PRAKASAM DISTRICT COMMON EXAMINATION BOARD

PRE PUBLIC EXAMINATIONS-MARCH-2016

GENERAL SCIENCE , Paper – I

(Physical Sciences)

(Telugu Version)

Class-10 - Principles of Evaluation - PART-A

Q.No	Points for Evaluation	Marks allotted	Total Marks
1.	The bottle will be broken. Because Water expands on freezing.	2x 1	2
2.	If the angle of refraction is 90^o ; that incident angle is called critical angle. When light travels from denser medium to rarer medium, if the incident angle is more than the critical angle then Total internal reflection occurs.	2x 1	2
3.	Presbyopia means decreasing the ability of accommodation of eye. To correct this type of eye defect, we use bi focal lens.	2x 1	2
4.	Television works on the motion of electrons, charged particles. When a bar magnet is brought close to the screen, magnetic field exerts a force on the moving charge. So the picture appears as distorted.	2x 1	2
5.	Reaction in test tube "A" is vigorous. Because Hydro chloric acid is a strong acid.	2x1	2
6.	(i) The orbit which is nearer to the nucleus has less energy. (ii) K (n=1) is the closest to the nucleus. Shell L (n=2) is at higher energy level.	2x1	2
7.	(i) In periods, the atomic radius decreases from left to right. (ii) In groups, the atomic radius increases from top to bottom.	2x1	2
8.	(i) Consumption of small quantity of ethanol causes drunkenness. (ii) Large quantity of ethanol consumption effect the nervous system. (iii) Ethanol consumption leads to slow down the metabolic processes. (iv) Driving vehicles when taken alcohol causes accidents. So, I condemn the use of alcohol as a social practice.	Any two points 2x1	2
9.	(i) From which place , we can take measurements? (ii) Where should we keep the screen?	Any two questions $2x\frac{1}{2}$	1
10.	The splitting of white light in to different colours	*	1
11.	1 KWH (or) 3.6×10^6 Joule (or) 3.6×10^{13} erg	*	1
12.	$Fe_2O_3 + 3\,CO \rightarrow 2\,Fe + 3\,CO_2$	*	1
13.	Distilled water does not contain any ionic substance that can dissociate hydronium ion. That's why It does not conduct electricity.	*	1
14.	The feasible material formed due to reaction between flux and gangue. (or) Slag = Flux + Gangue	*	1

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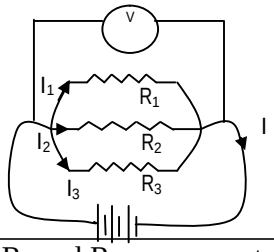
15.	Evaporation depends upon the surface area of the liquid: Take 5ml of spirit in a small plate And big plate (without lid). **Observation :** The spirit in the big dish that disappears quickly. This means that Evaporation depends upon the surface area of the liquid.	2x1=2	4
	Evaporation depends upon the vapour already present in surrounding : Take 5ml of spirit in two small cups. Put one cup in the A.C. room and put another in the normal room. **Observation:** The spirit in the normal room disappears quickly.This means that the rate of evaporation depends upon the vapour already present in surrounding area.	2x1=2	
16.	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.	4 x 1	4
17.		1	4
	R_1, R_2 and R_3 are connected in parallel. I_1, I_2 and I_3 are the flow of current through the resistors R_1, R_2 and R_3 respectively. Let 'V' is the potential difference between the ends of each resistor.	1	
	Ohm's law : $V = I R \rightarrow I = \frac{V}{R}$ Apply this ohm's law for R_1, R_2 and R_3. Then $I_1 = \frac{V}{R_1}$ $I_2 = \frac{V}{R_2}$ $I_3 = \frac{V}{R_3}$ Let the resultant flow of current is 'I' and R is the resultant resistance. Then $I = \frac{V}{R}$	1	
	In parallel arrangement $I = I_1 + I_2 + I_3$ $\frac{V}{R} = \frac{V}{R_1} + \frac{V}{R_2} + \frac{V}{R_3}$ $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$	1	
18.	Apply Kirchhoff's loop law for ABCDA loop : $-5 - 2 I_1 - (I_1+I_2) 3 + 12 = 0 \rightarrow 5 I_1 + 3 I_2 = 7$ --------(i)	1	4
	Apply Kirchhoff's loop law for AFEDA loop : $-4 I_2 - (I_1+I_2) 3 + 12 = 0 \rightarrow 3 I_1 + 7 I_2 = 12$ --------(ii)	1	
	Do (ii) x 5 then $15 I_1 + 35 I_2 = 60$ ------(iii) Do (i) x 3 then $15 I_1 + 9 I_2 = 21$ ------(iv) $26 I_2 = 39 \rightarrow I_2 = \frac{39}{26} = \frac{3}{2} = 1.5$ A From (i) $5 I_1 + 3 (1.5) = 7 \rightarrow 5 I_1 + 4.5 = 7 \rightarrow I_1 = 0.5$ A	1	
	The current drawn from the battery having 12 V e.m.f. is $I_1 + I_2 = 1.5 + 0.5 = 2$ A **Note : any loop in any direction can take**	1	

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<table>
<tr><td>19.</td><td><u>Aufbau Principle:</u> The electron occupies the orbital having the least energy first.</td><td>1</td><td rowspan="3">4</td></tr>
<tr><td></td><td>The energy of the orbital depends upon the value of (n + l). The electron goes to an orbital whose (n + l) value is minimum.

