

Model Question of HSC Examination 2020

Chemistry Second Paper

Subject Code

1	7	7
---	---	---

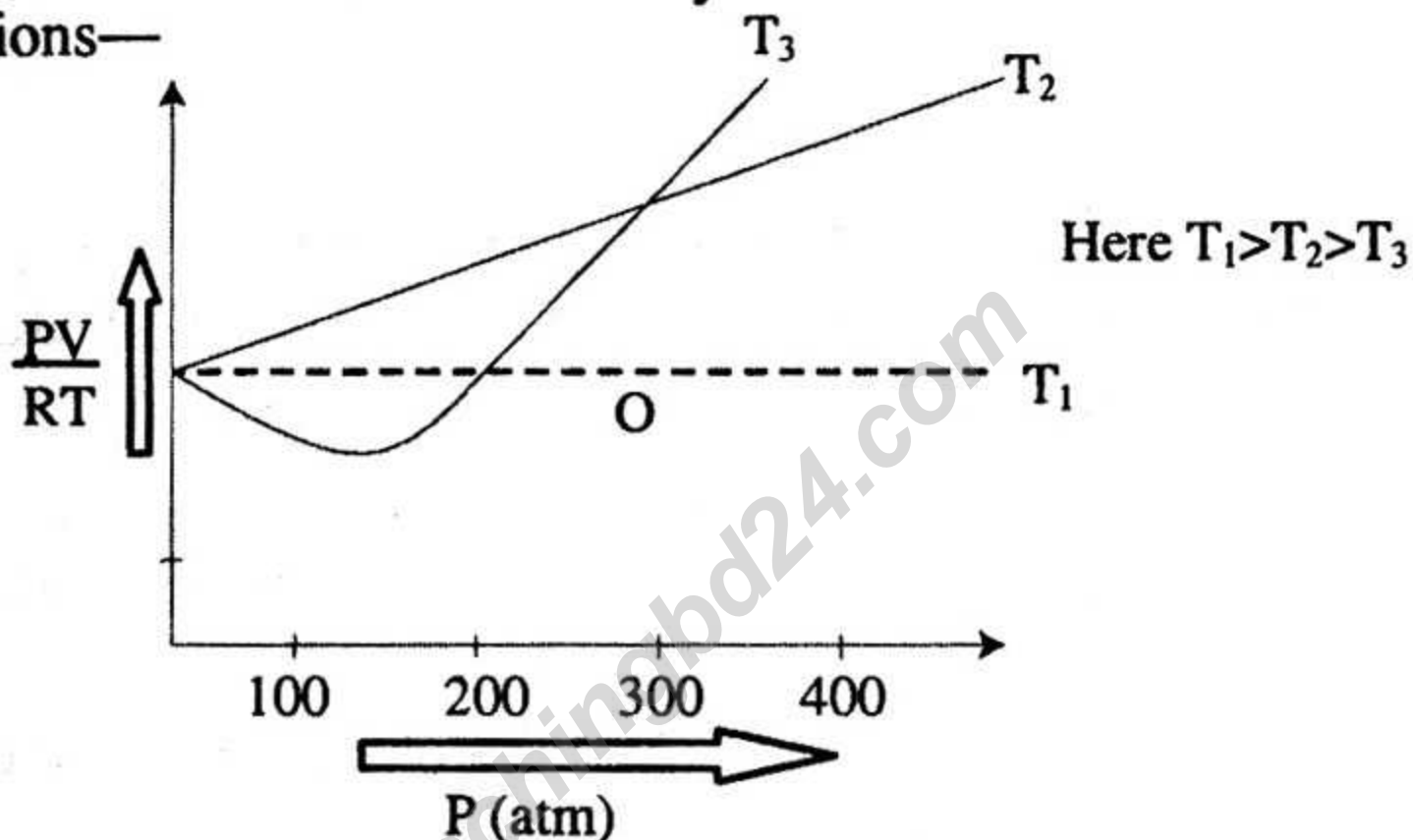
Time — 2 hours 35 minutes

Creative Essay Type

Full marks — 50

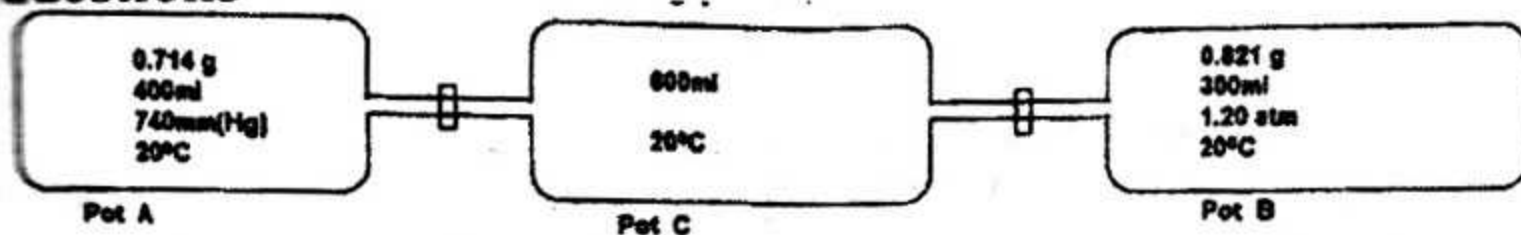
[N.B. -The figures in the right margin indicate full marks. Read the stems carefully and answer the associated questions. Answer any five questions.]

1. ► Read the stem carefully and answer the following questions—



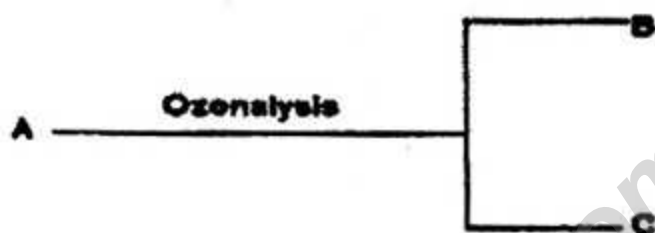
- a. What is called partial pressure? 1
- b. HSO_4^- acts both as an acid and a base Explain it. 2
- c. Find out the volume of 160 gm stated gas by mass at point Q in the figure. 3
- d. When will lines T_2 and T_3 mix with dotted line T_1 ? Analyze logically. 4

