

Third Periodic Test – December 2019

Science (Set A)

Class: X
Date: 15-12-2019

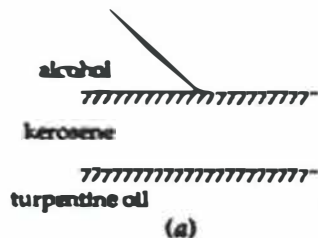
Time Allowed : 3 Hrs
Maximum Marks: 80

General Instructions:

1. The question paper comprises three sections --- A, B and C. Attempt all the sections.
 2. All questions are compulsory
 3. Internal choice is given in each section.
 4. All questions in section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
 5. All questions in Section B are three-marks, short answer type questions. These are to be answered in about 50 - 60 words each.
 6. All questions in Section C are five-marks, long answer type questions. These are to be answered in about 80 - 90 words each.
 7. This question paper consists of a total of 36 questions
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SECTION A

1. What is meant by power of a lens? Give its SI unit. (1)
2. In the electrolysis of water, why is the volume of gas collected over one electrode double than that of the gas collected over the other electrode? (1)
3. Which endocrine gland is present in males but not in females? (1)
(i) Pituitary (ii) testes (iii) Adrenal (iv) Thymus
4. Refractive index of turpentine oil, kerosene and alcohol are 1.47, 1.44 and 1.36 respectively, on the basis of this information, complete the following ray diagram to show path of ray of light through each medium. Give reason. (1)



5. Why does calcium float on water? (1)

6. Floral parts of a plant that develop into fruit and seeds are: (1)
(i) Ovary and ovule (ii) Ovary and stamen (iii) Ovule and thalamus (iv)
Both (i) and (ii)

7. (a) Define resistivity. A wire of resistivity ρ is pulled to double its length.
What will be its new resistivity? (1)

OR

A wire has a resistance of 16Ω . It is melted and drawn into a wire of half its original length. Calculate the resistance of new wire.

8. Ionic compounds conduct electricity in molten state. Give reason. (1)
9. In evolutionary terms, we have more in common with: (1)
(i) A chimpanzee (ii) A Chinese school boy (iii) A spider (iv) A bacterium

10. The least distance of distinct vision for a young adult with normal vision is (1)
(a) 25m (b) 25cm (c) 20cm (d) infinity

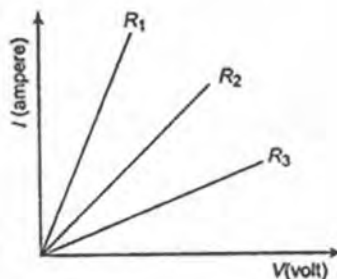
11. The metallic character of elements _____ from top to bottom in a group (1)

12. What is DNA copying? (1)

OR

What is speciation?

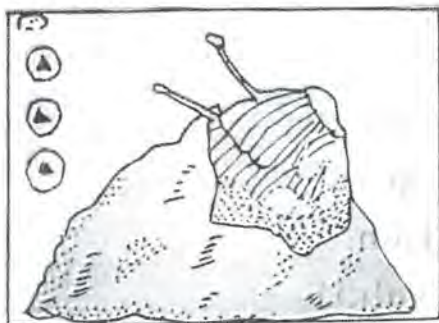
13. A student carries out an experiment and plot the V-I graph of three samples of nichrome wire with resistances R_1, R_2 and R_3 respectively. Which of the following is true? (1)



14. Which of the following does not represent Dobereiner's triad? (1)
a) Li, Na, K b) Be, Mg, Ca c) N, P, As d) Cl, Br, I

15. Identify the fossil:

(1)



16. Two resistors of resistances 2Ω and 4Ω when connected to a battery will have
(a) Same current flowing through them when connected in parallel
(b) Same current flowing through them when connected in series
(c) Same potential difference across them when connected in series
(d) Different potential difference across them when connected in parallel
17. Which of the following can show addition reaction?

(1)

(1)

a) C_2H_4 b) C_2H_6 c) C_2H_5OH d) $CH_3CH_2CH_3$

OR

General formula of an alkyne is _____

a) C_nH_{2n+2} b) C_nH_{2n} c) C_nH_{2n-2} d) C_nH_n

In questions 18, 19 and 20 given below, there are two statements marked as Assertion (A) and Reason (R). Mark your answer as per the codes provided below:

- a. Both A and R are true and R is the correct explanation of A.
b. Both A and R are true but R is not the correct explanation of A.
c. A is true but R is false.
d. A is false but R is true.
e. Both A and R are false.
18. Assertion: The sex of the child is determined by the mother. (1)
Reason: Human have two types of sex chromosomes, XX and XY
19. Assertion: A wire carrying current can deflect a magnetic needle. (1)
Reason: A magnetic field is generated around current carrying conductors.

