



**RX-003-001606**

Seat No. \_\_\_\_\_

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

**March - 2019**

**C-601 : Chemistry**

*(Inorganic & Industrial Chemistry)*

*(Old Course)*

**Faculty Code : 003**

**Subject Code : 001606**

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

[Total Marks : 70

- Instructions :**
- (1) All questions are compulsory.
  - (2) Do not write any rough work and tick mark in question paper.
  - (3) Q. 1 carries 20 marks, Q. 2 carries 25 marks and Q. 3 carries 25 marks.

**1 Give answers of following questions : 20**

- (1) What is spin multiplicity ?
- (2) What is microstates ?
- (3) What is the value of L for F -term ?
- (4) Give full name of CFT.
- (5) What is Jahn Teller effect ?
- (6) What is asymmetric arrangement ?
- (7) What is excess electron system ?
- (8) Define the term magnetic dipole.
- (9) Give definition of Larmor rotation.
- (10) Define diamagnetism.
- (11) Define the Glass chemically.
- (12) Which Glass is not affected by strong acid and alkali ?
- (13) Give the importance of  $B_2O_3$  in glass manufacturing.
- (14) What is drying oil ?
- (15) Define Winterisation.
- (16) Define Soap.
- (17) Define Saponification.
- (18) Define COD.
- (19) What is thermal pollution ?
- (20) Define green house effect.

- 2** (a) Answer any three questions : **6**
- (1) Explain s-s coupling and l-s coupling.
  - (2) Explain l-l coupling for  $p^2$  configuration with vector diagram.
  - (3) Define : (1) Hole formalism (2) Orgel diagram.
  - (4) Draw the Orgel diagram of D-term.
  - (5) Explain magnetic induction.
  - (6) Explain Neel temperature.
- (b) Answer any three questions : **9**
- (1) Give Hund's rules to decide ground state spectral term.
  - (2) Find out the ground state spectral term for  $Mn^{+2}$ .
  - (3) Explain Laporte selection rules.
  - (4) Explain Absorption spectrum of  $Ni^{+2}$ .
  - (5) Explain characteristics of paramagnetic substances.
  - (6) Explain the effect of temperature on magnetic susceptibility of paramagnetic, diamagnetic and ferromagnetic substances.
- (c) Answer any two questions : **10**
- (1) Calculate microstate for  $d^2$  configuration.
  - (2) Explain L-S coupling for  $p^2$  case with vector diagram.
  - (3) Discuss Jahn-Teller effect.
  - (4) Explain Absorption spectrum of  $[Ti(H_2O)_6]^{3+}$ .
  - (5) Discuss Guoy balance method for measurements of magnetic susceptibility.
- 3** (a) Answer any three questions : **6**
- (1) Give formula and uses of Feldspars.
  - (2) What is Cullet ? What is its use in glass industry ?
  - (3) Define : (i) Acid value (ii) Iodine value
  - (4) Give uses of castor oil and coconut oil.
  - (5) Differentiate between soap and detergent.
  - (6) Define the term smog and photochemical smog.

- (b) Answer any three questions : **9**
- (1) Write a note on high silica glass.
  - (2) Explain properties of oil and fats.
  - (3) Name the raw materials used in soap manufacture along with their importance.
  - (4) Explain manufacture of shampoo.
  - (5) How C.F.C react with  $O_3$  (reactions only).
  - (6) Write a note on thermal pollution.
- (c) Answer any two questions : **10**
- (1) Explain various raw materials used in glass.
  - (2) Explain wet process of hydrogenation of oil and Iodine value determination of oil.
  - (3) Describe continuous process of soap manufacture with flow chart.
  - (4) Explain how the green house occurs and what are the factors responsible for it ?
  - (5) Give the method of determination of the BOD.
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