

Home Based CBSE Board Exam 2015

SUMMATIVE ASSESSMENT - II (2014-15)

SCIENCE Class - X G1QFU6Z

Time allowed : 3 hours

St. Paul Kalyanpur, Bihar

Maximum Marks : 90

- 1/ The formula of citric acid is shown below : 1
- $$\begin{array}{c}
 \text{COOH} \\
 | \\
 \text{CH}_2 \\
 | \\
 \text{H}_3\text{C}-\text{C}-\text{COOH} \\
 | \\
 \text{CH}_2 \\
 | \\
 \text{COOH}
 \end{array}$$
- State the name of  $-\text{COOH}$  functional group in citric acid.
- 2/ Mention the function of stamen. 1
- 3/ Identify the biodegradable pollutants from the following : 1  
Sewage, agriculture waste, fertilizers and pesticides.
- 4/ With the help of ray diagram show that angle of incidence is equal to the angle of reflection when a ray is incident on the concave mirror. 2
- 5/ List four changes in our habits which can make a difference in our energy consumption patterns. 2
- 6/ Non-biodegradable materials do not break down by the action of microorganisms. Will there be any effect of heat and pressure if they remain buried under the land for a long time ? 2
- 7/ The reaction between methane and chlorine is considered a substitution reaction. Explain with the help of a chemical equation. 3
- 8/  $\text{C}_3\text{H}_6$ ,  $\text{C}_4\text{H}_8$  and  $\text{C}_5\text{H}_{10}$  belong to the same homologous series. 3
- (i) Define homologous series.
  - (ii) Why the melting and boiling points of  $\text{C}_5\text{H}_{10}$  is higher than  $\text{C}_4\text{H}_8$  ?
  - (iii) Arrange these hydrocarbons in order of increasing boiling points.
- 9/ Explain how the tendency of metallic character changes on moving down a group in the periodic table ? 3

- 10/ The position of three elements A, B and C in the periodic table is shown below : 3

Group → Period ↓	I	II	III	IV	V	VI	VII	VIII
1								
2							C	
3	A	B						

Giving reasons explain : (a) Element A is a metal.

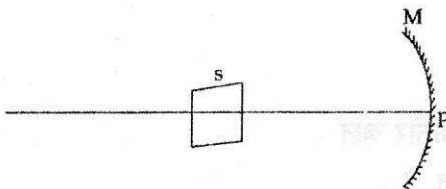
(b) Element B has larger atomic size than the element C. (c) Element C has a valency of one.

- 11 Mendel had worked upon the laws of inheritance and applied it in a number of spheres. Write three applications of Mendel's Laws. 3
- 12 In case A, brother and sister are very closely related. In case B, the girl and her 1<sup>st</sup> cousin are also related. Out of these two cases which are closely related and why? 3
- 13 Define the following processes of asexual reproduction. 3  
(a) Spore formation (b) Regeneration (c) Multiple fission
- 14 How is placenta designed to give nutrition to the developing embryo? 3
- 15 Give reasons in the following cases : 3  
(a) A bacterial cell is able to survive better in hot weather conditions.  
(b) Sexually reproducing organisms have more variations.
- 16 (a) Is there any variation in the image distance in the eye when we increase or decrease the distance of an object from the eye? Justify your answer. 3  
(b) Define least distance of distinct vision. Give the value of least distance of distinct vision for a young adult with healthy eye.
- 17 An object is placed at a distance of 20 cm from a concave mirror of radius of curvature 60 cm. Find the position and nature of image formed by the mirror. Also find magnification produced by mirror. 3
- 18 "Bharat Scouts and Guides" group of a school motivated public to donate old clothes, books, stationary items, utensils etc so that these can be distributed among the needy people whose homes are devastated by floods. 3  
(a) Mention two objectives fulfilled by this initiative.  
(b) List any two values associated with this.
- 19 (i) What is a homologous series? 5  
(ii) Generate homologous series of alkane upto four carbon atoms.  
(iii) Mention four characteristics which change with increasing molecular mass in a homologous series.
- 20 (a) What is speciation? (b) What are the factors that lead to speciation? 5
- 21 (a) Mention the type of method of reproduction as used by unicellular organisms. Define the method. 5  
(b) How can the above method be classified further?  
(c) Differentiate between the process of reproduction as seen in *Amoeba* and *Leishmania*.
- 22 Draw a diagram to show the formation of image of an object placed at (i) the near point of the defective eye and (ii) infinity by a myopic eye. With the help of a ray diagram show how such eye defect can be corrected? List two reasons due to which this eye defect can be caused. 5
23. An object placed at infinity from a concave mirror of focal length 10 cm. Find the position and nature of image formed. Draw ray diagram to show the formation of image. (not to scale).
- 24 Account for the following :  
(a) Part of the human eye that helps in changing the focal length of the eye lens.  
(b) The condition resulting due to the eye lens becoming cloudy. *cataract*

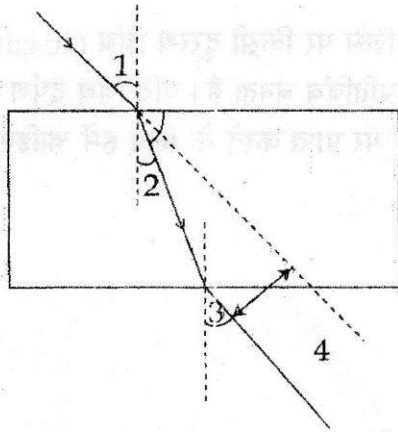
- (c) The factors on which colour of the scattered white light depends ~~on wavelength~~ <sup>on dispersion</sup>
- (d) The range of vision of a normal eye?  $25\text{cm}$
- (e) The sky appears dark to the astronauts in the space?

