

**CAREERS360**

**PSEB 12<sup>th</sup>**

**Chemistry**

**Model Question Paper**

Roll No. ....

**053**

Total No. of Questions : 26]

[Total No. of Printed Pages : 4

SS

2117

**ANNUAL EXAMINATION SYSTEM**

**CHEMISTRY (Theory)**

**(Common for Science and Agriculture Groups)**

**(English Version)**

Time allowed : Three hours

Maximum marks : 70

**Note :** (i) You must write the subject-code/paper-code **053** in the box provided on the title page of your answer-book.

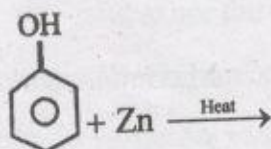
- (ii) Make sure that the answer-book contains 30 pages (including title page) and are properly serialised as soon as you receive it.
- (iii) Question/s attempted after leaving blank page/s in the answer-book would not be evaluated.
- (iv) Log tables may be asked for if needed.
- (v) Use of simple calculator is allowed.
- (vi) Marks allotted to each question are indicated against it.
- (vii) The paper comprises of 26 questions. Attempt total 26 questions. Internal choice is given in Q. No. 19, 23, 24, 25 and 26.
- (viii) Question No. 1 to 8 carry one mark each. Answer in one line.
- (ix) Question No. 9 to 16 will be of two marks each. All questions are compulsory. They are short answer type questions.
- (x) Question No. 17 to 23 will be of 4 marks each. All questions are compulsory. Internal choice is given for Q. No. 19 and 23.
- (xi) Question No. 24, 25 and 26 (Three questions) will be of 6 marks each. All questions are compulsory. Full internal choice is given.

**All questions are compulsory**

- |  |   |
|--|---|
| 1. Define normality of a solution.         | 1 |
| 2. Define activation energy of a reaction. | 1 |
| 3. What type of drug is penicillin?        | 1 |



4. What are antiseptics ? 1
5. Mention one important function of carbohydrates in our body. 1
6. Write down Cannizzaro's reaction. 1
7. Complete the following reaction : 1



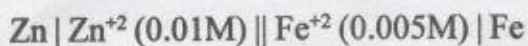
8. Convert aniline to benzonitrile. 1
9. Atoms of element B form hcp lattice and those of the element A occupy two third ( $2/3$ ) of the tetrahedral voids. What is the formula of the compound formed by these elements A and B ? 2
10. The rate law for a reaction of A, B and C has been found to be  $\text{rate} = k [\text{A}] [\text{B}] [\text{C}]^2$ . How would the rate of reaction change when concentration of A is halved ? 2
11. Write down the names of any two ores of copper. 2
12. Write down the name of monomers and one use of Teflon. 2
13. (i) Define co-ordination number. 1
- (ii) Write down IUPAC name of  $\text{Na}_3 [\text{Co}(\text{NO}_2)_6]$  1
14. Write down one main source and one deficiency disease of Vitamin B<sub>1</sub>. 1+1=2
15. Why is methylamine stronger base than ammonia ? 2
16. Why are  $\text{Mn}^{+2}$  compounds more stable than  $\text{Fe}^{+2}$  compounds towards oxidation to their +3 state? 2
17. Lead (II) sulphide crystal has NaCl structure. What is its density ? The edge length of the unit cell of PbS crystal is 500 pm. (Atomic masses : Pb = 207, S = 32). 4
18. (i) State Henry's Law. 2
- (ii) 18 g of glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) is dissolved in 1000g of water. Calculate elevation in boiling point.  $K_b$  for water is  $0.52 \text{ K Kg mol}^{-1}$ . 2



19. (i) Write any two differences between electrochemical cell and electrolytic cell. 2  
 (ii) Define resistivity and give its S.I. units. 1+1=2

or

Write down the Nernst equation and calculate e.m.f. of the following cell at 25°C :



given :  $E^\circ_{(\text{Zn}^{+2}|\text{Zn})} = -0.763\text{V}$

$E^\circ_{(\text{Fe}^{+2}|\text{Fe})} = -0.44\text{V}$  4

20. Explain briefly the activity and selectivity of a catalyst. 2+2=4
21. (i) How will ozone oxidise lead sulphide ? 2  
 (ii) Why is  $\text{H}_2\text{O}$  a liquid and  $\text{H}_2\text{S}$  a gas ? 2
22. (i) Explain Victor Meyer's test for primary ( $1^\circ$ ) alcohols. 2  
 (ii) Alcohols are soluble in water while alkyl halides are not, although both are polar compounds. Explain. 2
23. (i) Give one test to distinguish between phenol and benzoic acid. 2  
 (ii) Write down the reaction between acetic acid and ethyl alcohol in presence of conc.  $\text{H}_2\text{SO}_4$ . 2

or

- (i) Why do aldehydes and ketones have high dipole moments ? 2  
 (ii) How will you convert acetic acid to trichloroacetic acid ? 2
24. (i)  $\text{H}_3\text{PO}_4$  is triprotic acid explain. 2  
 (ii)  $\text{SO}_3$  has zero dipole moment. Why ? 2  
 (iii) Why do noble gases form compounds with fluorine and oxygen ? 2

or

- (i) Draw diagram in manufacture of sulphuric acid by contact process. 3  
 (ii) Why are halogens strong oxidising agents ? 2  
 (iii) Draw structure of thiosulphuric acid ( $\text{H}_2\text{S}_2\text{O}_3$ ). 1

(4)

25. (i) Explain why  $\text{ScCl}_3$  is colourless while  $\text{TiCl}_3$  is coloured? 2  
(ii) Why do transition metals show catalytic properties? 2  
(iii) Which of  $\text{Lu}(\text{OH})_3$  and  $\text{La}(\text{OH})_3$  is more basic and why? 2

or

- (i) What are the consequences of Lanthanoid contraction? 3  
(ii) Chromium is a typical hard metal where as mercury is a liquid. Why? 2  
(iii) Draw the structure of chromate ion: 1

26. Write down the following reactions :

- (i) Haloform reaction 1  
(ii) Sandmeyer's reaction 1  
(iii) Wurtz reaction 1  
(iv) Balz-Schiemann reaction 1  
(v) Carbylamine reaction 1  
(vi) Groove's process. 1

or

- (i) Explain the mechanism of  $\text{S}_{\text{N}}1$  reactions of alkyl halides. 3  
(ii) The para isomer of dichlorobenzene has higher melting point than ortho and meta isomer why? 3