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B.Sc. 4th Semester (New Scheme) Examination,

April-2018

BIO TECHNOLOGY

Paper-BT-407

Inorganic Chemistry

*Lecturer 07.21*

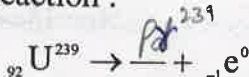
Time allowed : 3 hours]

[Maximum marks : 40

Note : Attempt five questions in all, selecting one question from each section. Question No. 1 is compulsory.

1. (a) Out of La(57) and Sm(62), which element will give coloured ion ? Sm

(b) Complete the reaction :



*91 U 239*

*89-103*

(c) What are transuranic elements ? *element which have*

*atomic no. more than*

*AC km Pa U*

(d) Why La(OH)<sub>3</sub> is more basic than Lu(OH)<sub>3</sub> ? *covalent character*

(e) Which colour is obtained when ferric chloride reacts with pot. sulfocyanide ? *FeCl<sub>3</sub> + KSCN*

(f) Which radicals are present in Group IV. *2n*

(g) Write equation when sodium thiosulphate reacts with iodine solution. *Na<sub>2</sub>S<sub>2</sub>O<sub>4</sub>*

(h) What do you understand by digestion of precipitates ? *with type the small crystals of ppt*

0  
1-2211  
2-1125  
3

(2)

ionic prod  $\rightarrow$  KSF

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**Section-A**

2. (a) Discuss the method of separation of Lanthanides. 4
- (b) Compare :
- (i) Oxidation states
  - (ii) Complex formation properties of d-block elements with those of f-block elements. 4
3. (a) Write four points of differences between Lanthanides & actinides. 4
- (b) What is Lanthanide contraction ? Discuss the causes and effects of Lanthanide contraction. 4

**Section-B**

4. (a) Actinides form oxocations but Lanthanides do not. Why? 2
- (b) Write short note on :  $2 \times 3 = 6$
- (i) Colour of ions
  - (ii) Magnetic behaviour of Actinides
  - (iii) Size of actinides
5. (a) The electronic configuration and position of most of the actinides is controversial. Comment. 4

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- (b) What is nuclear fusion ? Give two reactions to explain. 2
- (c) What are similarities between Lanthanides & actinides ? 2

**Section-C**

6. (a) What are interfering radicals ? How they interfere ? Discuss the chemistry of removal of oxalate ions from mixture. 6
- (b) Explain the chemistry of ring test for  $\text{NO}_3^-$  ion. 2
7. (a) Explain :
- (i) How carbonate is detected in presence of  $\text{SO}_3^{2-}$  (Sulphite) during inorganic analysis. 6
- (ii) How is nitrate confirmed in presence of Bromide ?
- (b) Discuss the silver nitrate test for thiosulphate. 2

**Section-D**

8. (a) How are these reagents used for detection of cation in qualitative analysis :  $2 \times 3 = 6$
- (i) Sodium cobaltinitrite
- (ii) DMG
- (iii) Nessler's reagent

- (b) Why Group II radicals are precipitated by passing  $H_2S$  gas only in acidic medium. 2
9. (a) Write short note on : 4
- (i) Co-precipitation
- (ii) Post precipitation
- (b) Why does  $Zn^{2+}$  not precipitate with  $Cd^{2+}$  ions in group II? 2
- (c) Explain Lake Test for Al. 2