Total No. of Questions : 4]

SEAT No. : ____

P2016

[Total No. of Pages : 2

[4923]-406
M. Sc. - II
INORGANIC CHEMISTRY
CHI-430: Inorganic Polymers and Heterogeneous Catalysis
(2014 Pattern) (Semester - IV) (Credit - 4)

Time : 3 Hours] ***[Max. Marks :50***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following questions. **[20]**

a) Give the basic principle of heterogeneous catalysis.

b) Define chemical reactors. State their importance in industry.

c) Give the classification of zeolites on the basis of pox size and chemical composition.

d) Organic templates are structural directing agent in zeolite synthesis. Explain.

e) Define promoter, modifier and poison.

f) Discuss in brief incipient wetness method of preparation of supported metal catalysts.

g) Which properties of TiO_2 makes it a very good photocatalyst.

h) How $BiMOO_4$ is useful as a catalyst in ammoxidation of propylene?

i) Draw the structure of keggins heteropolyanion.

j) Draw the structure of tetrameric phosphazene.

Q2) Answer any two of the following questions. **[10]**

a) What is adsorption? Discuss various types of adsorption phenomena along with Langmuir isotherms.

b) Give an overview on post synthetic treatment given to supported metal catalyst.

P.T.O.

c) What do you mean by shape selective catalysts? How zeolites are used as a shape selective catalyst. Illustrate with suitable example.

d) Give an account of various processes of deactivation of heterogeneous catalyst.

Q3) Attempt the following (Any two) **[10]**

a) Discuss in detail application of perovskite type oxide as a catalyst for vehicular emission control.

b) Give an account of use of IR & NMR techniques for characterisation of heterogeneous catalyst.

c) Describe various methods of finding out the number and nature of acidic sites in solid catalysts.

d) How will you prepare S_4N_4? Explain its properties and structure.

Q4) Write a short note (Any two). **[10]**

a) Intercalated compounds as a catalyst.

b) ZSM-5.

c) Role of support in supported metal catalysts.

d) Heteropolyanions of Mo & W.

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