

**WARANGAL DISTRICT COMMON EXAMINATION BOARD**  
**PRE PUBLIC EXAMINATIONS-MARCH-2016**  
**GENERAL SCIENCE , Paper – I**

(Physical Sciences)  
 (English Version)

Time: 2 Hours 45 Min.

Parts A and B

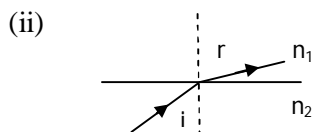
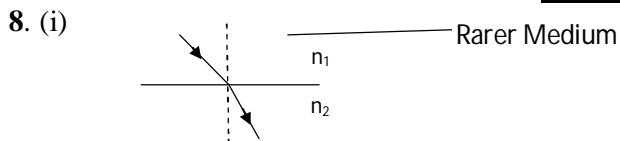
Maximum Marks : 50

**Class-10 - KEY SHEET**

**Section - I**

- Mass of water = 4000 g  
 Water at 100°C converted to water vapour at 100°C.  
 Latent heat of vaporization of water = 540 cal/g  
 Latent heat of vaporization of water for 4000 g = 540 X 4000 = 21,60,000 Cal = 2160 K.Cal
- Pent, 1-en, 3-ol
- Required material : Batteries-2, Volt meter, Ammeter, Connecting wires, Conductors/resistors  
 (OR) Battery, Volt meter, Ammeter, Connecting wires, Rheostat
- The given quantum numbers represents  $3s^1$  electron.  
 The total electronic configuration is  $1s^2 2s^2 2p^6 3s^1$ . The element is Sodium (Na).
- (i) Lead heats up first.  
 (ii) Aluminium is the suitable substance to prepare lids of kitchen ware.
- The given reaction is chemical double displacement reaction.  
 The precipitate that formed is Lead Iodide ( $PbI_2$ ).
- Examples for total internal reflection :  
 (i) Formation of mirages (ii) Brightness of Diamonds (iii) Working of optical fibres.

**Section - II**



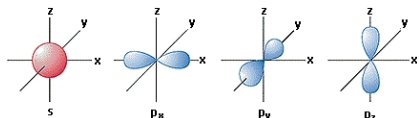
9. Given data in tabular form:

Atomic number	10	20	8	16
Name of the element	Neon	Calcium	Oxygen	Sulphur

Ascending order of elements is : Neon, Oxygen, Sulphur, Calcium

- If a bird sits on a current wire, there is no potential difference as it sits on a single wire. So the bird can not be shocked. If we touch a live wire, we get shock as current passes through us. We stand on the ground, so that there is a potential difference.
- The three substances  
 A - Ethyl alcohol ( $C_2H_5OH$ )  
 B - Acetaldehyde ( $CH_3CHO$ )  
 C - Acetic acid ( $CH_3COOH$ )
- Materials that evaporates faster than water (i) Petrol (ii) Diesel (iii) Spirit  
 Materials that evaporates slower than water (i) Palm oil (ii) Glycerin (iii) Coconut oil

13.



WGL-PP  
2015-16

**NAGA MURTHY- 9441786635**  
 Contact at : [nagamurthysir@gmail.com](mailto:nagamurthysir@gmail.com)  
 Visit at : [nagamurthy.weebly.com](http://nagamurthy.weebly.com)

### Section - III

14A. For concave mirror Object distance (u) = - 20 cm

Radius of curvature (R) = - 30 cm

Height of object (H<sub>o</sub>) = 5 cm

(i) Focal length (f) =  $\frac{R}{2} = \frac{-30}{2} = -15$  cm

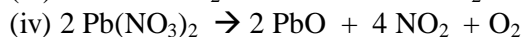
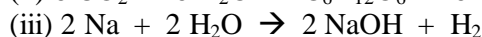
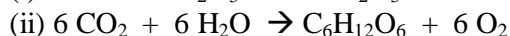
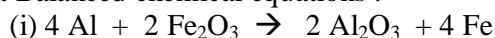
(ii) Mirror formula :  $\frac{1}{f} = \frac{1}{u} + \frac{1}{v} \Rightarrow \frac{1}{-15} = \frac{1}{-20} + \frac{1}{v} \Rightarrow \frac{1}{v} = \frac{1}{-20} - \frac{1}{15} \Rightarrow \frac{1}{v} = \frac{-1}{60} \Rightarrow v = -60$  cm

(iii) Properties of image : Real, Inverted, Enlarged

(iv) Magnification (m) =  $\frac{H_i}{H_o} = \frac{-v}{u} \Rightarrow \frac{H_i}{5} = \frac{-(-60)}{-20} \Rightarrow H_i = -15$  cm (Size of the image)

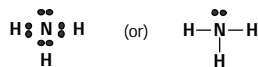
14B. The atmosphere molecules and atoms scatter light of different wavelengths which are comparable to their size. Molecules having a size that is comparable to the wavelength of red light are less in the atmosphere. Hence scattering of red light is less when compared to the other colours of light. The light from the sun needs to travel more distance in atmosphere during sunrise and sunset to reach our eye. Since scattering of red light is very small, it reaches us. As a result sun appears red in colour during sunrise and sunset.