2. ► Read the stem carefully and answer the following questions—



Here: Distance of Pot A and Pot B is same from Pot C

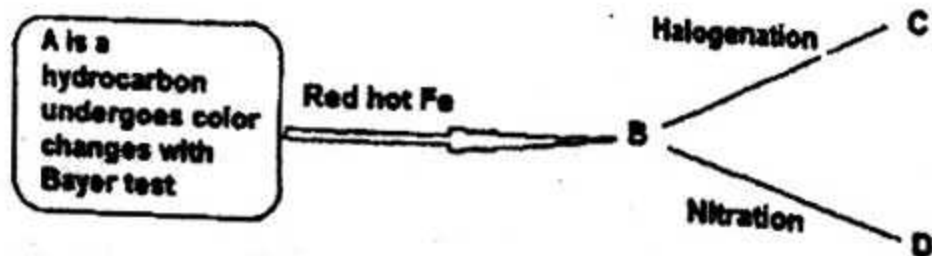
- What is called mole fraction? 1
 - Freon-II causes ozone layer depletion. Explain it. 2
 - Find out the total pressure if pot-A and pot-B is placed in pot-C. 3
 - If stop cork is opened up then which gas will reach at pot C first between pot-A and pot-B gas. Analyze mathematically. 4
3. ★ Observe the stem carefully and answer the following questions—



Here a is a hydrocarbon which changes color with Br_2 in CCl_4 . Compound B undergoes haloform test but C does not. Though both of them form precipitate with Fehling solution.

