splitting into many daughter cells simultaneously e.g Plasmodium | 2
(1 for each structure) |

9. Hold the given piece of glass over printed matter 2
 (i) Real image can be obtained on a screen but virtual image cannot
 (ii) Real image is formed when rays actually meet after reflection/refraction while virtual image is formed by extending these rays (1 + 1)
10. Eye lens is made up of fibrous material. Its curvature can be changed by ciliary muscles. Which changes its focal length. When muscles is relaxed the lens is thin and focal length increases. Their eye is able to see distant objects similarly when ciliary muscles contract, focal length decreases and eye is able to see nearer objects. 1
 Distance of distinct vision. Minimum distance at which objects can be seen distinctly what strain. This is 25 cm. 1
11. A spectrum is the band of distinct colours we obtain when the white light is split by a prism. We can recombine the component of white light by passing them through a prism placed upside down near the given prism. When we pass white light through two identical prism held side by side with their refracting edges in opposite directions; the first prism disperses white light but the 2nd prism recombines the. Thus light emerging from 2nd prism is white. Fig 11.6 of NCERT – 1
1
12. Coal and petroleum 1
 These fuels were made by decomposition of biomass over millions of years 1
13. (i) Involvement of local people by giving the employment in sericulture and harvesting operation 1
 (ii) Allowing collection of fuel wood and fodder or payment of normal fee. 1
14. C_3H_4 , C_2H_4 1½
 because they are unsaturated compounds. ½
 $C_3H_4 \rightarrow$ Alkyne ½+½
 $C_2H_4 \rightarrow$
15. (a) 9, because atomic number increases by one in going from one element to the next modern periodic table. ½+½
 (b) 'X' because of less effective nuclear charge ½+½
 (c) 'Z' has layer atomic size became new shells are added where we go down the group ½+½

16.

Ovary	Testis
(i) This is female primary	This is male primary
(ii) Sex organ which carry	Sex organ which
eggs and secrete estrogen and progesterone	produce sperms and secrete testosterone

1
1
1

17. 1
- XX : XY

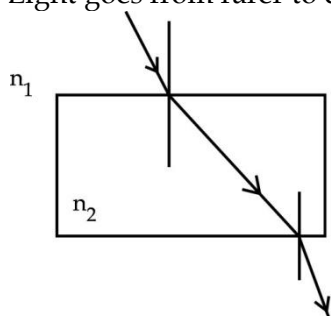
1 : 1
- 1

18. Organs which have similar structure basic pattern and different functions are called homologous organs. Organs which have different basic plan but perform similar functions. 1
- Wings of an insect, wings of a bat – Analogous fore limbs of lizard, forelimbs of bird – homologous 1

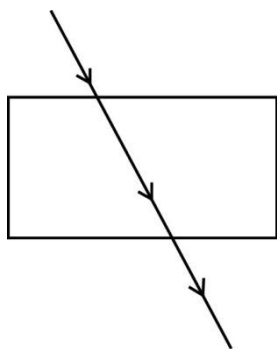
19. Formation of new species because of barriers, genetic drift and natural selection takes place which leads to complex structures with better survival advantage. This is known as evolution. 1
- The traits, which are acquired during the life time of an organism affect the structure and functioning of cells, tissues and organs without affecting the genetic material and thus are not inherited. 1

20. (a) $u = 30 \text{ cm}$ $v = 30 \text{ cm}$ 1
 This is possible if the object is placed at $2F$
 $\therefore 2f = 30$
 $f = 15 \text{ cm}$
- (b) $u = 15 \text{ cm}$; $v = 70 \text{ cm}$ is incorrect. This is because with if the object is at focus then image is formed at infinity. 1
- (c) In (iii) case because object is at center of curvature 1

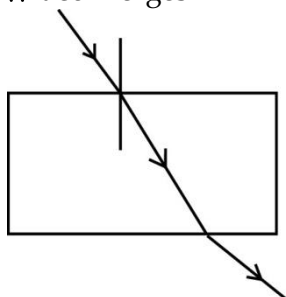
21. (i) When $n_1 > n_2$ 1
 Light goes from rarer to denser medium \therefore it diverges



- (ii) When $n_1 = n_2$ 1
 There is no change in medium \therefore no bending or refraction occurs

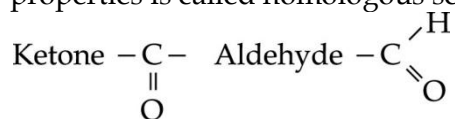


- (iii) When $n_1 < n_2$
 Light goes from denser to rarer medium
 \therefore it converges



22. (a) At sunrise and sunset Light has to pass through thicker layers of air and large distance. Shorter wavelengths are scattered away only larger wavelengths of light reaches us. 1
 (b) No atmosphere, no scattering of light 1
 (c) Due to atmospheric refraction of star light and physical conditions of earth's atmosphere not being stationary. 1

23. (a) Propanoic acid, Benzene. 1
 (b) A series of compounds, in which the compounds have similar chemical properties is called homologous series. 1



