This question paper contains **4** printed pages]

AO—38—2018

FACULTY OF SCIENCE

B.Sc. (Second Year) (Fourth Semester) EXAMINATION

MARCH/APRIL, 2018

(CBCS/CGPA Pattern)

CHEMISTRY

Paper VIII

(Organic + Inorganic)

(MCQ & Theory)

(Tuesday, 20-03-2018) **Time : 2.00 p.m. to 4.00 p.m.**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) Attempt *All* questions.

(*ii*) All questions carry equal marks.

(*iii*) Use separate answer sheet (OMR sheet) for MCQ question No. **1**.

(*iv*) Use black ball point pen to darken the circle of correct choice in OMR sheet.

(*v*) Use only *one* answer book for Section A and B.

MCQ

1. Select the correct answer for each of the following multiple choice questions :

(*i*) The process of converting an optically active compound into Racemic modification is known as :

(*a*) Resolution (*b*) Isomerism

(*c*) Crystallisation (*d*) Racemisation

(*ii*) Which of the following compounds is optically inactive ?

(*a*) Glyceraldehyde (*b*) Lactic acid

(*c*) Meso-tartaric acid (*d*) None of these

P.T.O.

(*iii*) Pick out the odd one from the following :

(*a*) Glucose (*b*) Maltose

(*c*) Mannose (*d*) Galactose

(*iv*) Reduction of glucose with HI and Red P yields :

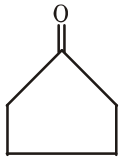
(*a*) *n*-Hexane (*b*) Sorbitol

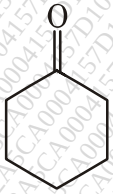
(*c*) Glucaric acid (*d*) Glucosazone

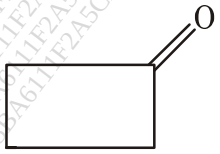
(*v*) Commercially urea is prepared from :

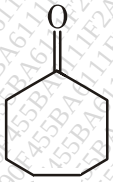
(*a*) CO and NH_3 (*b*) CH_3COOH and NH_3

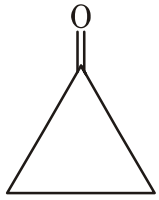
(*c*) CO_2 and NH_3 (*d*) HCHO and NH_3

(*vi*)  + $CH_2N_2 \longrightarrow A + N_2$ where A is :

(*a*) 

(*b*) 

(*c*) 

(*d*) 

(*vii*) Which of the following is ozone ?

(*a*) [O] (*b*) O_3

(*c*) O_2 (*d*) All of these

(*viii*) The formula of Vsaka's compound is :

(*a*) $[Ir(PF_3)_4]$ (*b*) $[Ir_4(CO)_{12}]$

(*c*) $[IrCl(CO)(PPh_3)_2]$ (*d*) $[Ir(PCl_3)_4]$

(*ix*) Which of the following is naturally occurring actinide ?

(*a*) CF (*b*) Pu

(*c*) No (*d*) Th

(*x*) Which of the Lanthanides has configuration $4f^7 5d^1 6s^2$?

(*a*) Sm (*b*) Gd

(*c*) Eu (*d*) Tb

Theory

Section A : Organic Chemistry

2. Answer any *two* of the following :

(*a*) Discuss the conformational analysis of *n*-butane.

(*b*) How will you convert glucose into mannose ?

(*c*) What is reagent ? Give any *one* preparation method of each of the following :

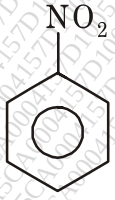
(*i*) SeO_2 (*ii*) O_3

(*iii*) O_sO_4 (*iv*) BF_3

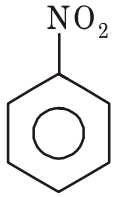
(*d*) Predict the products :

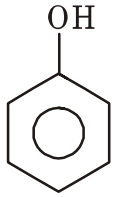
(*i*)  + 2H $\xrightarrow{Fe/H_2O(g)}$

(*ii*)  $\xrightarrow[Conc.\ H_2SO_4]{Electrolytic\ reduction}$

(*iii*)  + conc. HNO_3 $\xrightarrow{Conc.\ H_2SO_4}$

P.T.O.

(*iv*)  + 6[H] $\xrightarrow{Sn/HCl}$

(*v*)  + NH_3 $\xrightarrow[ZnCl_2]{300°C}$

3. Answer any *two* of the following :

(*a*) What is asymmetric carbon ? Give R and S forms of :

(*i*) Lactic acid

(*ii*) 2-Bromobutane

(*b*) Explain open chain structure of glucose.

(*c*) What is the effect of —CH_3, —OCH_3 and —NO_2 groups on basicity of Aniline ?

(*d*) (*i*) Explain structural isomerism and stereoisomerism.

(*ii*) Give any *three* synthetic applications of BF_3.

Section B : Inorganic Chemistry

4. Answer any *two* of the following :

(*a*) Write the applications of Lanthanides.

(*b*) Describe in brief the extraction of uranium from pitchblend by acid digestion method.

(*c*) Give the general characteristics of '*d*' block elements.

(*d*) (*i*) Give *two* examples of complexes of Pt(IV).

(*ii*) 'Ions of Actinides are coloured.' Explain.