**6 SEM TDC CHM M 3**

**2014**

( May )

# CHEMISTRY

( Major )

Course : 603

**( Inorganic Chemistry )**

*Full Marks* : 48
*Pass Marks* : 19

*Time* : 3 hours

*The figures in the margin indicate full marks for the questions*

**1.** Choose the correct option : 1×5=5

(a) Paper chromatography is more suited to

(i) adsorption

(ii) molecular sieving

(iii) partition

(iv) ion-exchange

(b) Anaemia is due to the deficiency of

(i) Fe

(ii) Zn

(iii) Na

(iv) K

(c) Which of the following ceramic products is mainly used as pigment in paints?

(i) $SiO_2$

(ii) $TiO_2$

(iii) $ZrO_2$

(iv) $UO_2$

(d) Which vitamin is known as cyanocobalamin?

(i) A

(ii) $B_6$

(iii) $B_{12}$

(iv) C





(e) The colour of the transmitted light, when yellow light is absorbed, is

(i) yellow

(ii) red

(iii) blue

(iv) green

UNIT—I

2. (a) What is plastocyanin? Give its functions in plant body. 1+1=2

(b) Name and discuss the biological importance of one metalloprotein containing Cu. 2

(c) What are picket-fence porphyrins? How do they help in oxygen transport? 1+2=3

*Or*

What is myoglobin? How does it help in oxygen transport? 1+2=3

(d) What is carboplatin? Mention its advantages over cisplatin. 1+2=3

(c) Write notes on (any two) : 2×2=4

(i) Nitrogenase

(ii) Carbonic anhydrase

(iii) Role of Zn in human body

(iv) Importance of Ca for human body

## UNIT—II

3. Answer any three questions : 3×3=9

(a) What are supramolecular interactions? Give two examples. 3

(b) Mention the two basic approaches for synthesis of nanomaterials. Name two characterization techniques for nanomaterials. 1½+1½=3

(c) What are clay minerals? Give two examples and mention the typical formula of clay. 1+1+1=3

(d) Write a note on polymer nanocomposite materials. 3

(e) Discuss about the advantages of solid state reaction with the help of two examples. 3





## UNIT—III

4. (a) Mention the basic principle used in chromatographic separation. Why is TLC more advantageous over paper and column chromatography? 1+1=2

(b) What are the basic parts present in a general spectrophotometer? 2

*Or*

What are chromophores and auxochromes? Give examples. 2

(c) What kind of information do you get from atomic absorption spectroscopy? How on the basis of $R_f$ values, a mixture containing 3 components can be separated using paper chromatography? 2+3=5

*Or*

Write short notes on : 2½×2=5

(i) Gas chromatography

(ii) FTIR spectroscopy

## UNIT—IV

5. *(a)* What do you mean by setting of cement? Write down the reactions involved in it. 1+2

*(b)* What are paints? Mention the names of essential parts of a paint. What is the role of a binder? 1+1+1

*(c)* How does lead harm the human body? How can lead poisoning be prevented? 1½+1½

*Or*

Discuss the poisoning effect of Hg on human body.

*(d)* State two principles of Green chemistry.

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