15A. Balanced chemical equations :

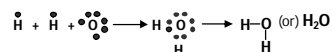


15B. Balanced chemical equations :

Formation of Ammonia molecule: Nitrogen (N) atomic number is 7. Electronic configuration is  $1s^2 2s^2 2p^3$ . It need 3 electrons for stability. Hydrogen (H) atomic number is 1. Electronic configuration is  $1s^1$ . It need one electron for stability. Nitrogen can share three electrons with three different hydrogen atoms and form covalent molecule Ammonia (NH<sub>3</sub>).



Formation of Water molecule: Oxygen (O) atomic number is 8. Electronic configuration is  $1s^2 2s^2 2p^4$ . It need 2 electrons for stability. Hydrogen (H) atomic number is 1. Electronic configuration is  $1s^1$ . It need one electron for stability. Oxygen can share two electrons with two different hydrogen atoms and form covalent molecule Water (H<sub>2</sub>O).



16A. Importance of P<sup>H</sup> in daily life:

- Living organisms can survive only in a narrow range of pH change. Acid rains lowers the pH of the river water, the survival of aquatic life in such rivers becomes difficult.
- Tooth decay starts when the pH of the mouth is lower than 5.5. When the pH in the mouth is below 5.5, Bacteria present in the mouth produce acids by degradation of sugar and food particles remaining in the mouth.
- Our stomach produces hydrochloric acid. It helps in the digestion of food without harming the stomach. During indigestion the stomach produces too much acid and this causes pain and irritation. To get rid of this pain, people use bases called antacids.
- Plants require a specific pH range for their healthy growth.

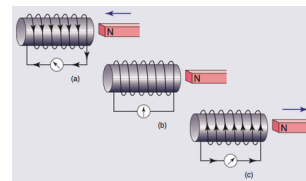
16B. Examples of corrosion in our daily life:

- Tarnishing of silver articles in to black
- Tarnishing of copper vessels in to green
- Rusting of iron in to red brown colour
- Patina formation on brass vessels

Preventive methods of Corrosion :

- Oiling the articles
- Greasing the articles
- Painting the articles
- Chrome plating
- Galvanizing
- Making alloys

- 17A.** Connect the terminals of a coil to sensitive Galvanometer. Push a bar magnet towards the coil whose north pole is facing towards the coil. Then the needle in the galvanometer deflects. If the magnet is moved away from the coil, the needle in the galvanometer again deflects but in the opposite direction. If the south pole is facing towards the coil, then also the needle deflects.

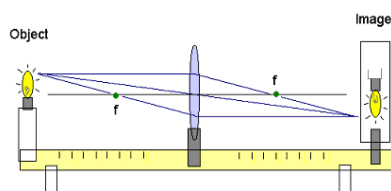


Whenever there is a continuous change of magnetic flux linked with closed coil, the current is generated.

Thus Faraday stated the law of induction as - The induced e.m.f. generated in the closed loop is equal to the rate of change of magnetic flux passing through it.

- 17B.** Take a V-stand and place it on a long table at the middle. Place a convex lens on the V- stand. Light a candle and arrange it on a candle stand such that the flame lies along the principal axis of the lens. Adjust the screen at other side of the lens until we get the clear image of the flame on it.

Measure the distance between the optical centre of lens (centre of V-stand) and candle flame and denote it as 'u'. Measure the distance between centre of the lens and image and denote it as 'v'. Calculate the focal length of the given convex lens by using the formula  $f = \frac{uv}{u+v}$



(or)

Keep a convex lens on a V-Stand. Slect a distant object like a tree or a building. Place a white screen on the other side of the lens such that the clear image of the object can be collected on it. Measure the distance from the middle of the v-stand to the screen. It is the focal length of the given lens.

**Note :** Any related answers should be given full marks for any question. Drawing is unnecessary.

18. D

19. A

20. B

21. D

22. C

23. B

24. D

25. B

26. C

27. B