- (c) $\text{CH}_3\text{OH} + \text{CH}_3\text{COOH} \xrightarrow{\text{H}^+} \text{CH}_3\text{COOCH}_3 + \text{H}_2\text{O}$ 1

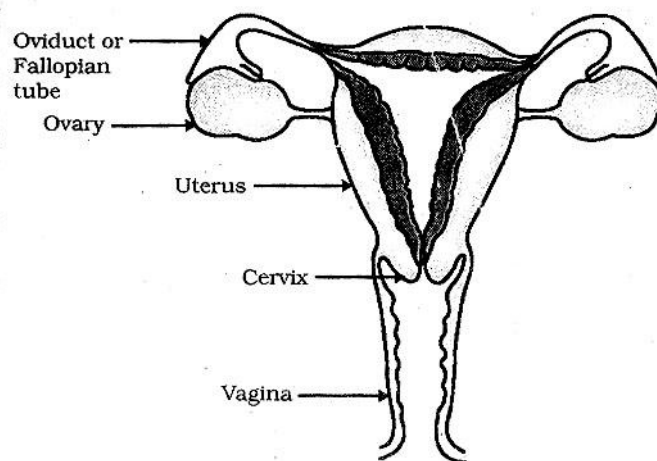
Esterification reactions. 1

OR

- (i) (a) $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow[\text{conc H}_2\text{SO}_4]{443 \text{ K}} \text{CH}_2 = \text{CH}_2$ 1
 (b) $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{alk KMnO}_4} \text{CH}_3\text{COOH}$ 1
 (ii) (a) $\text{CH}_4 + \text{Cl}_2 \xrightarrow{\text{sunlight}} \text{CH}_3\text{Cl} + \text{HCl}$ 1
 (b) $\text{CH}_3\text{COOC}_2\text{H}_5 \xrightarrow{\text{NaOH}} \text{C}_2\text{H}_5\text{OH} + \text{CH}_3\text{COOH}$ 1
 (c) $\text{CH}_4 + \text{O}_2 \longrightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{light} + \text{energy}$ 1

24. Forelimbs of lizard and forelimbs of bird

(a)



Human-female reproductive system

- (b) Ovary release egg every month the uterus prepares itself to receive fertilized egg. The inner lining becomes spongy. If fertilisation does not take place then this lining breaks down and comes out through vagina.

OR

- (a) Fig 8.10 of NCERT book
 (b) (i) people may get female foetus aborted
 (ii) reckless female foeticide has disturbed male female ratio in society.

25. (a) Statement of snell's law

$$\frac{\sin i}{\sin r} = \text{Constant} = \text{Refractive Index}$$

Where i = angle of incidence

r = angle of refraction

- (b) $h = 4 \text{ cm}$

$$u = -25 \text{ cm}$$

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

$$v = ?$$

$$h^1 = ?$$

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$$

$$\frac{1}{v} + \frac{1}{-25} = \frac{1}{-15}$$

$$\frac{1}{v} = \frac{1}{25} - \frac{1}{15} = \frac{3-5}{75} = \frac{-2}{75}$$

$$v = -37.5 \text{ cm}$$

$$m = \frac{h^1}{h} = -\frac{v}{u}$$

$$\begin{aligned}
 (c) \quad h^1 &= -\frac{vh}{u} \\
 &= \frac{(-37.5) \times 4}{-25} \\
 &= -6 \text{ cm}
 \end{aligned}$$

Image is inverted and enlarged

OR

(a) LAWS OF REFRACTION OF LIGHT

(i) The incident ray, the refracted ray and the normal to the interface of two transparent media at the point of incidence, all lie in the same plane

(ii) The ratio of sine of angle of incidence to the sine of angle of refraction is a constant, for the light of a given colour and for given pair of media.

$$\begin{aligned}
 (b) \quad R &= +3 \text{ m} \\
 u &= -5 \text{ m} \\
 v &=?
 \end{aligned}$$

$$h^1 = ?$$

$$f = R/2 = \frac{3}{2} = 1.5 \text{ m} \quad \frac{1}{2}$$

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f} \quad \frac{1}{2}$$

$$\frac{1}{v} + \frac{1}{-5} = \frac{1}{1.5}$$

$$\frac{1}{v} = \frac{1}{1.5} + \frac{1}{5} = \frac{1+0.3}{5 \times 0.3} = \frac{1.3}{1.5} = \frac{13}{15}$$

$$V = 1.15 \text{ m.}$$

$$\text{magnification, } m = \frac{h^1}{h} = \frac{-v}{u} = -\frac{1.15}{-5.00} = +0.23 \quad \frac{1}{2}$$

Image is virtual erect and smaller in size by a factor of 0.23.

26. (b) 1

27. (a) 1

28. (c) 1

29. (c) 1

30. (a) 1

31. (a) 1

32. (a) 1

33. (d) 1

34. (b) 1

35. (d) 1

36.	(d)	1
37.	(d)	1
38.	(b)	1
39.	(d)	1
40.	(a)	1
41.	(d)	1

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