HCY-003-001304   Seat No. _____

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

October / November – 2017

Chemistry : C-301

Faculty Code : 003

Subject Code : 001304

Time : $2\frac{1}{2}$ Hours]   [Total Marks : **70**

Instructions :   (1)   Question-1 contains 20 short type questions of one mark each. All are compulsory.

(2)   Write answer of all questions in main answer sheet.

(3)   Question number 2 and 3 carrier 25 marks with internal option.

1   Write correct answer of the following questions :   **20**

(1)   H ψ =E ψ is Schrodinger equation in the form of .... operator.

(2)   The electronic configuration of Eu is ....

(3)   How many unpaired electrons are present in Gd^{+3} ?

(4)   The colour of Pr^{+3} ion is ....

(5) Give characteristics of ψ.

(6) Aldehydes and ketones undergo .... addition reactions.

(7) Give relative reactivity of the following towards Nucleophilic addition reaction : Formaldehyde, ethanal and acetone.

(8) Due to which factor the M.P., B. P. of carboxylic acids are higher than corresponding alcohols ?

(9) Give structure of dimer of any carboxylic acid.

(10) Give statement of Perkin reaction.

(11) Write equation of condensed phase rule

(12) Steam distillation is used for separation of .... liquid mixture.

(13) Water is .... component system.

(14) Define parachor.

(15) .... of liquid is a measure of its fractional resistance.

(16) .... is a unit of viscocity.

(17) Which gas is known as blue gas ?

(18) The full form of GCV is ....

(19) Write any one application of Methyl Orange.

(20) Draw the structure of Congored.

2   Answer the following as per instructions :

(A) Answer any three from the following six questions :   6

   (1) Write two physical properties of aldehydes.

   (2) Give structure and IUPAC name of formic acid and acetic acid.

   (3) Give any two methods for the formation of acid chloride.

   (4) Give the conditions for normalization and orthogonality of wave function.

   (5) Give any two applications of Lanthanide elements.

   (6) What does ψ and ψ^2 represent ?

(B) Answer any three from the following six questions : 9

    (1) Describe physical properties of monocarboxylic acid.

    (2) Explain : hydrolysis of ester.

    (3) Explain separation of lanthanide ions by ion exchange.

    (4) Explain : Ylide

    (5) Write short note on Misch metals.

    (6) Explain eigen function and eigen values.

(C) Answer any two from the following five questions : 10

    (1) Discuss reaction of aldehyde and ketone with alcohol.

    (2) Derive Schrodinger wave equation.

    (3) Give reaction and mechanism of Aldol condensation.

    (4) Describe relative acidity of monocarboxylic acid.

    (5) Explain magnetic properties of lanthanide ions.

3 (A) Answer any three from the following six questions : 6

    (1) Give synthesis of Phenacetin.

    (2) Write the phases of sulfur system.

    (3) Why CO_2 has no dipole moment ?

    (4) Define coal gas and give its composition.

    (5) Give two examples each of natural and artificial fuel.

    (6) Explain: Maximum three phases can be at equilibrium for one component system.

(B) Answer any three from the following six questions : **9**

    (1) Give synthesis of Malachite Green.

    (2) Explain water system.

    (3) Explain desilverization of Argentoferrous lead with phase diagram.

    (4) Explain additive and constitutive property.

    (5) Write a note on Biogas.

    (6) Give characteristic of an ideal fuel.

(C) Answer any two from the following five questions : **10**

    (1) Give synthesis of (i) Veronal (ii) Diamond Black-F.

    (2) Give construction and working of bomb calorimeter.

    (3) Discuss Pb-Ag system with diagram.

    (4) Explain method to determine the dipole moment.

    (5) Define refractive index. Discuss method to determine it.

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