<table><tr><td>Orbital</td><td>n</td><td>l</td><td>n + l</td></tr><tr><td>2s</td><td>2</td><td>0</td><td>2</td></tr><tr><td>2p</td><td>2</td><td>1</td><td>3</td></tr></table>
The electron occupies 2s orbital first and then 2p will be occupied.</td><td>3x $\frac{1}{2}$</td></tr>
<tr><td></td><td>If two orbitals have the same (n + l) value, the orbital having lower n' value will be occupied first.
<table><tr><td>Orbital</td><td>n</td><td>l</td><td>n + l</td></tr><tr><td>3p</td><td>3</td><td>1</td><td>4</td></tr><tr><td>3d</td><td>3</td><td>2</td><td>5</td></tr><tr><td>4s</td><td>4</td><td>0</td><td>4</td></tr></table>The electron occupies 3p, 4s and 3d respectively.</td><td>3x $\frac{1}{2}$</td></tr>
<tr><td>20.</td><td>Valence bond theory: Suggested by Linus Pauling (1954).
1. A covalent bond between two atoms is formed when the two atoms approach each other closely and one atom overlaps its valence orbital containing unpaired electron, the valence orbital of the other atom that contains the unpaired electron of opposite spin.

2. The greater the overlapping of the orbitals that form the bond, the stronger will be the bond.

3. Each bonded atom maintains its own atomic orbitals but the electron pair in the overlapping orbitals is shared by both the atoms involved in the overlapping.

4. If two atoms form multiple bonds between them the first bond is due to the overlap of orbitals along the inter-nuclear axis giving a stronger sigma(σ) bond. After formation of (σ) bond the other bonds are formed due to the overlap of orbitals side wise or laterally giving weaker π bonds.</td><td>Any related four points

4x1</td><td>4</td></tr>
<tr><td>21.</td><td>(i) We use hand picking in separating stones from rice and dal in our daily life.</td><td>1</td><td rowspan="4">4</td></tr>
<tr><td></td><td>Hand picking: If the ore particles and the impurities are different in one of the properties like colour, size etc., Using that property either ore particles or impurities are handpicked .</td><td>1</td></tr>
<tr><td></td><td>(ii) We use washing to separate dust from vegetables, rice and dal in our daily life.</td><td>1</td></tr>
<tr><td></td><td>Washing: Ore particles are crushed and kept on a slopy surface. They are washed with controlled flow of water. Less densive impurities are carried away by water flow, leaving the more densive ore particles behind.</td><td>1</td></tr>
</table>

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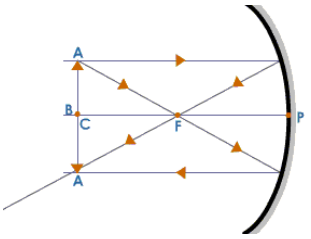
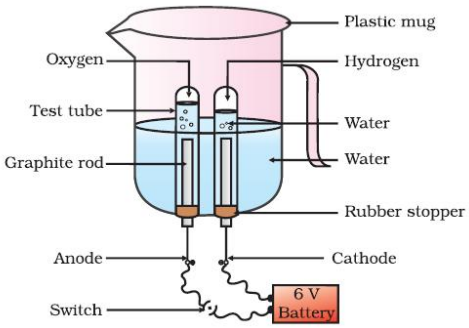
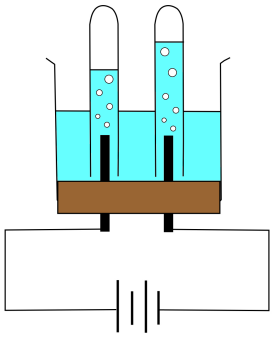
22.	The chemical reaction in which an atom or a group of atoms in a given compound is replaced by other atom or group of atoms is called a substitution reaction.	1	4
	Ex: If Methane (CH_4) reacts with chlorine in the presence of sunlight, the hydrogen atoms substituted with chlorine atoms.	1	
	(i) $CH_4 + Cl_2 \rightarrow CH_3C + HCl$ (ii) $CH_3Cl + Cl_2 \rightarrow CH_2Cl_2 + HCl$ (iii) $CH_2Cl_2 + Cl_2 \rightarrow CHCl_3 + HCl$ (iv) $CHCl_3 + Cl_2 \rightarrow CCl_4 + HCl$	Any two equations related 2	
23.		3	5
	Properties of image : (i) Real image (ii) Inverted image (iii) Same size image	2	
24.	 (OR) 	Diagram 3 Any four parts $4x\frac{1}{2}=2$	5

KEY SHEET - PART-B

Sl No.	Ans.	Sl No.	Ans.	Sl No.	Ans.
1	D	**11**	A	**21**	Specific heat
2	*	**12**	C	**22**	Critical angle
3	B	**13**	A	**23**	70 cm
4	A	**14**	C	**24**	4 D
5	A	**15**	B	**25**	0
6	B	**16**	D	**26**	B
7	C	**17**	A	**27**	E
8	*	**18**	B	**28**	D
9	B	**19**	C	**29**	A
10	*	**20**	D	**30**	C

Note : * means allot full marks.

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