GENERAL SCIENCE , Paper – I

(Physical Sciences)

(English Version)

Time: 2 Hours 45 Min.	Parts A and B	Maximum Marks : 40

Instructions :

1. The Question paper contains Part-A and also Part-B.
2. 15 Min. is allotted for reading the question paper.
3. Answer the questions under Part-A on a separate answer booklet.
4. Write the answers to the questions under Part-B on the question paper itself and attach it to the answer booklet of Part-A.
5. Answer all the questions.

PART-A   **Max. Marks : 30**
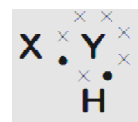
Section - I   **4 x 1 = 4 Marks**

Note :

1. Answer all the questions.
2. Each question carries One mark.

1. A chemical compound has the following Lewis notation:

a) How many valence electrons does element Y have?

b) How many covalent bonds are there in the molecule?

2. Explain the difference between the valence electrons and the covalency of an element.

3. Two immiscible liquids were taken in a glass tumbler. The light ray incident on the liquids didn't bent. Can you guess the reason ? Write it.

4. A tomato is drawn from a fridge. Why do we get dew on the surface of the tomato kept in open air ?
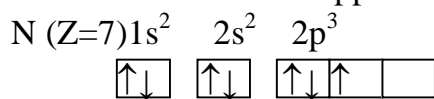
Section - II   **5 x 2 = 10 Marks**

Note :

1. Answer all the questions.
2. Each question carries Two marks.

5. Following orbital diagram shows the electron configuration of nitrogen atom. Which rule does not support this?

N (Z=7)$1s^2$ $2s^2$ $2p^3$

6. Write down the characteristics of the elements having atomic number 17.

   (a) Electronic configuration

   (b) Period number

   (c) Group number

   (d) No. of valence electrons

7. Explain the formation of $BeCl_2$ molecule with Hybridisation concept ?

8. Imagine that spherical mirrors were not known to human beings. Guess the consequences.

9. We know that a paper can burn by focusing light rays with a convex lens. In this case, where should we keep the paper ? Why ?

Section - III   4 x 4 = 16 Marks

Note :

   1. Answer all the questions.

   2. Each question carries Four marks.

   3. Internal choice is given in questions.

10. How do you correct the eye defect Myopia?

(OR)

A house has 5 tube lights, two fans and a television. Each tube light draws 40W. The fan draws 80W and the television draws 60W. On the average, all the tube lights are kept on for five hours, two fans for 12 hours and television for five hours every day. Find the cost of electric energy used in 30 days at the rate of Rs. 3.00 per KWH.
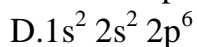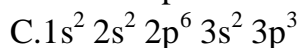
11. Complete the following table.

Substance	Blue Litmus	Red Litmus	Methyl Orange	Phenolpthalene
HCl		No change in colour		No change in colour
NaOH			Yellow	
Lemon Juice	Red			
Soap Water	No change in colour			Pink
Sodium Chloride Aqueous solution		No change in colour		
Soda Solution			Red	

(OR)

Given below is the electronic configuration of elements A, B, C, D.

A. $1s^2\, 2s^2$

B. $1s^2\, 2s^2\, 2p^6\, 3s^2$

C. $1s^2\, 2s^2\, 2p^6\, 3s^2\, 3p^3$

D. $1s^2\, 2s^2\, 2p^6$
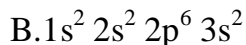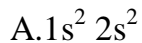
Now answer the following.

(i) Which are the elements coming with in the same period ?

(ii) Which are the elements coming with in the same group ?

(iii) Which are the noble gas elements ?

(iv) To which group and period does the elements 'C ' belongs to ?

12. Explain two activities for the formation of artificial rainbow in your class room.

(OR)

How do you verify that resistance of a conductor is proportional to the length of the conductor for constant cross section area and temperature?

13. Draw a neat diagram that represents the experimental set up of "Electrolysis process of water". Label the parts.

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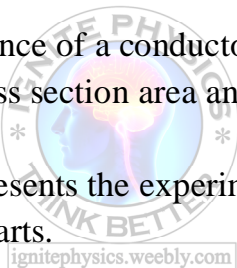
(OR)

Draw the neat diagram of s, p and d orbitals. Mention the shapes of s, p and d orbitals.

GENERAL SCIENCE , Paper – I

(Physical Sciences)

(English Version)

Time: 2 Hours 45 Min.	Parts A and B	Maximum Marks : 40
	PART-B	**Maximum Marks : 10**

This Question paper contains 4 printed pages.

Instructions :

1. Answer all the questions.
2. Each question carries ½ Mark.
3. Marks will not be awarded in case of any overwriting and rewriting or erased answers.
4. Write the answers to the questions under Part-B on the question paper itself and attach it to the answer booklet of Part-A.
5. Write the 'CAPITAL LETER' showing the correct answer for the following questions in the brackets provided against them.