20. Assertion (A): CH_3Cl is obtained from CH_4 by the action of Cl_2 in the presence of sunlight. Reason (R): It is obtained by addition reaction. (1)

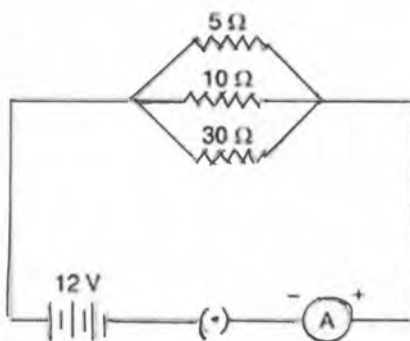
SECTION B

21. Explain why the sun is visible to us two minutes before the actual sunrise and two minutes after the actual sunset. (3)
22. Write a chemical equation for the reaction in which the following changes take place with an example for each
- Change in colour
 - Change in temperature
 - Formation of precipitate

OR

Decomposition reaction is the reverse of combination reaction. Explain with an example for both. (3)

23. DNA content has the tendency to double itself during sexual reproduction due to combining of the genetic material from two parents. How can the problem of DNA doubling be solved to maintain the consistency of the genetic material throughout the species? (3)
24. In the given circuit diagram, calculate : (3)
- The value of current through each resistor
 - The total current in the circuit
 - The total effective resistance of the circuit



OR

(a) Two identical resistors each of resistance 10Ω are connected in :
(i) series (ii) parallel in turn to a battery of 6V . Calculate the ratio of power consumed by the combination of resistor in the two cases.

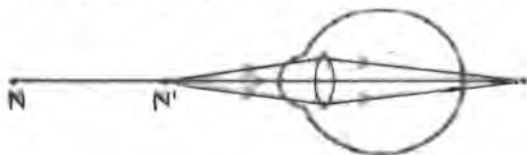
25. a) What is the formula of lead nitrate? (3)
b) Name the products formed on strongly heating lead nitrate?
c) What type of chemical reaction occurs in this change?

- 26 (a) Name the following: (3)
(i) The three carbon molecule that is formed due to the breakdown of glucose during respiration.
(ii) The nitrogenous waste that is removed from the blood in our kidneys.
(b) How do unicellular organisms generally remove waste?

OR

Write any three different glands associated with the digestive system in humans. Also name their secretions.

27. Study the diagram and answer the questions that follow: (3)



- (i) Identify the defect of vision represented by this diagram.
(ii) List the two possible causes of this defect.
(iii) With the help of ray diagram explain how this defect can be corrected.
28. a) What is periodicity in properties of elements with reference to Modern Periodic table?
b) Why do all elements of the same group have similar properties?
c) How does the tendency of elements to gain electrons change as we move from left to right in a period? (3)
29. A pea plant with blue flowers denoted by **BB** is crossed bred with a pea plant with white flowers denoted by **bb**
(i) What is the expected color of the flower in their F1 progeny?
(ii) What will be the percentage of plants bearing white flowers in F2 generation, when the flowers of F1 plants were selfed?
(iii) State the expected ratio of the genotype in F2 progeny. (3)

30. A student is observing a permanent slide showing sequentially the different stages of asexual reproduction taking place in yeast. Name this process and draw the diagrams, of what he observes in a proper sequence. (3)

SECTION C

31. (a) Define focal length of a diverging lens. (1)
(b) A divergent lens of focal length 30cm forms the image of an object of size 6cm on the same side as the object at a distance of 15cm from its optical centre. Use lens formula to determine the distance of the object from the lens and the size of the image formed. (2)
(c) Draw a ray diagram to show the formation of image in the above situation. (2)
32. (a) What are magnetic field lines? List any two characteristics of field lines.
(b) Draw the pattern of magnetic field lines due to a current carrying circular loop.

OR

- (a) Define electromagnetic induction. (2)
(b) Two coils P and S are wound over the same iron core. Coil P is connected to a battery and key and the coil S is connected to galvanometer. Write your observation when
(i) Current in the coil P is started by closing the key. (1)
(ii) Current continues to flow in coil P. (1)
(iii) Current in coil P is stopped by removing the key. (1)
Explain the reason for such observation.
33. a) Show the formation of Magnesium chloride by electron transfer method. (2)
b) Define roasting. What type of ores are roasted? (2)
c) What is an alloy? (1)
34. Give reason for the following:
a) Soap is not effective in hard water.
b) Ethene and Ethyne burn with a sooty flame.
c) Graphite is a good conductor of electricity.
d) Melting and boiling points of butane is higher than that of propane.
e) C_3H_6 and C_4H_8 have similar chemical properties.

OR

(5)

- a) What happens when ethanol is heated with excess of conc. H_2SO_4 at 443K?
What is the role of conc. H_2SO_4 in this reaction? (2)
- b) What are esters? Represent its formation with the chemical equation. (2)
- c) What is observed when sodium carbonate is added to ethanoic acid? (1)
35. (a) What are STDs? Name any two STDs caused by bacteria.
(b) Write the functions of the following parts in human female reproductive system.
i. Ovary ii. Oviduct iii. Uterus (2+3)
36. (a) Why is the use of iodized salt advisable? (2)
(b) Distinguish between: (2)
(i) Spinal nerves and cranial nerves
(ii) Sensory neurons and motor neurons
(c) How is brain protected from injuries and shocks? (1)

OR

- (a) Explain how auxins help in bending of plant stem towards light? (2)
(b) Write an activity to show phototropism. Support your answer with a diagram. (3)



