



JA-003-001606

Seat No. _____

B. Sc. (Sem. VI) (CBCS) Examination

August - 2019

Chemistry : C-601

(Inorganic Chemistry & Industrial Chemistry) (Old Course)

Faculty Code : 003

Subject Code : 001606

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :**
- (1) Question one contains 20 short questions of one mark each. All are compulsory.
 - (2) Question 2 and 3 carries 25 marks each with internal options.
 - (3) Write answers of all questions in answer sheet.

1 Answer the following questions : 20

- (1) What is the resultant quantum number derived by L-S coupling ?
- (2) Electronic transition between two energy levels with similar spin-multiplicity is called _____.
- (3) What is the effect of change in temperature on magnetic susceptibility of diamagnetic substance ?
- (4) Write the general formula of feldspar.
- (5) What is the chief roll of arsenic trioxide in glass manufacturing ?
- (6) For 3F state $J =$ _____.
- (7) Number of microstates for $J=3$ is _____.
- (8) Typical smell of mustard is due to _____.
- (9) Which catalyst is use for the hydrogenation of oil ?
- (10) The main component of stratosphere layer is _____.

- (11) Magnetic induction is shown by symbol _____.
- (12) Which gas is also called green gas ?
- (13) Write any two binding agents used in manufacture of soap.
- (14) In p^2 case spectral term for ground state is _____.
- (15) What is smog ?
- (16) High silica glass is also known as _____.
- (17) Which are two groups of surfactants molecule ?
- (18) What is cullet ?
- (19) Pole strength of magnet is express in terms of _____.
- (20) Laporte selection rule is also known as _____.

2 (a) Answer any three questions : **6**

- (1) Write the statement of Jahn-Teller effect.
- (2) Write the spin-selection rule.
- (3) Calculate microstates for d^1 .
- (4) What is Larmor precession ?
- (5) Explain : $l-l$ coupling ?
- (6) Explain : Magnetic permeability.

(b) Answer any three questions : **9**

- (1) Write the short note : Russel - Saunders coupling scheme.
- (2) Explain Laporte - Selection rule.
- (3) Calculate ground state spectral term for d^8 .
- (4) Explain :
 - (i) Neel temperature and
 - (ii) Curie temperature
- (5) Write the Hund's rule for determination of ground state term symbol.
- (6) Write the characteristics of paramagnetic substances.

(c) Answer any two questions : 10

- (1) Discuss Gouy method for determination of magnetic susceptibility.
- (2) Derive allowed spectral terms for d^2 system using pegen hole diagram and arrange them in order of stability.
- (3) Discuss orgal diagram for 'D' state.
- (4) Explain diamagnetism and derive the equation for diamagnetic momentum.
- (5) Discuss electronic transition spectrum of Cu^{+2} in oh field.

3 (a) Answer any **three** questions : 6

- (1) Write the short note : Medicated soap.
- (2) What is the function of fluxes in glass manufacture ?
- (3) Explain : Iodine value
- (4) Which gases are responsible for GHE ?
- (5) Define glass chemically.
- (6) Write only types of oils according to it's utility.

(b) Answer any **three** questions : 9

- (1) Write short note : High silica glass.
- (2) Differentiate soap from detergents.
- (3) Explain : COD and BOD.
- (4) Write short note : Acid rain.
- (5) Explain conditions for Hydrogenation of oil.
- (6) Write all the steps include in glass manufacturing.

(c) Answer any **two** questions :

10

- (1) Discuss the manufacturing of soap by batch process.
 - (2) What is pollutants ? Discuss the sources of thermal pollution.
 - (3) Explain the expression method of extracting oil from cotton seeds.
 - (4) Discuss various raw materials used in glass production.
 - (5) Explain how green house effect occurs and the factors responsible to increase green house effect.
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