

# Model Question of HSC Examination 2019

Chemistry First Paper

Subject Code 

1	7	6
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Time — 2 hours 35 minutes

Creative Essay Type

Full marks — 50

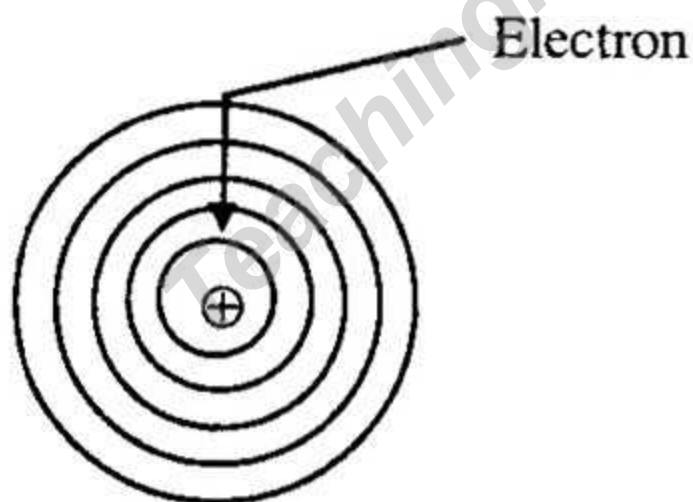
[N.B. -The figures in the right margin indicate full marks. Read the stems carefully and answer the associated questions. Answer any five questions.]

1. ►

Qualitative analytical method	mass	volume	substances
Qualitative analytical method-i	100mg	4ml solution	HCl
Qualitative analytical method-ii	10mg	1ml solution	KMnO <sub>4</sub>

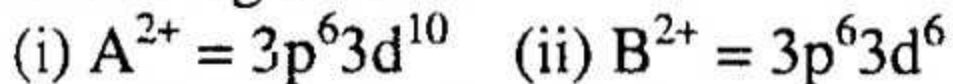
- a. What is molarity? 1
- b. Explain the use of UV ray to detect fake currency. 2
- c. Find out the molarity of above acid solution. 3
- d. Compare the merits and demerits of the two methods (i) and (ii). 4

2. ★



- a. What is orbital? 1
- b. Why AlCl<sub>3</sub> is less soluble in water? 2
- c. Determine the frequency of above electron during transition to 2<sup>nd</sup> shell. 3
- d. Base on which limitation above model was given? Analyze the concept of above model. 4

3. ► Observe the outermost shell electronic configuration of following cations :



- What is alkali metal? 1
- Explain Hess's law of constant heat summation? 2
- How you will identify  $B^{2+}$  ion in solution? Explain. 3
- Which of the stem's cation will form colorful compound? Analyze. 4

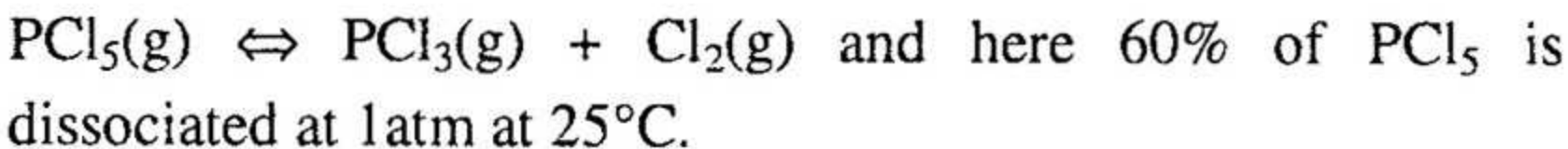
4. ►

Element →	D	E	G
Valence electron configuration	$ns^2$	$(n + 1)s^2$	$(n + 2)s^2$

Here  $n = 2$

- Write Hund's rule. 1
- Why Zn is not transition element? explain. 2
- $DCl_2$  has lower melting point compared to  $GCl_2$ . Explain by Fajan's rule. 3
- Ionization potential is a periodic property. Analyze the statement according to stem. 4

5. ► Observe the reaction :



- What is chemical equilibrium? 1
- What is meant by buffer solution? 2
- Determine the value of  $K_c$  of above reaction? 3
- Derive the  $K_p$  expression for the above reaction. 4