- What is called tautomerism? 1
- Though cis-Butendioic acid forms anhydride but trans of it does not. Explain it? 2
- Find out the structure of A compound. 3
- Is both B and C compound undergoes same types of reaction with concentrated and diluted NaOH respectively. Analyze with proper chemical reaction. 4

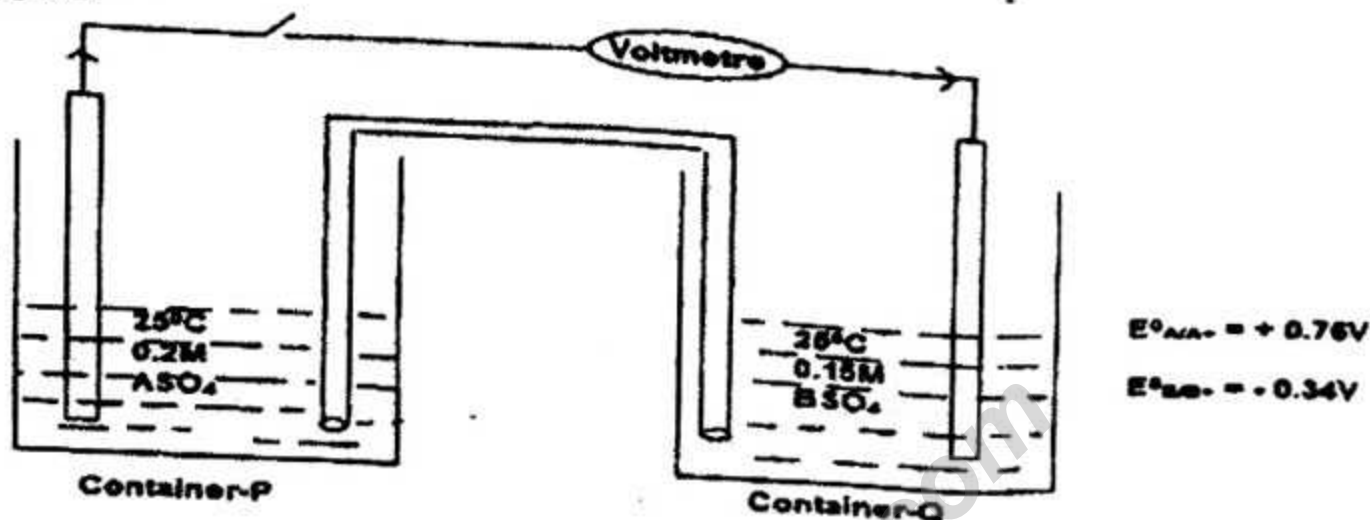
4. ★ Observe the stem carefully and answer the following questions—



- What is Markonikov rule? 1
- Recimic mixture is optically inactive. Explain it. 2
- The substitute group in compound D is a meta directing group. Explain it. 3