### SECTION - B

- 25 The correct sequence of steps in preparation of soap is :
- Heat vegetable oil with NaCl, add sodium hydroxide, filter
  - Heat vegetable oil with NaOH, filter, add sodium chloride
  - Heat vegetable oil with NaCl, filter, add sodium chloride
  - Heat vegetable oil with NaOH, add sodium chloride, filter
- 26 During saponification alcohol should be heated :
- on direct flame
  - on indirect flame
  - in oil bath
  - in water bath
- 27 Soap gives lather with :
- soft water
  - hard water
  - boiled water
  - cold water
- 28 The following are the few steps of the procedure for determining the focal length of a given convex lens by obtaining a sharp image of a distant object :
- Measure the distance between the lens and the screen
  - Select a suitable distant object
  - Adjust the position of the lens to form a sharp image
  - Hold the lens between the object and screen with its faces parallel to the screen. The correct sequence of the steps for the experiment is :
- (iii), (iv), (i), (ii)
  - (ii), (iv), (iii), (i)
  - (iii), (i), (iv), (ii)
  - (ii), (iii), (iv), (i)
- 29 In the figure below 's' is the position of the screen on which a sharp image of a distant object (nearly 600 m away from the concave mirror of focal length 10 cm) is formed by the mirror 'M'. If the object moves towards the mirror by some distance say 50 cm, then to obtain the sharp image of the object on the same screen again the :



- screen should be moved towards the object.
  - screen need not be moved.
  - mirror should be moved towards the screen.
  - screen and mirror both should be moved towards the object by same distance.
- 30 A student was asked to label his diagram made after tracing the path of a ray of light through a rectangular glass slab. The correct sequence of labeling for  $\angle i$ ,  $\angle e$ ,  $\angle r$  and lateral displacement respectively is :



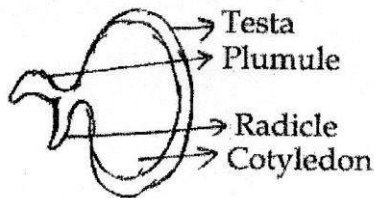
- (a) (1), (2), (3) and (4)      (b) (3), (4), (1) and (2)  
 (c) (1), (3), (2) and (4)      (d) (3), (2), (4) and (1)

31. When a ray of light enters from air to the triangular glass prism then it emerges out of the prism. In this situation : 1
- (a) angle of incidence is smaller than the angle of emergence.  
 (b) angle of incidence is larger than the angle of emergence.  
 (c) angle of incidence is equal to angle of emergence.  
 (d) there is no fixed relation between angle of incidence and angle of emergence.

32. Select the mismatched group for homologous organs :

- (a) forelimbs of horse, wings of bird  
 (b) wings of insect, flippers of seal  
 (c) flippers of seal, wings of birds  
 (d) forelimbs of horse, forearms of man

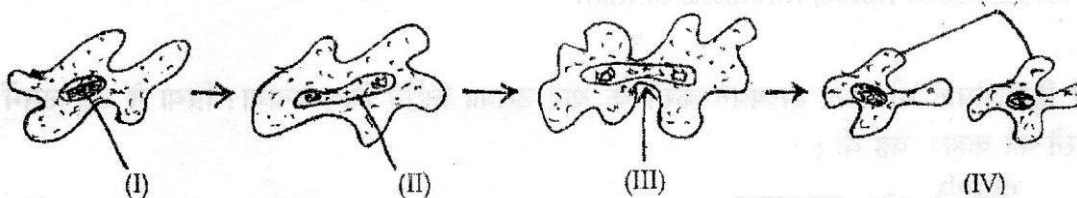
33. Bhavana after observing the structure of a dicotyledonous seed draws the adjoining diagram. Her friend Priya suggested her a major correction in it. It was :



- (a) The size of seed was not proportional.  
 (b) The number of cotyledons.  
 (c) The shape of cotyledon.  
 (d) The position of hypocotyle.

34. When acetic acid was added to sodium hydrogen carbonate solution taken in a test tube a brisk effervescence was observed immediately and a transparent solution remained in the test tube. Which gas was liberated as brisk effervescence and give the chemical composition of the transparent solution of the test tube. 2

35. Redraw the following diagrams on your answer sheet and Label them correctly : 2



36. A student performed an experiment with convex lens and found the virtual image of an object. Find : (a) Position of the object. (b) Draw ray diagram for the above situation. 2