

Bachelor of Vocation in Pottery & Ceramic Examination-2016

Semester-I

Applied Science-I

Paper - BVoc-I/04

Time: 3 Hrs

Full Marks: 40

Questions are of value as indicated in the margin.

Group A

Question no. 1 is compulsory and answers *any three* from the rest

1. Chose the appropriate answer from the given alternatives in the right side (any ten):  $10 \times 1 = 10$

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|---|--|
| a. Light year is a unit of :  | Light/Time/Distance  |
| b. Which is the unit of acceleration?   | cm per sec / cm per sec <sup>2</sup> / cm per sec <sup>3</sup> |
| c. A white body   | reflect all colour / absorb all colour                         |
| d. Kelvin is a unit of  | heat / temperature / force                                     |
| e. Mirage is formed due to  | refraction / total internal reflection of light                |
| f. If angle of incidence is $42.5^\circ$ ,<br>angle of reflection will be         | $0^\circ$ / $40^\circ$ / $42.5^\circ$                          |
| g. A rod when immersed partially in<br>water is looked not straight because of:   | reflection / absorption / refraction of light                  |
| h. $20^\circ\text{C}$ is equal to   | $68^\circ\text{F}$ / $58^\circ\text{F}$ / $100^\circ\text{F}$  |
| i. Water boils at   | $0^\circ\text{C}$ / $100^\circ\text{C}$ / $200^\circ\text{C}$  |
| j. When a train starts, passenger bends<br>Forward, this is because:              | sudden jerk / speed of the train / inertia                     |
| k. If the angle of reflection is $90^\circ$ , the angle<br>of incidence is called | refracted angle/internal angle/critical<br>angle               |

2. What are the laws of reflection of light? Show that light travels in straight line with the help of an experiment. 10

3. How the mirage is formed in desert? What is critical angle? 10

4. State Newton's laws of motion. What is the unit of force? 10

5. What is the difference between heat and temperature? 10

6. Write short notes on (*any two*)  $5 \times 2 = 10$

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|----------------|----------------|--------------|---------------|
| a. Thermometer | b. Calidoscope | c. Periscope | d. Light year |
|----------------|----------------|--------------|---------------|

P.T.O.

(2)

Group-B

Question no. 1 is compulsory and answers *any three* from the rest

1. Answer *any five* questions 5x2=10
    - (a) What is Avogadro's number? What is its value?
    - (b) Why atomic mass of an element has no unit?
    - (c) Define mole.
    - (d) What is the maximum number of electrons present in 3d orbitals?
    - (e) How many neutrons are present in  $^{40}\text{Ca}_{20}$ ?
    - (f) What are the factors on which electron affinity of an element depends?
    - (g) Mention two characteristic properties of s-block element.
  2. What are the postulates of Dalton's atomic theory? Define atomic mass. What is mole? 6+2+2=10
  3. Electronic configurations of the outermost shell of the atoms of some elements are given below. From these identify the elements and write their corresponding atomic numbers. 5x2=10
    - i)  $3s^2$
    - ii)  $3p^4$
    - iii)  $2p^4$
    - iv)  $3p^6$
    - v)  $5p^5$
  4. Define cation. Write the electronic configuration of  $\text{Fe}_{26}$  and  $\text{Fe}^{+2}$ . Define valancy. 2+3+3+2=10
  5. Atomic numbers of three elements A, B, C are respectively 10, 13, 17.
    - i) Write their electronic configurations.  $2\frac{1}{2} \times 4=10$
    - ii) Find their positions in the periodic table from the electronic configurations.
    - iii) Which one of them will form cation and which one an anion?
    - iv) Mention their valancies.
  6. Explain how the following properties of atom of elements vary across a period and down a group: i) Atomic radii ii) Metallic and non-metallic character iii) Ionisation potential iv) Electron affinity.  
Which elements are called transitional elements? (4x2)+2=10
  7. Draw the structure of structure of the following compounds: 5x2=10
    - i)  $\text{H}_2\text{O}$
    - ii)  $\text{MgCl}_2$
    - iii)  $\text{H}_2\text{SO}_4$
    - iv)  $\text{CCl}_4$
    - v)  $\text{K}_2\text{CO}_3$
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