ASN Senior Secondary School

PRE-BOARD EXAMINATION (2019-20)

Subject – Science

Set-B

Time: 3 hour **MM: 80**

Class: X

General Instructions:

1. The question paper comprises of three sections – *A, B&* C. You are supposed to attempt all the sections.
2. All questions are compulsory. However internal choices are provided.
3. Internal choice is given in each section.
4. All Questions in Section-A are one mark questions, comprising of MCQ, VSA type and assertion-reason type questions. These are to be answered in one word or in one sentence.
5. All Questions in Section-B are three mark, short –answer type questions. These are to be answered in about 50-60 words each.
6. All Questions in Section-C are five mark, long answer type questions. These are to be answered in about 80 words each.
7. This question paper consists of a total of 30 questions.

Section A

1. The colours obtained on a pH paper for a highly acidic, basic and neutral solutions are (1)

(a) blue, orange, green (b) yellow, blue, green

(c) red, blue, green (d) red, green, blue

2. Which of the following is not a propertyof carbon? (1)

(a) Carbon compounds are good conductor of heat and electricity

(b) Carbon compounds are poor conductor of heat and electricity

(c) Most of the carbon compounds are covalent compounds

(d) Boiling and melting point of carbon compounds are relatively lower than those of ionic compounds

OR

Which of the following is not the use of graphite?

(a) It is used as lubricant

(b) It is used in manufacturing of lead-pencils

(c) It is used in manufacturing of artificial diamond

(d) It is used for making insulated plates

3. Answer question numbers 3(a) – 3(d) on the basis of your understandingof the following paragraph.

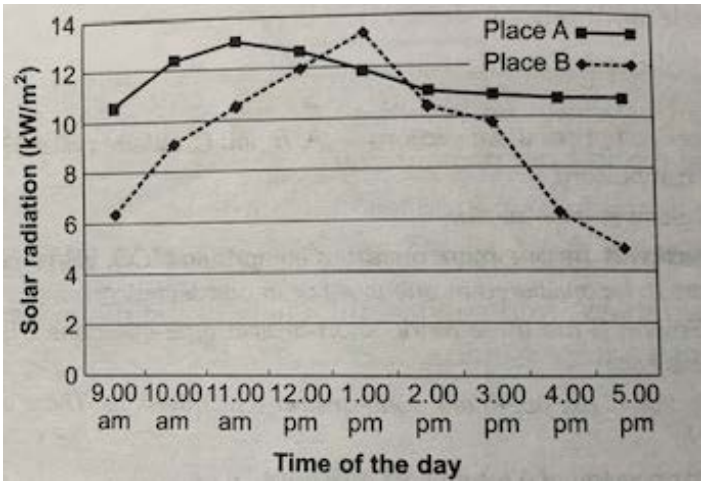
India is a tropical country. It has enormous possibility of trapping solar energy. Solar energy is fast becoming popular in rural and remote areas. The larger solar plant of India is located at Madhapur, near Bhuj, where solar energy is used to sterilise milk cans it is expected that use of solar energy will be able to minimize the dependence of rural house holds on fire woods and dung cakes, which in turn will contribute environmental conservation and adequate supply of manures in agriculture.

3(a) What is power. (1)

3(b) How would the use of solar energy help to improve the living conditions of rural households? (1)

3(c) Why is Madhapur suitable to establish a solar plant? (1)

3(d) Based on the data represented in the graph below, which of the two places A & B is ideal for establishing a Solar Plant? (1)



4. The level of faecal and coliform bacteria in the Ganga river in Varanasi measured by the UP Pollution Control Board (UPPCB) is several hundred times more than the permissible limit. Faecal coliform bacteria are found in excreta that contaminates water through untreated sewerage. The higher the level, the higher the presence of disease-causing pathogen in water. According to April 2019 survey report of the UPPCB, the top five most critical level of twin forms of bacteria in the Ganga was detected in Kanpur, Varanasi, Ghazipur, Kaushambi and Prayagraj.

4a. What are Coliforms? (1)
4b. Name the river that contain high. no. of coliforms. (1)
4c. Write the names of two diseases caused by contaminated water. (1)
4d. Suggest two ways of reducing water pollution. (1)

5. The least distance of distinct vision for a young adult with normal vision is (1)
a) 25m b) 2.5cm c)25 cm d) 2.5m

OR

The part of eye that controls the size of pupil is
a) eye ball b) iris c) cornea d) retina

6. Which of the following represents voltage (1)
a) $\frac{\text{workdone}}{\text{Current x time}}$ b) workdone x charge c) $\frac{\text{workdone x time}}{\text{current}}$ d) workdone x charge x time

7. Difference between motor and generator. (any 1 point) (1)

8. Having observed and studied the prepared slides of Amoeba and yeast for asexual reproduction, students made following conclusions. The correct conclusion is: (1)

(a) both reproduce by binary fission
(b) both reproduce by budding
(c) Amoeba reproduces by budding and yeast by binary fission
(d) Amoeba reproduces by binary fission and yeast by budding.

9. Which type of seeds does not give any positive result for CO2 experiment (1)
a). Germinating seeds b). Sprouting seeds c). living seeds d). Boiled seeds

10. A shiny brown coloured element X' on heating in air becomes black in colour. Name the element X' and the black compound formed. (1)

11. How will the tendency to gain electrons change as we go from left to right across a period? Why? (1)

12. $Fe_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Fe$ (1)

The above reaction is an example of a :

(a) combination reaction
(b) double displacement reaction
(c) decomposition reaction
(d) displacement reaction

Directions for Question no: 13 and 14: In the following question, the assertion and reason have been put forward. Read the statement carefully and choose the correct alternative from the following:

[A] Both the assertion and the reason are correct and the reason is the correct explanation for the reason.
[B] The assertion and the reason are correct but the reason is not the correct explanation of the assertion.
[C] The assertion is true but the reason is false.
[D] The statement of the assertion is false but the reason is true.

13. **Assertion:** Vegetable oils are unsaturated, react with hydrogen in presence of nickel to form vegetable ghee.
Reason: This reaction is saponification. (1)

14. **Assertion:** A fuse works on heating effects of current. (1)
Reason: A fuse wire is made of pure tin or an alloy of lead and tin.

Section B

15. Answer question numbers 15.1-15.3 on the basis of your understanding of the following paragraph and the related studied concepts.
(3)

The arrangement of metals in a vertical column in the decreasing order of their reactivities is called the reactivity series or activity series of metals. The most reactive metal is at the top position of the reactivity series. The least reactive metal is at the bottom of the reactivity series. Hydrogen, though a non-metal, has been included in the activity series of metals only for comparison. Apart from it, the hydrogen atom also has tendency to lose its valence electron and form cation like the behaviour shown by metals. Thus,

$$H \longrightarrow H^+ + e^-$$

15.1 Which metal can be displaced by copper from its salt solution?
15.2 An element 'X' after reacting with acids liberate hydrogen gas and can displace lead and tin from their salt solution. Write down the Name of X metal.
15.3 Which metal does not liberate hydrogen gas after reacting with acid?

16. An organic compound 'A' is an essential constituent of wine and beer. Oxidation of 'A' yields an organic acid 'B' which is present in vinegar. Name the compounds 'A' and 'B' and write their structural

formula. What happens when 'A' and 'B' react in the presence of an acid catalyst? Write the chemical equation for the reaction. (3)

17. Give two uses each of the products obtained by the electrolysis of sodium chloride. (3)

Name the type of chemical reaction presented by the following equations:

$CaCO_3(s) \xrightarrow{\text{eat}} CaO(s) + CO_2(g)$

i. $CaO(s) + H_2O(l) \longrightarrow Ca(OH)_2(aq)$

ii. $Zn(s) + H_2SO_4(aq) \longrightarrow ZnSO_4(aq) + H_2(g)$

18. How are the fats digested in our body? Where does this process take place. (3)

19. Mention the events that occur during binary fission in amoeba. (3)

20. Write the function of the following- (3)

a). Cerebrum
b). Cerebellum
c). Medulla

21. . Explain with the help of suitable example why certain traits cannot be passed on to the next generation. What are such traits called ? How are these traits different from Inherited traits . (3)

OR

A cross was carried out between a pure bred tall pea plant and a pure bred dwarf pea plant and F1 progeny was obtained. Later, the F1 progeny was selfed to obtain, F2 progeny. Answer the following questions.

i. What is the phenotype of the F1 progeny.?
ii. Give the phenotype ratio of the F2 progeny.
iii.Which law of Mendel can be explained by this example?

22. A divergent lens has a focal length of 30cm. At what distance should an object of height 5cm from the optical centre of the lens be placed so that its image is formed 15cm away from the lens? Find the size of the image. (3)

23. Explain the working of an electric generator with the help of a labelled diagram. (3)

24. A copper wire has diameter 0.4mm and resistivity of $1.6X10^{-8}$ Ωm. What will the length of the wire to make its resistance 10Ω. (3)

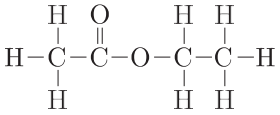
OR

Compare the power used in the 2Ω resistor in each of the following circuits:

a) A 6V battery in series with 1Ω and 2 Ω resistors.
b) A 4V battery in parallel with 12Ω and 2Ω resistors.

Section C

25. i. The structural formula of an ester is :



Write the structural formulae of the corresponding alcohol and the acid.

ii. (a) Mention the experimental conditions involved in obtaining ethene from ethanol.
(b) Write the chemical equation for the above reaction.

iii. Explain the cleansing action of soap. (5)

26. . [A] Give reasons for the following : (3+2=5)

i. Zinc oxide is considered as an amphoteric oxide.
ii. Non-metals in general do not displace hydrogen from dilute acids.
iii. Metals conduct electricity.

[B] Elements magnesium and oxygen respectively belong to group 2 and group 16 of the Modern Periodic Table. If the atomic numbers of magnesium and oxygen are 12 and 8 respectively, draw their electronic configurations and show the process of formation of their compound by transfer of electrons.

OR

Atoms of seven elements A, B, C, D, E, F and G have a different number of electronic shells but have the same number of electrons in their outermost shells. The elements A and C combine with chlorine to form an acid and common salt respectively. The oxide of element A is a liquid at room temperature and is a neutral substance, while the oxides of the remaining six elements are basic in nature. Based on the above information answer the following questions.

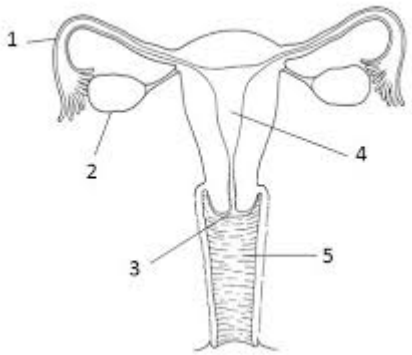
i. What could the element A be ?
ii. Will elements A to G belong to the same period or same group of the periodic table ?
iii. Write the formula of the compound formed by the reaction of element A with oxygen.
iv. Show the formation of the compound by a combination of element C with chlorine with the help of an electronic structure.
v. Which one of the given elements is likely to have the smallest atomic radius ?

27. Draw a longitudinal section of a flower and label the following parts – (2)

a) Part that develops into a fruit (1/2x6)
b) Part that produces pollen grain
c) Part that transfers male gametes
d) Part that is sticky to trap .
e) Part that develops in to seed.
f) part that is coloured.

OR

i. Name the parts labelled 1, 2, 3 , 4 and 5 (1/2x5)



ii. Where do the following functions occur ? (1/2x3)
(a) Production of an egg
(b) Fertilisation
(c) Implantation of zygote
iii. Write any two contraceptive methods (1/2x2)

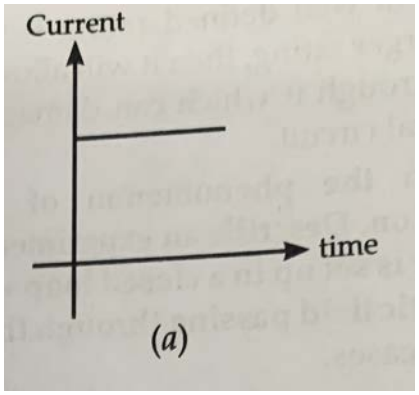
28. a).What is Trophic level? (1)
b). Write a food chain with four trophic levels. (2)
c). In the following Food chain if grass has 30,000 joules of energy ,How much energy will be available for the frog and Why? (2)
GRASS-------- GRASSHOPPER---------FROG

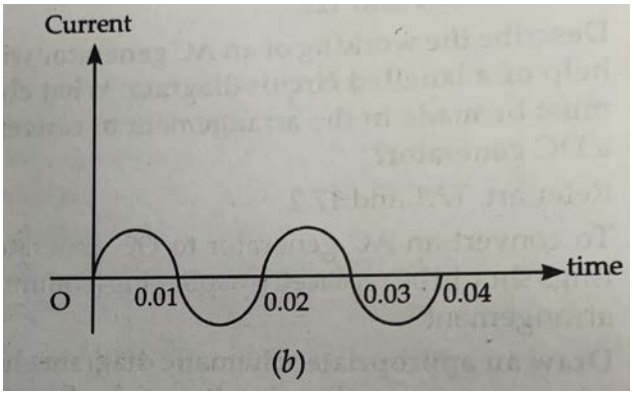
29. a) A concave mirror of focal length 20cm forms a real image at a distance of 40cm. Find the position of the object.
b) A convergent lens of power 5D is combined with a divergent lens of power -4D. Find the total focal length and power of combination of both the lens. (5)

30.
a) State the rule which is used to determine the direction of force acting on a conductor when placed in a magnetic field.
b) A coil of insulated copper wire is connected to a galvanometer. What will happen if a bar magnet is
(i) pushed in to the coil.
(ii) pulled out of the coil.
(iii) held stationary inside the coil.
Explain each of three given parts with the help of a diagram. (5)

Or

You are given following current-time graphs from two different sources:





(i) Name the type of current in two cases.
(ii) Identify any one source of each type.
(iii) What is the frequency of current in case (b) in India?
(iv) What is the advantage of AC over DC?
(v) Using above graphs write two differences between the current in two cases.