LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

SIXTH SEMESTER – **APRIL 2019**

16UCH6MC02– TRANSITION ELEMENTS AND NUCLEAR CHEMISTRY

Date: 08-04-2019 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

PART- A

Answer **ALL** questions **10X2 = 20 marks**

1. Name any two ores of chromium.
2. What is Ellingham diagram? Mention its use.
3. Mention the uses of sodium nitroprusside.
4. Give any two tests for nickel.
5. What is mass defect?
6. What do you mean by binding energy of nucleus?
7. State Geiger –Nuttal rule.
8. Calculate the number of α and β particles emitted in the conversion of U-235 in to Pb-207.
9. What is spallation reaction?
10. What is the principle involved in hydrogen bomb?

PART- B

Answer any **EIGHT** questions **8 x 5 = 40 marks**

11. Write a note on Mac-Arther forest cyanide process.
12. Discuss the extraction of titanium from its ore.
13. Explain reducing and catalytic properties of transition elements.
14. Describe the heat treatment of steel.
15. Discuss the production of nickel by Orford process.
16. Discuss the position of lanthanides in the periodic table.
17. Explain liquid drop model of nucleus.
18. Write notes on Soddy- Fajans and Russel Group displacement law.
19. Describe artificial transmutation.
20. Explain the theory of nuclear chain reaction.
21. Discuss the stability of nuclei using n/p ratio.
22. Write notes on nuclear medicine.

PART- C

Answer any **FOUR** questions **4x10 = 40 marks**

23. Give a brief account on the choice of extraction process.
24. (i). Discuss the role of silver halides in photography and silvering of mirrors.
    (ii). Write the similarities between nickel and copper**.** **(5+5)**
25. Describe the separation of lanthanides by solvent extraction and ion exchange process.
26. How will you measure radioactivity using ionization chamber and Geiger counters? Explain.
27. Describe nuclear reactor with a neat diagram.
28. (i). How is uranium extracted from its ore?
    (ii).Derive the relation between decay constant and half –life time**.** **(5+5)**

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