



BBE-003-001304

Seat No. _____

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

July - 2021

C - 301 : Chemistry

(Old Course)

Faculty Code : 003

Subject Code : 001304

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

[Total Marks : 70

- Instructions :** (1) Question 1 contains 20 Sub-questions of one mark each, all are compulsory.
(2) Question 2 & 3 carry 25 marks each with internal option.

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

- (1) Give symbol of Laplacian operator.
- (2) Give an equation for wavelength according to De-Broglie.
- (3) Write electronic configuration of cerium (Ce).
- (4) What is stable oxidation state of Lutetium(Lu).
- (5) Give the structure of Butane-2, 3-dione.
- (6) Aldehyde & ketones undergo _____ addition reaction.
- (7) Due to which factor the M. P. & B. P. of Carboxylic acids are higher than corresponding alcohol.
- (8) Give the structure of vinegar.
- (9) Give the IUPAC name of HCOOH.
- (10) The Surface tension of liquid is _____ with increase temperature (Decrease/Increase).
- (11) _____ Instrument is used to measure viscosity of liquid.
- (12) In equation $P+F=C+2$ where P is _____
- (13) Steam distillation is used for separation of _____ liquid.
- (14) What is water gas?

- (15) Nitro group(- NO₂) is act as chromophore (True or False).
- (16) Write symbol of Dipole moment.
- (17) Draw the structure of Methyl orange.
- (18) The full form of GCV is _____
- (19) Give the structure of Phenacetin.
- (20) Sulphathiazole is also known as _____

- 2** (A) