Total printed Pages:-03

NAME 20/01/2018
ROLL NO.....

DELHI PUBLIC SCHOOL VINDHYANAGAR
PRE - BOARD EXAMINATION (2017-18)

CLASS - X
SUBJECT – SCIENCE

Max. Marks: 80
Time: 3 Hrs.

General Instructions:

1. **The question paper comprises two sections, A and B. You are to attempt both the sections.**
2. **All questions are compulsory.**
3. **All questions of Section-A and B are to be attempted separately.**
4. **There is an internal choice in questions of 3 marks each and questions of 5 marks.**
5. **Question numbers 1 and 3 in Section-A are one mark question. They are to be answered in one word or in one sentence.**
6. **Question numbers 4 in Section- A is of two marks questions. These are to be answered in 30 words each.**
7. **Question numbers 5 to 15 in Section-A are three marks questions. These are to be answered in about 50 words each.**
8. **Question numbers 16 to 21 in Section-A are 5 marks questions. These are to be answered in 70 words each.**
9. **Question numbers 22 to 27 in Section- B are based on practical skills. Each question is a two marks question. These are to be answered in brief**

---

1. Why don't two magnetic field lines intersect each other? 1
2. Name the phenomenon responsible for the reddish appearance of sun at sunset and sunrise. 1
3. An element "X" has mass number 35 and the number of neutrons, is 18. Identify the group number and period of "X . 1
4. list two reasons to show that the existence of decomposers is essential in an ecosystem. 2
5. An object of height 1.2m is placed before a concave mirror of focal length 20cm so that a real image is formed at a distance of 60cm from it. Find the position of an object. What will be the height of the image formed? 3
6. Name the electric device that converts mechanical energy into electrical energy. Draw the labelled diagram and explain the principle involved in this device.

   OR

   i) What is the function of earth wire in electrical instruments?
   ii) Explain what is short circuiting an electric supply.
   iii) What is the usual current rating of the fuse wire in the line to feed
   (a) Lights and fans
   (b) Appliances of 2kW or more power? 3
7. Draw a circuit diagram of an electric circuit containing a cell, a key, an ammeter, a resistor of 4Ω in series with a combination of two resistors (8Ω each) in parallel and a voltmeter across parallel combination. Each of them dissipate maximum energy and can withstand a maximum power of 16W without melting. Find the maximum current that can flow through the three resistors. 3
8. Rohit focused the image of a candle flame on a white screen using a convex lens. He noted down the position of the candle, screen and lens as under:

   Position of candle = 26.0 cm
   Position of convex lens = 50.0 cm
   Position of screen = 74.0 cm

   i) What is the focal length of the convex lens?

ii)Where will the image be formed if he shifts the candle towards the lens at a position of 38 cm?
iii)Draw a ray diagram to show the formation of the image in case (ii) as said above? 3

9 . i] What is the pH range for a base ?
ii]How the strength of a basic solution be increased ?
iii]Write the acid and base from which sodium carbonate salt is formed ? 3

10 .i] What is observed when lead nitrate is strongly heated ?
ii]What type of reaction is this ?
iii]Write a balanced equation to represent the above equation . 3

11 .i] Write the electron dot structures for magnesium and oxygen.
ii]Show the formation of Na_2O and MgO by the transfer of electrons .
iii] What are the ions present in these compounds ? 3

12. Define the following – 3
a. Genetic drift b. Natural selection c. Reproductive isolation.

OR

Why did Mendel choose garden pea for his experiments. Give three reasons.
List three contrasting visible characters of garden pea Mendel used for his experiments.

13. a. Why do ventricles have thick muscular walls than atria? 3

b. What are peristaltic movements ?
c. "Stomata remains closed in desert plants during day time ". How do they do photosynthesis ?

14. With the help of a diagram show asexual reproduction in Rhizopus. How is this method helpful for Rhizopus. 3

15. Solar cooker takes more time as compared to the LPG to cook food, yet Ravi uses solar cooker. 3

a. Why does Ravi use solar cooker instead of LPG ? Give reasons for your answer.
b. Name the phenomenon which is responsible for obtaining high temperature in solar cooker.

16 With the help of a labelled circuit diagram wire describe an activity to illustrate the pattern of the magnetic field lines around a straight current carrying long conducting wire.
i)Name the rule that is used to find the direction of magnetic field associated with a current carrying conductor.
ii)Is there a similar magnetic field produced around a thin beam of moving
(a)protons and (b) neutrons? Justify your answer. 5

17 Noopur needs a lens of power -4.5D for correction of her vision.
a) What kind of defect in vision is she suffering from?
b) What is the focal length and nature of the corrective lens?
c)Draw ray diagrams showing the (a) defected eye and (b) correction for this defect.
d)What are the causes of this defect? 5

18 An organic compound 'A' is widely used as a preservative in pickles and has a molecular formula C_2H_4O. This compound reacts with ethanol to form a sweet smelling compound B.
I] Identify the compound 'A'
II]Write the chemical equation for its reaction with ethanol to form compound 'B'.
III] How can we get compound 'A' back from 'B' ?
iv] Name the process and write the chemical equation involved . 5

19 Atoms of eight elements A,B.C,D,E,F,G and H have the same number of electronic shells but different number of electrons in their outermost shell.It was found that elements A and G combine to form an ionic compound. This compound is added in a small amount to almost all vegetable dishes in cooking. Oxides of elements A and B are basic in nature while those of E and F are acidic. The oxide of D is almost neutral. Based on this information answer the following questions : 5

i]To which group or period, do the listed elements belong ?
ii]What would be the nature of compound formed by combination of element B and F ?
iii]Which two of these elements could definitely be metals ?
iv]Which one is most likely to be found in gaseous state at room temperature ?
v] If the number of electrons in the outermost shell of elements C and G be 3 and 7 respectively, write the formula of compound formed by combination of C and G.

20. Draw a diagram of an excretory unit of a human kidney and label the following- 5

Bowman's capsule , glomerulus, collecting duct .
Write important function of the structural unit of kidney.
Write one function of artificial kidney.

21 a. Give one example each of a unisexual and a bisexual flower. 5

b. Mention the changes a flower undergoes after fertilization.
c. How does the amount of DNA remain constant through each new generation in a combination of DNA copies of two individuals.

OR

What is placenta ? Describe its structure. State the role of placenta in the development of embryo.

SECTION B

22 The values of current I flowing in a given resistor for the corresponding values of potential difference V across the resistor are given below:

I (ampere)	0.5	1	2	3	4
V (volt)	1.6	3.4	6.7	10.2	13.2

Plot a graph between V and I and calculate the resistance of the resistor.
OR
In a given ammeter, a student sees that needle indicates 17 divisions in ammeter while performing an experiment to verify Ohm's law. If ammeter has 10 divisions between 0 and 0.5A, then what is the value corresponding to 17 divisions? 2

23 Draw a path of light ray passing through a prism. Label angle of incidence and angle of deviation in the ray diagram. 2

24 A student dipped a pH paper in distilled water taken in a tube. As expected, the pH paper acquired green colour. He then dissolved a pinch of common salt in the same tube. What will be the expected change in colour of pH paper. Give reason . 2

25 State any two observations in an activity which may suggest that a chemical reaction has taken place. Give examples in support of your answer. 2

26 A student confirms binary fission process in a unicellular organism after observing a slide under microscope. What he might have observed in that slide to reach to this conclusion. 2

27 You have a basket of vegetables which contain carrot, potato ,ginger ,tomato, radish and sweet potato. Select two vegetables to represent homologous structure. 2