3 (Sem-6) CHM M 4

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CHEMISTRY

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Full Marks: 60

Time: Three hours

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

30 2 --- 30 4 --- 9 15

1. Answer the following:

3

 $1 \times 7 = 7$

(a) What states are expected in an an in between the conference of the unitial complex cases

or trans.?

- (b) Between $[Ni(CN)_4]^{-2}$ and $[Co(NH_3)_6]^{+3}$ complex ions, which one is kinetically inert?
 - (c) On which factor of the biological system the Hill constant depends?
 - (d) Which complex of EDTA is used for the treatment of heavy metal toxicity?
 - (e) Name the actinide whose compound is used as a reagent in your laboratory.
 - (f) Why are lanthanides known as inner transition elements?

Answer the following:

(g) Complete the following:

$$^{30}_{15}P \longrightarrow ^{30}_{14}Si + \dots$$

2. (a) In the reaction

1×7=7

$$[Co(NH_3)_4Cl_2]^+ + Cl^- \longrightarrow [Co(NH_3)_3Cl_3] + NH_3$$

only one isomer of the complex product
is obtained. Is the initial complex cis
or trans?

	Define the following terms:
15.11	g collineras sierard new comme
8	(i) Receptor is sansful and a control of the contro
ordera a	(ii) Sink.
A BANK	Describe the use of gold compounds in
TESTALL	medicine. 2
420	Calculate the binding energy of an
no ^h mir	α -particle. Mass of proton = 1.0078 amu,
ra Lance	mass of neutron = 1.0089 amu, mass of
2=4+1	α -particle = 4.0084 amu. Express the
	result in MeV2
0=3=30	At a Whomer's east to put a Different that
3. Ans	wer any three questions: 5×3=15
aroilete	osde yra n woe nisigre
ni (a)	How three isomeric [Pt(NH3)(Py)ClBr]
to mi	complexes can be synthesized from
energy stuens	$[PtCl_4]^{-2} \text{ ion ?} $
	+8 mm contribution 2 (60% 15/13-7

- (b) Explain which one of the following complexes should have comparatively more intense d-d transition: 5 Ni(CO)4 or Fe(CO)5
- (c) Write briefly about the antagonistic effect among the essential trace elements.
- (d) What is meant by Q-value of nuclear reaction? How is it calculated? 2+3=5

- Write the outer electronic configuration of promethium. Why is it not found in 1+4=5 adl gos nature? an 4800 h = plan min-a
- Answer any three of the following: 10×3=30
- (a) (i) With the help of Orgel diagram, explain how many absorption half (19) bands mare expected in more bariso the electronic spectrum of $[Cr(H_2O)_6]^{+3}$ ion. Level the energy levels and assign the transitions.

3+(1+1)=5

- tod (ii) Discuss the theory of calorimetric determination of metals. 5
- (b) (i) Write about the absorption and metabolic function of vitamin B12.

5

- to the Webs department of the action and the How does cyanide ion act as a poison in the human body? What is the antidote of cyanide 3+2=5poisoning?
 - (i) Write about the radioactive disintegration series.
 - Write the theory of redox titration. (ii)

6 (f) fill 1be absorption band of Ceffill ton

(d) (i) What are complexones? Name the simplest complexone with its formula. Which complexone is widely used in analytical chemistry and why? How the charge of cation, pH of solution and stability of the complexes formed with it are correlated? 1/2+1/2+3+3=7 Js.

8

	HGP	(ii)	The reaction of actinides with hot
3			water is faster than expected.
inu.	s mo	orp.	Why? 10000 0000 00 00 00 3
	9 0	C. tir	ในสายาสติวรี มีตาสเ
8	(e)	(i)	Write about the characteristics of
er. En	ned	et a di	'London smog' and 'Los Angeles
			smog'.
7,=1	SHE.		Symboling .
97	1.73	(ii)	Explain the mechanism of Na^+-K^+
7			pump. nour granach 5
.110	iteu เกลา์เ	is kel	(i) Write the theory of m
3	<i>(f)</i>	(i)	The absorption band of Ce (III) ion
od	t sitti	Y S	is broad, while that of other
			lanthanide ions are sharp. Explain.
			s litaria kinch con
			when u ed in analytic
lo vii	u ge tabil	(ii)	Actinides have a greater
			tendency to form complexes than
7-	8+8+	7, +3/	lanthanides. Explain. 4

(iii) A piece of wood taken from a cave is found to have C-14 activity only 0.636 times that of fresh wood sample. Estimate the age of the wood sample. The half-life of C-14 is 5700 years.