d. Analyze the formation of 3° alcohol from compound C via Grignard reagent. 4

5. ► Observe the stem carefully and answer the following questions—



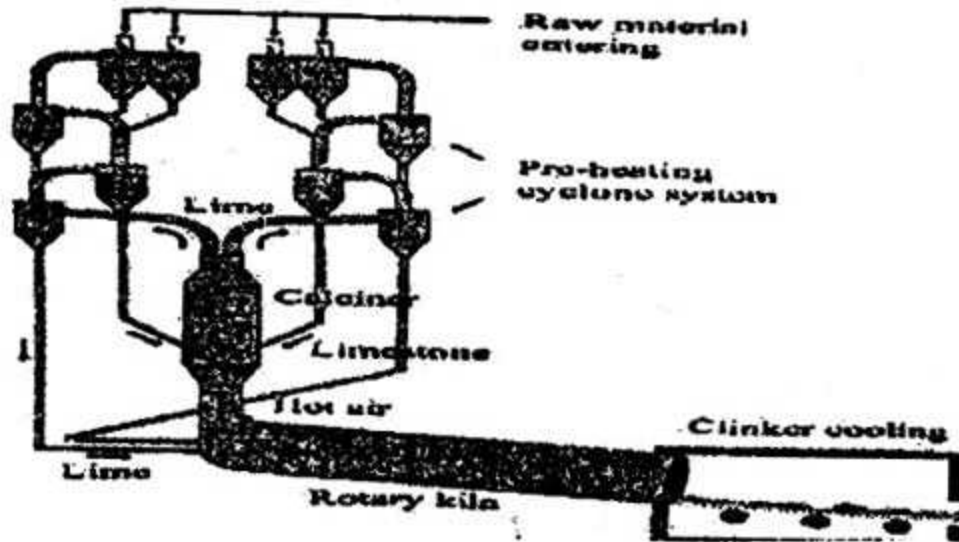
- What is called nano particle? 1
- H⁺/H₂, Pt is used as primary reference electrode. Explain it. 2
- Calculate the emf of the stated cell in the stem. 3
- If container Q is made with Ag (E°_{Ag⁺/Ag} = -0.80V) then for preserving the cell for long time analyze your opinion. 4

6. ★ Observe the stem carefully and answer the following questions—

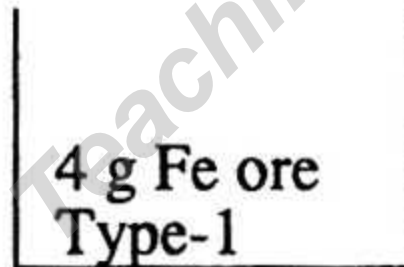
Titration No	Acid	Base	Indicator
1	0.1M HCl	NH ₄ OH	p (3.0-6.5)
2	0.1CH ₃ COOH	NaOH	Q (8.3-10.1)

- Write down the Beer-Lamberts law. 1
- Iodometry titration is a indirect titration method. Explain it. 2
- Calculate the concentration of weak acid mentioned in the stem in ppm unit. 3
- Analyze the cause of used different indicators in titration-1 and titration-2 with neutralization curve. 4

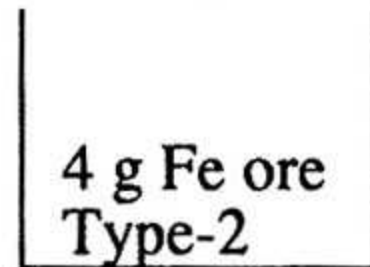
7. ► Observe the stem carefully and answer the following questions—



- What is ETP? 1
 - CNT is more stronger than steel. Explain it. 2
 - Explain the basic principle of above compound manufacturing. 3
 - The main air pollutant from above industry is used in Solvay process. Analyze the statement. 4
8. ► Observe the stem carefully and answer the following questions—



Beaker-1



Beaker-2

By adding H_2SO_4 250ml solution be prepared in both beakers. 25ml of each solution of beaker 1 & 2 be titrated with 25ml 0.05M $\text{K}_2\text{Cr}_2\text{O}_7$ and 20ml 0.02 M KMnO_4 to neutralized completely.

- What is called secondary standard substance? 1
- Semi molar solution is standard solution. Explain it. 2
- Balance the titrated redox reaction stated in beaker-1 by ion-electron method. 3
- Which type of Fe ore is more economically benefited for Fe extraction in industry. Analyze mathematically. 4

Time — 25 minutes

Creative Multiple Choice Questions

Full marks — 25

[N.B. Choose the best answer among the options. Fill the circle in the answer sheet with ball point pen. Each question has value 1.]

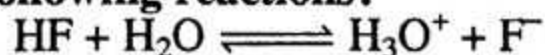
1. Which of the following gas having high absorbing power of IR radiation?

