



HAD-003-001606

Seat No. _____

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

June / July - 2017

Chemistry : C - 601

(Inorganic & Industrial Chemistry) (New Course)

Faculty Code : 003

Subject Code : 001606

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

[Total Marks : 70

- Instructions :**
- (1) Answer all the questions.
 - (2) Q. 1 carries 20 marks, Q. 2 and 3 of 25 marks each.
 - (3) Right side figures shows marks.

1 Answer the following : 20

- (1) In P^2 case spectral term for ground state is _____.
- (2) Number of microstates for $J = 3$ is _____.
- (3) What is the resultant quantum number derived by L - S coupling ?
- (4) Laporte Selection rule is also known as _____.
- (5) Electronic transition between two energy levels with similar spin multiplicity is called _____.
- (6) For 3F state $J =$ _____.
- (7) The ratio of magnetic induction to applied magnetic field strength is known as _____.
- (8) Which method is used to determine magnetic susceptibility ?
- (9) Magnetic induction is shown by symbol _____.
- (10) Pole strength of a magnet is expressed in terms of _____.
- (11) Crushed glass from imperfect articles, trim and other waste glass is known as _____.
- (12) What is the function of fluxes in manufacturing glass ?

- (13) Which salts shows pink colouration to the glass ?
- (14) High Silica glass is also known as _____.
- (15) The process of removal of saturated glycerides from oil is known as _____.
- (16) Which catalyst is use for the hydrogenation of oil ?
- (17) Which value indicates unsaturation of oil ?
- (18) In which two types, oil is classified according to its use ?
- (19) Name the compound present in personal care which pollutes air ?
- (20) The main component of stratosphere layer is _____.

- 2** (a) Answer any three : **6**
- (1) Explain *l-l* coupling.
 - (2) Calculate microstates for d^1 .
 - (3) Write the spin selection rule.
 - (4) Define : Paramagnetic substances.
 - (5) Explain : Magnetic susceptibility.
 - (6) Write the statement of Jahn-Teller effect.
- (b) Answer the following : (any three) **9**
- (1) Explain Laporte - Selection rule.
 - (2) Write short note : L-S coupling.
 - (3) Write short note : Ferromagnetic substances.
 - (4) Discuss the effect of temperature on magnetic body.
 - (5) Calculate ground state spectral term for d^8 .
 - (6) Write Hund's rules for determination of ground state term symbol.
- (c) Answer any two : **10**
- (1) Derive allowed spectral terms for d^2 -system using pegen hole diagram and arrange them in order of stability.
 - (2) Discuss electronic spectrum of $[Ti(H_2O)_6]^{3+}$.
 - (3) Explain diamagnetism and derive the equation for diamagnetic momentum.
 - (4) Discuss orgal diagram for 'D' state.
 - (5) Discuss Gouy method for determination of magnetic susceptibility.

- 3** (a) Answer any three : **6**
- (1) Define glass chemically.
 - (2) What is winterization of oil ?
 - (3) Explain : "acid rain".
 - (4) Define : Saponification.
 - (5) What is green house effect ?
 - (6) Explain 'annealing' of glass.
- (b) Answer the following : (any three) **9**
- (1) Write the properties of pyrex glass.
 - (2) Write short note : Vycor glass.
 - (3) Write the classification of detergent with examples.
 - (4) Write short note : Ozone depletion.
 - (5) Write the different ways for prevention of water pollution.
 - (6) Write short note about 'Medicated Soaps'.
- (c) Answer any two : **10**
- (1) Explain the manufacturing of cotton seed oil by expression method.
 - (2) What is pollution ? Discuss air pollution.
 - (3) What is soap ? Discuss the batch process for the manufacture of soap.
 - (4) Name different types of furnaces used in manufacture of glass and explain any one with labelled diagram.
 - (5) What is thermal pollution ? Discuss the sources of thermal pollution.
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