

Roll No.

053/B

Total No. of Questions : 26]

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[Total No. of Printed Pages : 4

SS

2037

ANNUAL EXAMINATION SYSTEM

CHEMISTRY (Theory)

(Common for Science & Agriculture Groups)

(English Version)

(Evening Session)

Time allowed : Three hours

Maximum marks : 70

Note : (i) You must write the subject code/paper code **053/B** 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. **psebonline.com**

(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.** **psebonline.com**

(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.

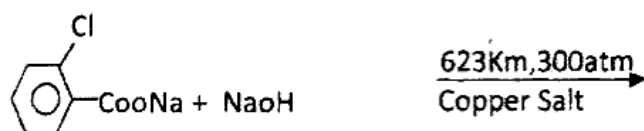
1. Under what conditions the van't Hoff factor is less than one ?

(2)

2. Define molecularity of a reaction. **psebonline.com** 1

3. Write down IUPAC name of $\text{CH}_3-\text{NH}-\text{CH}_2-\text{CH}_3$ 1

4. Complete the following reaction :- 1



5. Write down the position isomer of 1



6. Write down name of one antiseptic. 1

7. What are artificial sweetners ? 1

8. What are polysaccharides ? 1

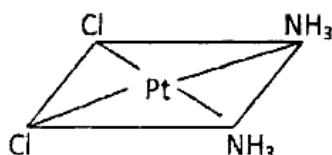
9. The two ions A^+ and B^- have radii 88 pm and 200 pm respectively. In the close packed crystal of compound AB, predict the coordination number of A^+ . 2

10. A first order reaction is 20% complete in 10 minutes. Calculate the time for 75% completion of the reaction. 2

11. What is Froth flotation process for concentration of ore ? **psebonline.com** 2

12. Write down differences between addition and condensation polymers. 2

13. Express geometrical isomerism in 2



14. What is mutarotation ? 2

15. Write down coupling reaction of amines. **psebonline.com** 2
16. Explain how the colour of $K_2Cr_2O_7$ solution depends on p_H of the solution ? 2
17. Unit cell of an element (atomic mass = 108 amu and density = 10.5 g cm^{-3}) has an edge length of 409 pm. Deduce the type of crystal lattice. 4
18. (i) Prove that depression in freezing point is a colligative property. 2
- (ii) 45g of ethylene glycol ($C_2H_6O_2$) is mixed with 600g of water. Calculate the freezing point depression (K_f for water = $1.86 \text{ K Kg mol}^{-1}$). 2
19. Explain the variation of molar conductivity of strong and weak electrolytes with dilution. 4

or

Write the Nernst equation and calculate the emf of following cell at 298K :- 4



Given $E^\circ Mg^{2+} / Mg = -2.37V$, $E^\circ Cu^{2+} / Cu = 0.34V$ **psebonline.com**

20. Define coagulation. Differentiate between physical adsorption and chemical adsorption. 4
21. (i) Among noble gases, only Xe is known to form chemical compounds. Why ? 2
- (ii) Sulphur is a solid but oxygen is a gas. Why ? 2
22. (i) Alcohols have higher boiling point than alkanes. Why ? 2
- (ii) Discuss oxidation of primary, secondary and tertiary alcohols. 2
23. (i) Write Cannizzaro reaction. 1
- (ii) Write aldol condensation. **psebonline.com** 1
- (iii) Why aliphatic carboxylic acids are stronger than phenols ? 2

or

- (i) Carboxylic acids do not give characteristic reactions of carbonyl group. Explain. 2
- (ii) Why do aldehydes and ketones have high dipole moment ? 2

24. (i) PbCl_2 is known but PbCl_4 is not known. Explain with inert pair effect. 2
- (ii) Why is SF_6 much less reactive than SF_4 ? 2
- (iii) Give hybridization and draw structure of XeF_2 . 2

or

- (i) Draw flow chart for Haber's process for the manufacture of ammonia. 3
- (ii) Write down the reaction of Ozone with Potassium nitrite. 2
- (iii) Draw structure of IF_5 . psebonline.com 1

25. (i) Why do transition elements exhibit higher enthalpies of atomization ? 2
- (ii) Calculate equivalent weight of KMnO_4 in alkaline medium. 2
- (iii) What are the consequences of Lanthanoid contraction ? 2

or

- (i) Write down general electronic configuration and any two uses of block elements. 3
- (ii) Copper is regarded as transition metal though it has completely filled d-orbitals ($3d^{10}4s^1$). Explain. 2
- (iii) Draw the structure of chromate ion. 1

26. Write the following reactions :

- (i) Wurtz reaction 1
- (ii) Sandmeyer's reaction 1
- (iii) Hunsdiecker reaction 1
- (iv) Reimer-Tiemann reaction 1
- (v) Friedel Craft's acylation psebonline.com 1
- (vi) Ullman reaction 1

or

- (i) Why are haloarenes more stable than haloalkanes ? 3
- (ii) Alkyl halides react with AgNO_2 to give R-NO_2 or R-ONO . Explain. 3