6. ★

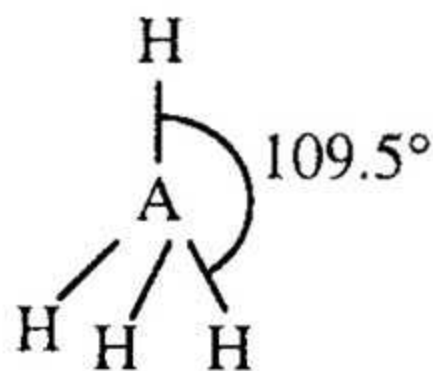


Fig-1

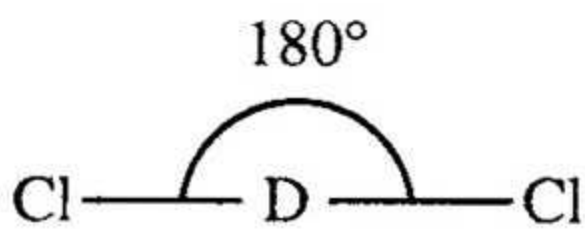


Fig-2

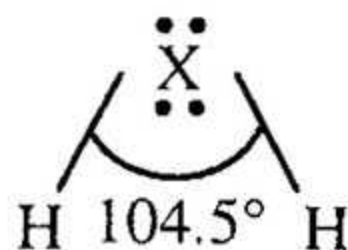


Fig-3

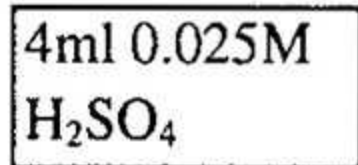
The atomic no of A, D X are 6, 4 & 8 respectively. Here, A, D and X are not actual symbol of element

- What is solvent extraction? 1
- Why 2d orbital is not possible? 2
- Explain the hybridization process of the fig-2 compound. 3
- Give your evaluation about the shapes and bond angles of Fig-1 and fig-3 molecules. 4

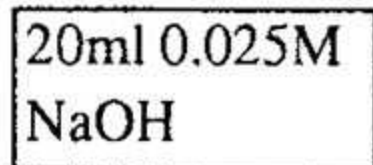
7. ► Sugarcane → Vinegar

- What is green chemistry? 1
- What is meant by solubility product? Explain. 2
- Explain the causes of using above acid solution as a preservative? 3
- Analyze the preparation of above preservative from sugarcane. 4

