MODEL QUESTIONS

B.Sc. Part I general

Paper I

CGT-11a

Unit -I

1. (i) What is ionization potential ? Compare the ionization potential of Nitrogen and oxygen.　(3)

   (ii) Write short note on lanthanide contraction.　(2)

2. (i) Discuss significance of four quantum numbers.　(2)

   (ii) State hund's rule. Write electronic configuration of cu^{+2} and indicate the number of unpaired electrons in it.　(3)

3. Name three natural radioactive disintegration series. Why are they so named?　(3+2)

Unit-II

1. (i) Describe with reactions the Lassaigne's method for the detection of chlorine in an organic compound　(3)

   (ii) Which functional group is deteceted by 'DNP ' test ?　(2)

CGT-11b

Unit –I

1. **(i) Write down the different enantiomers of 3-bromo- 2- butanol using Fischer projection formula.**
   (3)

   (ii) Which one is more stable in between 1-butene and 2 –butene and why ?　**(2)**

2. (i) Write note on Friedel-Craft's reaction.　(2)

   (ii) Convert cis-buten to trans-butene and Acetylene to mesitylene.　(3)

Unit –II

1. (i) Explain SN^2 reactions with mechanism .　(2)

   (ii) Write the major product of the following reaction :-

   $$CH_3----CH_2---CHBr---CH_3 \rightarrow (NaOH+C2H5OH)$$　(5)

CGT-12a

Unit-I

1. (i) Write down the differences between complex salt and double salt.　(3)

   (ii) Discuss VSEPR Theory　(2)

Unit-II

1. (i) Mention the important ore of lead metal.   (1)

    (ii) Discoss how lead is extracted from its ore   (4)

CGT-12b

Unit- I

1. (i) Write a note on Reimer-Tiemann reaction   (2)
    (ii) Between p-nitrophenol and phenol, which one is more acidic and why?   (3)

Unit-II

1. (i) How will yoy convert glucose to fructose ?   (2)
    (ii) Write one method for synthesis of amino acid.   (3)

B.Sc-Part-II General

CGT-21a

Unit-I

1. Write the Maxwell speed distribution equation and draw the distribution curve for a gas at two different temperatures.   (2+3)

Unit-II

1. Write down the rate equation for a first order reaction and derive a mathematical expression for the rate constant.

Show that the time taken for 75% completion of the reaction is twice the time taken for 50% completion of the reaction.   (3+2)

CGT-21b

Unit-I

1. How is borate detected? How would you distinguish between a borate and free boric acid? Give reaction.   (3+2)

1. Write short notes on:

Unit-II

(a) Electroplating

(b) Inert pair effect   (2+3)

CGT-22a

Unit-I

1. A .Classify: Volume, Viscosity, Temperature and internal energy as intensive or extensive property

B. Two moles of an ideal gas undergo isothermal reversible expansion from 15·15 litres to 60litres at 400K.Calculate W and ΔE.   (2+3)

Unit –II

1. A. What do you mean by homogeneous and heterogeneous equilibria? Give example of each.

   B. What do you mean by electrophoresis of a colloid?   (3+2)

CGT-22b

Unit-I

1. What do you mean by ionic product of water and how is it different from ionisation constant of water?   (2+3)

Unit-II

1. A. What do you mean by salt bridge?

B. Describe saturated calomel electrode. Write the electrode reaction when the electrode acts as cathode.   (2+3)

B.Sc- Part- III General

CGT-31a

Unit-I

1.A. State the principle for Gravimetric estimation of Nickel. Why it is advised to avoid use of excess reagent?

B. Explain the role of common ion effect in precipitation of a substance. (2+3)

Unit –II

1.A. Define the terms-Mean, Median and Mode.

B. What is standard deviation? (3+2)

CGT-31b

Unit-I

1.A. Describe in brief, Catalytic Cracking process of petroleum.

B. What is meant by photochromatic glass? (3+2)

Unit-II

1.A. Distinguish between thermoplastic and thermosetting polymers.

B. What is sulphadiazine? Write down its uses. (3+2)

CGT-31c

Unit-I

1.A. State and explain nitrogen cycle of the environment.

B. What are TDS and DO? (3+2)

Unit-II

1.A. Distinguish between soap and detergent.

B. Give the names of a red and a yellow colour producing synthetic food additives. (3+2)