Progressive Education Society's
Modern College of Arts, Science and Commerce, Ganeshkhind, Pune-411016
(Autonomous)

B.Sc. Blended Program

(A degree of Savitribai Phule Pune University equivalent to the degree of University of Melbourne)

End Semester Examination : April 2025

Program: B.Sc. Blended **Semester:VI** **SET: A**
Program (Specific): B.Sc.Blended(Chemistry) **Course Type: Core Course Theory**
Class: T.Y.B.Sc.Blended **Max.Marks: 25**
Name of the Course: Materials Chemistry
Course Code: CHM605 **Credit: 2** **Time: 1½ hrs**
Paper: V

Note:

1) All questions as compulsory
2) Figures to the right corner indicate full marks
3) Use of scientific calculators is allowed
4) Draw diagrams wherever necessary.
5) Use only Black or blue ink/ball/gel pens for writing.

Q1] Select the correct option. (Any 5) **[5 x 1M = 5 M]**

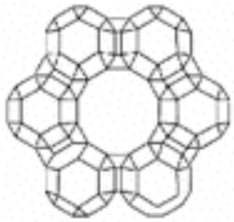
1. The interplanar distance in the crystal is dependent on —--- and the lattice constant.
   a. h,k,l
   b. wavelength
   c. angle of x rays
   d. sin value

2. Molecular sieves are known as —--.
   a. silicon molecules
   b. molecular framework
   c. zeolites
   d. crystals

3. Which is the following crystal type?

   a. cubic
   b. rhombic
   c. hexagonal
   d. monoclinic

4. Identify the following pore type.

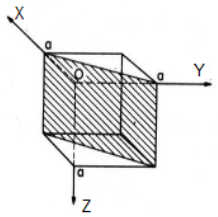


   a. triangular
   b. star
   c. ring
   d. hexagonal

5. ——--silicates absorb water.

   a. Hydrophobic
   b. Hydrophilic
   c. Organo philes
   d. Hydrogen

6. Identify the h,k,l values of the following plane.



   a. 1,1,1
   b. 1,∞,∞
   c. 1,1,∞
   d. 0,0,0

Q2] Select the correct option. (Any 5) **[5 x 2M = 10 M]**

1. What are porous materials? State their classification.
2. Discuss the catalytic activity and the pore selection of the zeolites.
3. Name the symmetry elements in cubic crystal structure.
4. What is the point group of aniline?
5. Write a note on metal-matrix composite materials.
6. Draw (123) plane and write its h,k,l values.

Q3] Select the correct option. (Any 2) **[2 x 5M = 10 M]**

1. Discuss the classification of fiber reinforced composite materials.
2. What are orgo silica materials? Discuss their applications.
3. What is polymorphism? Explain polymorphism in carbon and phosphorus.

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