- (a) CO_2 (b) N_2O
(c) NH_3 (d) SO_3

2. How many optically active stereoisomer of tartaric acid are there?

- (a) 2 (b) 3
(c) 4 (d) 5

3. According to bronsted - lowry concept, which pair is base in the following reactions?



- (a) H_3O^+ , Cl^- (b) H_2O , F^-
(c) HF , OH^- (d) H_2O , HCl

4. Which of the following indicator is suitable during the titration of NaOH by CH_3COOH ?

- (a) Methyl orange
(b) Methyl red
(c) Phenolphthalein
(d) Bromophenol

5. \star In the preparation of cement, Gypsum —

- i. slow down the setting time of cement
ii. react with tricalcium aluminate to form calcium sulphoaluminate
iii. helps to quick setting of cement

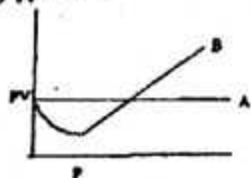
Which one is correct?

- (a) i (b) i and ii
(c) i and iii (d) i, ii and iii

6. \star A 500g toothpaste contain 0.4gm fluoride. What is the concentration of fluoride in term of ppm unit?

- (a) 800 ppm (b) 600 ppm
(c) 400 ppm (d) 200 ppm

PV VS P curve of two gases A and B show below—



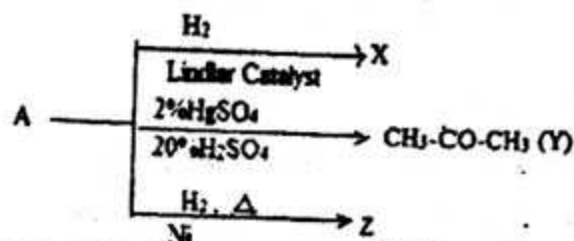
7. On what condition gas B will behave like A gas?

- (a) High pressure, high temperature
(b) High pressure, low temperature
(c) Low pressure, high temperature
(d) Low pressure, low temperature

8. Which of the following glass is used for making burette, pipette etc?

- (a) Soft glass (b) Hard glass
(c) Bottle glass (d) Flint glass

Answer to the question No-9 and 10 from the following stem—



9. What is the name of the compound Z?

- (a) Ethane (b) Propane
(c) Propyne (d) Ethyne

10. If the compound Y is $\text{CH}_3\text{C HO}$, then —

- i. X will be a symmetric alkene
ii. order of reactivity is $\text{X} > \text{A} > \text{Z}$
iii. Z can be prepared from X

Which one is correct?

- (a) i (b) i and ii
(c) i and iii (d) i, ii and iii

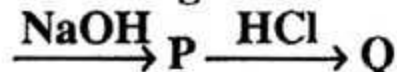
11. What is the potential of half-cell consisting of zinc electrode in 0.01 M ZnSO_4 solution at 25°C ? ($E^\circ_{\text{Zn}/\text{Zn}^{2+}} = +0.76\text{V}$)

- (a) 0.763 V (b) 0.701V
(c) 0.822V (d) 0.819V

12. Which of the following is used to prepare Teflon polymer?

- (a) F_2 (b) Cl_2
(c) Br_2 (d) I_2

13. The structural formula of Q in the following reaction is — $\text{C}_6\text{H}_5\text{-Cl}$



- (a) $\text{C}_6\text{H}_5\text{-NH}_2$ (b) $\text{C}_6\text{H}_5\text{-COOH}$
(c) $\text{C}_6\text{H}_5\text{-OH}$ (d) $\text{C}_6\text{H}_5\text{-CHO}$

$\text{C}_4\text{H}_9\text{OH} \xrightarrow[\text{Conc. HCl}]{\text{Anhydrous}}$ Creates white ppt.

within 5-10 minutes.

14. What is the reacting alcohol in the reaction of the above stem?

- (a) butanol-1 (b) butanol-2
(c) 2-methyl propanol-1
(d) 2-methyl propanol-2

15. **★** Alloy of which two metal used for making superconductor?

- (a) Si & Ge (b) As & Ge
(c) Se & Ge (d) Nb & Ge



Here, Electrode M is made by high reactive metal.