Section - IV   **20 x ½ = 10** Marks

14. Convert 20°C in to Kelvin scale   [   ]
    - (A)   273 K   (B)   373 K
    - (C)   293 K   (D)   303 K

15. Processes :
    (i) Formation of mirage
    (ii) Lemon in water appear big in size
    (iii) Reason for blue of Sky
    Which is an example for Total internal reflection ?   [   ]
    - (A)   (i) Only
    - (B)   (i) and (iii) only
    - (C)   (i) and (ii) only
    - (D)   (i), (ii) and (iii)

16. Identify Snell's law   [   ]
    - (A) $n_1.$ Sin i = $n_1.$ Sin r   (B) $n_1.$ Sin i = $n_2.$ Sin i
    - (C) $\frac{n_1}{n_2} = \frac{Sin\ r}{Sin\ i}$ (D) $\frac{n_1}{n_2} = \frac{Sin\ i}{Sin\ r}$

17. Angle of a triangular prism is $A = 60^{o}$.
    The angle of minimum deviation is $D = 30^{o}$.
    Find the refractive index of the material of the Prism.   [   ]
    - (A)   2   (B) $\sqrt{2}$
    - (C) $\frac{1}{2}$ (D) $\frac{1}{\sqrt{2}}$

18. An electron in an atom has the following set of four quantum numbers to which orbital it belong to: [   ]

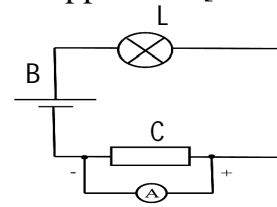| n	l	m_l	m_s
2	0	0	+ ½

(A) 2p   (B) 2s
(C) 2d   (D) 2f

19. Which of the following is Highest reactive metal ? [   ]
(A) Sodium   (B) Potassium
(C) Rubidium   (D) Caesium

20. P, Q, and R are three elements with atomic number 6, 11 and 17 respectively. Which of these cannot form ionic bond ? [   ]
(A) P - only   (B) R - only
(C) Q and R   (D) P and R

21. Number of Covalent bonds present in Methane (CH_4) molecule [   ]
(A) 1   (B) 2
(C) 3   (D) 4

22. A thief is imprisoned in a Jail. He wear white dress.
If we take his photograph with a camera, we can get ……………… [   ]
(A) A man with black stripes on white shirt
(B) A man with white stripes on black shirt
(C) A man with White shirt before the prison rods
(D) A man with white shirt behind the prison rods

23. The 17th group elements in Modern periodic table are F, Cl, Br and I respectively. The number of valence electrons in F is 7.
What is the number of valence electrons in third element (Br) in that group? [   ]
(A) 3   (B) 8
(C) 7   (D) 9

24. While doing the experiment of finding the refractive index of a prism,
We can place the prism on the paper in a particular way.
Identify the correct answer : [   ]
(A) The rectangular shape should touch the surface of paper
(B) The triangular shape should touch the surface of paper
(C) Either the rectangular or triangular shape should touch the paper
(D) None of these

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25. Observe the given diagram. Identify the wrongly connected apparatus. [   ]

(A) Ammeter   (B) Battery

(C) Light   (D) Conductor

26. A small amount of Copper sulphate is taken in a test tube. Heated it.
Then ………………   [   ]

(A) A colourless gas liberates from the test tube

(B) A brown colour gas liberates from the test tube

(C) Some water droplets formed on the inner walls of test tube

(D) Blue colour copper sulphate turns in to Yellow colour

27. Match the following:

Set-I	Set-II (Colours produced when heated up)
(i) Cupric chloride	(a) Yellow
(ii) Strintium chloride	(b) Green
(iii) Sodium vapours	(c) Red

Choose the correct answer :   [   ]

(A) (i)-a, (ii)-b, (iii)-c   (B) (i)-a, (ii)-c, (iii)-b

(C) (i)-c, (ii)-b, (iii)-a   (D) (i)-b, (ii)-c, (iii)-a

**28.** Observe the Specific heat values given in the following table.

Sl. No.	Substance	Specific heat (in Cal/gm-^{o}C)
1	Brass	0.092
2	Aluminium	0.210
3	Copper	0.095
4	Zinc	0.093

Which of the above is less preferable for manufacture of Cooking utensils
in the view of energy saving ?   [   ]

(A) Brass   (B) Copper

(C) Zinc   (D) Aluminium

29. A ray diagram of an optical device shown in the given figure.

Object always kept before a mirror.

Object always kept either side of a lens.

Identify the optical device shown in the given figure.   [   ]

(A) Convex mirror

(B) Convex lens

(C) Concave mirror

(D) Concave lens
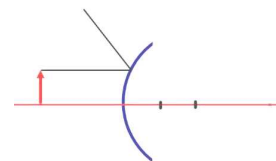
30. The maximum number of electrons that can be occupied in
" n^{th} " shell is $2n^2$. The number of M-shell is n=3.
The maximum number of electrons that can be occupied in M-shell   [   ]
(A)   8   (B)   10
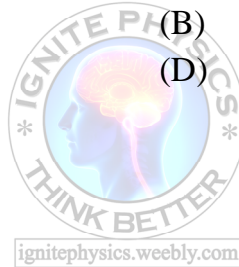(C)   18   (D)   32

31. Observe the following table.

Cation \ Anion	Cl^{-1}	O^{-2}	N^{-3}
Na^+	NaCl	X	Na_3N
Mg^{+2}	$MgCl_2$	MgO	Mg_3N_2
Al^{+3}	$AlCl_3$	Al_2O_3	Y

Identify the correct formulae in the places of X and Y.   [   ]
(A)   NaO and Al_3N
(B) Na_2O and Al_3N_2
(C) Na_2O and AlN
(D)   NaO and Al_2N_3

32. To overcome the problems of Over load of electric current, we can use [   ]
(A)   Plug   (B)   Switch
(C)   Fuse   (D)   Main switch

33. Processes :
(i) Painting
(ii) Greasing
(iii) Making alloys
(iv) Kept in Almirah
To overcome corrosion problems
Which of the above are suitable to preserve Iron articles Corrosion ?   [   ]
(A)   (i) Only
(B)   (i) and (iii) only
(C)   (i) , (ii) and (iii) only
(D)   (i), (ii), (iii) and (iv)