

# X SCIENCE PHY+ CHE SAMPLE PAPER 2012

## JSUNIL TUTORIAL, SAMASTIPUR

1	Draw an isomer of the <b>Pentane</b>	1																																																						
2	An object of size 2 cm is placed at 25 cm in front of a concave mirror. If the magnification produced by the mirror is 4 what is the size of the image ?	1																																																						
3	Five elements A, B, C, D and E have atomic number 2, 9, 11, 12 and 20 respectively. (i) Which pair of elements belongs to the same group ? (ii) Which pair of elements belong to the same period ?	2																																																						
4	State modern periodic law. Where are (i) metals, (ii) non - metals and (iii) metalloids located in the periodic table ?	2																																																						
5	An object is placed at the following distances from a concave mirror of focal length 15 cm. (a) 10 cm (b) 20 cm (c) 30 cm (d) 40 cm Which position of the object will produce (1) Virtual image (3) An enlarged real image (2) A diminished real image (4) An image of same size	2																																																						
6	(a) What is meant by refraction of light ? (b) If on applying Cartesian sign convention for spherical lenses the image distance obtained is negative, state the significance of the negative sign.	2																																																						
7	Name the following parts of a human eye - (1) A thin membrane through which light enters the eye. (2) Dark muscular diaphragm that controls the size of the pupil.	2																																																						
8	(i) Which of the following does NOT burn with a yellow flame ? $\text{CH}_4$ , $\text{C}_2\text{H}_4$ , or $\text{C}_2\text{H}_2$ (ii) Write a chemical equation to show the conversion of ethanol to ethanoic acid in the presence of an oxidising agent. (iii) Name the products formed when methane undergoes complete combustion.	3																																																						
9	Consider the part of periodic table given below and answer the following questions	3																																																						
<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Group</th> <th style="padding: 5px;">1</th> <th style="padding: 5px;">2</th> <th style="padding: 5px;">13</th> <th style="padding: 5px;">14</th> <th style="padding: 5px;">15</th> <th style="padding: 5px;">16</th> <th style="padding: 5px;">17</th> <th style="padding: 5px;">18</th> </tr> <tr> <th style="padding: 5px;">Period</th> <td colspan="8"></td> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">I</td> <td style="padding: 5px;">a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="padding: 5px;">j</td> </tr> <tr> <td style="padding: 5px;">II</td> <td style="padding: 5px;">b</td> <td style="padding: 5px;">e</td> <td></td> <td></td> <td></td> <td style="padding: 5px;">g</td> <td style="padding: 5px;">h</td> <td style="padding: 5px;">k</td> </tr> <tr> <td style="padding: 5px;">III</td> <td style="padding: 5px;">c</td> <td></td> <td></td> <td style="padding: 5px;">f</td> <td></td> <td></td> <td style="padding: 5px;">i</td> <td style="padding: 5px;">l</td> </tr> <tr> <td style="padding: 5px;">IV</td> <td style="padding: 5px;">d</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Group	1	2	13	14	15	16	17	18	Period									I	a							j	II	b	e				g	h	k	III	c			f			i	l	IV	d							
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(i) The atom of which element is smaller in size 'e' or 'h' ? (ii) Which element is most electropositive in nature ? (iii) Which element has only one proton in its atom ? (iv) What is the valency of 'g' ? (v) How many valence electrons does 'g' have ? (vi) Name the element which is a metalloid.																																																								

10	Find the size, nature and position of image formed when an object of size 1 cm is placed at a distance of 54 cm from a concave mirror of focal length 36 cm.	3
11	(i) What is meant by dispersion of white light? Draw a diagram to show the dispersion of white light by a glass prism. (ii) Light of two colours A and B pass through a prism. A deviates more than B from its path of incidence. Which colour has a higher speed in the prism?	3
12	Why is the colour of clear sky blue? Explain in brief.	3
13	(a) What is detergent chemically? Why are detergents effective as cleansing agents even in hard water? (b) Explain the mechanism of cleaning action of soap.	5
14.	(a) How is vinegar made? (b) What is glacial acetic acid? What is its melting point? (c) Why are carboxylic acids called weak acids? (d) Write the name and the formula of the two compounds formed when the ester $\text{CH}_3\text{COOC}_2\text{H}_5$ undergoes saponification.	5
15.	(i) Describe an activity to find the approximate value of focal length of a concave mirror. (ii) What happens to the size of the image of an object when it is moved gradually away from a convex mirror? (iii) In an experiment to study refraction through a glass slab, it is observed that a ray of light undergoing refraction emerges parallel to the direction of incident ray. Why does it happen so? Explain with the help of a diagram.	5
16	(i) Define principal focus of a concave mirror. (ii) Why do we prefer a convex mirror as a rear view mirror in vehicles? (iii) We wish to obtain an erect image of an object using a convex lens. Draw a ray diagram to show the image formation in this case.	5

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