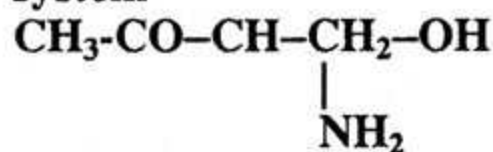
16. In case of the above electrode—

- solution pressure is higher than osmotic pressure
- it acts as cathode if attached with less reactive metal
- give + Ve of EMF with standard hydrogen electrode

Which one is correct?

- (a) i (b) i and ii
(c) i and iii (d) i, ii and iii

17. The name of the following compound according to IUPAC system —



- (a) 4-hydroxy-2-oxo butyl amine
(b) 3-amino-4-hydroxy-1-butanone
(c) 2-amino-3-oxo-1-butanol
(d) 4-hydroxy-3-amino-2-butanone

18. $\text{Na}_2\text{SO}_4 + 2\text{C} \xrightarrow{\Delta} [\text{X}] + 2\text{CO}_2$,
The substance 'X'—

- acts as sharpening agent in leather tanning
- break down disulphide (S – S) bond between polypeptide chain of protein
- helps to separate hair from leather

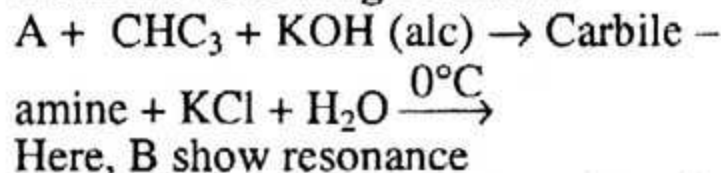
Which one is correct?

- (a) i (b) i and ii
(c) i and iii (d) i, ii and iii

19. **★** What type of hybridization present in fullerene?

- (a) sp (b) sp²
(c) sp³ (d) sp²d

Answer to question No 20 and 21 from the following reactions—



20. In Hoffman degradation 'A' is prepared from which substance?

- (a) CH₃NH₂
(b) C₆H₅NH₂
(c) CH₃CONH₂
(d) C₆H₅—CONH₂

21. The compound 'B' —

- gives Sandmeyer reaction
- undergoes hydrolysis to form phenol
- acts as nucleophile

Which one is correct?

- (a) i (b) i and ii
(c) i and iii (d) i, ii and iii

22. If 10ml $\frac{M}{10}$ K₂Cr₂O₇ ≡ D, Then which of the following is the value of 'D'?

- (a) 5.585 gm Fe²⁺ (b) 0.0585 gm Fe²⁺
(c) 0.335 gm Fe²⁺ (d) 0.0335 gm Fe²⁺

23. What is the oxidation number of cobalt in Na₃[Co(NO₂)₆]?

- (a) +6 (b) +4
(c) +3 (d) +2

24. **★** CFC—

- destroy ozone layer by ionic mechanism
- produces Cl⁻ in presence of UV-ray
- responsible chain reaction in Ionosphere

Which one is correct?

- (a) i (b) i and ii
(c) i and iii (d) i, ii and iii

25. Which of the following relationship is correct for diffusion?

- (a) $r = \frac{K}{\sqrt{M}}$ (b) $r = K\sqrt{M}$
(c) $r = K\sqrt{d}$ (d) $r = K\sqrt{M/d}$

Ans.	1	(a)	2	(a)	3	(b)	4	(c)	5	(b)	6	(a)	7	(c)	8	(a)	9	(a)	10	*	11	*	12	(a)	13	(c)
	14	(b)	15	(d)	16	(c)	17	*	18	(d)	19	(b)	20	(d)	21	(d)	22	(c)	23	(c)	24	(b)	25	(a)		

10. N.B. The correct answer is (ii) & (iii).

11. N.B. The correct answer is 0.789V.

17. N.B. The correct answer is 3-amino-4-hydroxy-2-butanone.