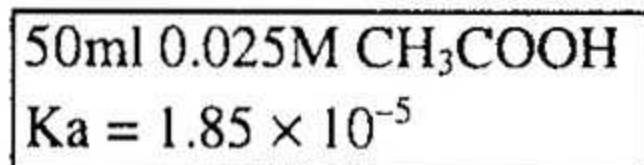
8. ★



A



B



C

- What is Aufbau principle? 1
- Why ammonia is used in less cleaner instead of NaOH? 2
- Calculate the pH of mixture of (B + C). 3
- What will be the nature of the mixture (A + B) solution? 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 one of the following is primary standard substance?
  - (a)  $\text{KMnO}_4$
  - (b)  $\text{H}_2\text{SO}_4$
  - (c)  $\text{Na}_2\text{S}_2\text{O}_3$
  - (d)  $\text{K}_2\text{Cr}_2\text{O}_7$
2. What minimum volume can be measured with a burette?
  - (a) 0.01 ml
  - (b) 0.1 ml
  - (c) 0.5 ml
  - (d)  $1.0 \text{ cm}^3$
3. Characteristics of  $\text{Na}_2\text{CO}_3$  is—
  - i. Primary standard substance
  - ii. Toxic free substance
  - iii. Aqueous solution is alkaline
 Which one is correct?
  - (a) i & ii
  - (b) i & iii
  - (c) ii & iii
  - (d) i, ii & iii
4. ★ What is the value of Bohr radius—
  - (a)  $5.292 \times 10^{-11} \text{ m}$
  - (b)  $2.18 \times 10^{-18} \text{ m}$
  - (c)  $1.3 \times 10^{-10} \text{ m}$
  - (d)  $3.0 \times 10^8 \text{ m}$
5. ★ With which principal electrons are mainly distributed in orbital?
  - (a) Hund's
  - (b) Aufbau's
  - (c) Pauli's
  - (d) VSEPR
6. How much centimetre is equal to one Angstrom?
  - (a)  $10^{-10}$
  - (b)  $10^{-12}$
  - (c)  $10^{-8}$
  - (d)  $10^{-9}$
7. Which element of the following atomic number is in P-block?
  - (a) 3
  - (b) 11
  - (c) 33
  - (d) 43
8. 50 ml standard solution contains 5gm  $\text{CaCl}_2$ . What is the solubility of  $\text{CaCl}_2$  per litre?
  - (a)  $10.0 \text{ gmL}^{-1}$
  - (b)  $100 \text{ gmL}^{-1}$
  - (c)  $101 \text{ gmL}^{-1}$
  - (d)  $1011 \text{ gmL}^{-1}$
9. Line spectrum is used in followings—
  - i. To detect fake passport
  - ii. To detect elements
  - iii. To detect disease and treatment
 Which one is correct?
  - (a) i & ii
  - (b) ii
  - (c) ii & iii
  - (d) i, ii & iii
10. Which element may have highest oxidation number?
  - (a) V
  - (b) Co
  - (c) Cr
  - (d) Fe
11. Which cation forms coloured compound?
  - (a)  $\text{Sc}^{3+}$
  - (b)  $\text{Mg}^{2+}$
  - (c)  $\text{Zn}^{2+}$
  - (d)  $\text{Ni}^{2+}$
12. What type of oxide  $\text{SiO}_2$  is—
  - (a) Acidic
  - (b) basic
  - (c) Amphoteric
  - (d) neutral
13. In which compound pi electrons are present?
  - (a)  $\text{C}_2\text{H}_4$
  - (b)  $\text{C}_2\text{H}_6$
  - (c)  $\text{C}_6\text{H}_6$
  - (d)  $\text{C}_3\text{H}_8$



14. What is molecular shape of  $\text{PCl}_5$ ?

- (a) Trigonal bipyramidal
- (b) octahedral
- (c) regular planar
- (d) tetrahedral

15. ★ Compound with incomplete octet is—

- i.  $\text{H}_2\text{O}$
- ii.  $\text{BH}_3$
- iii.  $\text{BeCl}_2$

Which one is correct?

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

16. In a chemical reaction when  $\Delta H = \Delta E$

- (a) at constant temperature
- (b) at constant volume
- (c) at constant pressure
- (d) when mole number is equal

17. Which catalyst is used in ammonia production by Haber's process?

- (a) Mo
- (b) Fe
- (c) Ni
- (d) Cr

18. ★ The pH value of 0.0005 M  $\text{H}_2\text{SO}_4$  is—

- (a) 1
- (b) 2
- (c) 3
- (d) 4

19. Which buffer does not control the pH of blood in human body?

- (a) Phosphate buffer
- (b) bicarbonate buffer
- (c) acetate buffer
- (d) protein buffer

20. ★ In a reaction catalyst—

- i. increases kinetic energy of reactant
- ii. Decreases activation energy
- iii. Absorbs reactant molecule

Which one is correct?

- (a) i & ii
- (b) i & iii

(c) ii & iii

(d) i, ii & iii

Observe the given stem and then answer two questions:

At  $25^\circ\text{C}$  temperature and 1.0 atm pressure 80%  $\text{PCl}_5$  dissociates to  $\text{PCl}_3$  and  $\text{Cl}_2$  gas.

21. What is the  $K_p$  value of reaction?

- (a) 1.67
- (b) 1.70
- (c) 1.78
- (d) 1.90

22. If  $\text{Cl}_2$  is added in the reaction, then—

- i. reaction goes forward
- ii. reaction goes backward
- iii. Changes equilibrium state

Which one is correct?

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

23. Milk is of what type?

- (a) Gel
- (b) Emulsion
- (c) Suspension
- (d) Sol

24. Which chemical causes colour in mehndi?

- (a) lenolin
- (b) Lawsone
- (c) Oleic acid
- (d) winter green

25. Substance used in preservatives are—

- i.  $\text{CH}_3\text{COOH}$
- ii. BHA and BHT
- iii.  $\text{CH}_3\text{OH}$

Which one is correct?

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

Ans.

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