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(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**UNIVERSITY**

**Reg. No. \_\_\_\_\_\_\_\_**

**End Semester Examination – Nov/Dec – 2016**

**Subject Title: MATERIALS CHEMISTRY Time: 3 hours Subject Code: 12CH208 Maximum Marks: 100**

**Answer ALL questions**

**Part - A (10x1 =10 Marks)**

1. Name the scientist who proposed the word ‘ATOM’ first in the history.

2. Write the electronic configuration of 16S and give its valence electrons.

3. Give reason: ZnO is white in color while on heating it turns to yellow.

4. AgBr exhibit what type of crystal defect?

5. The bonding in metals is due to \_\_\_\_\_\_\_\_\_\_\_.

6. Give the reason that gold is known as noble metal.

7. Methanol cannot be used as a monomer in polymerization reactions, because \_\_\_\_\_\_\_\_\_.

8. Bakelite polymer is classified under \_\_\_\_\_\_\_\_\_\_\_ type of polymer.

9. Define ceramics.

10. Give one use of fibre reinforced plastic.

**Part - B (5x3=15 Marks)**

11. Give reason Al3+ is smaller than Na+.

12. Define Bravais lattices and mention the three Bravais lattices for cubic crystal type.

13. Metals are good conductors. Give reason.

14. Give the preparation of PVC.

15. Can ceramics conduct electricity, justify your answer.

**PART – C (5 x 15 =75 Marks )**

16. a. Describe in detail the Modern Model of an atomic structure. (12)

b. The decreasing order of bond length in the following species will be: (3)

HI>HBr>HCl>HF

HI<HBr<HCl<HF

HI>HBr<HCl>HF

HI<HBr>HCl<HF

(OR)

17. a. Which of the following requires minimum energy to break the bond between them? (3)

Cl2,  HCl, H2

b. Arrange the following ions in the increasing order of ionization energy

Mg+, Mg2+, H+, Na+, Ca2+, K+ (3)

c. Briefly discuss on elementary particle lepton. (5)

d. Arrange the following molecules in the increasing order of bond angle

with reason NH3, CH4, H2O (4)

[P.T.O]

18. a. What is a crystal defect? (1)

b. Explain in detail about point defects with example. (9)

c. Briefly discuss seven crystal systems. (5)

(OR)

19. a. Define APF. Give the APF value for simple cubic, body centered cubic, and face centered cubic crystals (4)

b. Give advantages of crystal defects. (4)

c. Define unit cell. (2)

d. Give the difference between crystals and amorphous solids (5)

20. a. Give reason for the following (3)

i. Metals are good conductor of heat and electricity.

ii. Metals have high melting point.

iii. Silver metal is the best conductor among all metals but copper is used in making electrical wires, give reason.

b. Why do objects made out of alloys, metals need surface treatments? (4)

c. Discuss the properties and uses of any three precious metals. (8)

(OR)

21. a. What is electroplating? (2)

b. Write in detail case hardening method of surface treatments. (10)

c. Give the advantages of making alloys. (3)

22. a. What are the physical changes due to tacticity in polymers? (2)

b. Give the preparation and uses of silicone. (9)

c. Write the advantages and disadvantages of polymer usage. (4)

(OR)

23. a. Give the differences between thermoplastics and thermosetting plastics. (4)

b. Give the mechanism involved in the preparation of polymer Polyethylene. (9)

c. Give one example for each made out of which polymer (2)

Cooker gasket, Cooker handle, Telephone parts, hoses

24. a. Explain in details the properties and uses of ceramics. (9)

b. Briefly write about composites. (6)

(OR)

25. a. Give the advantages of making composites. (5)

b. Give the important classification of ceramics. (5)

c. What are refractory and glass type of ceramics? Give the composition. (5)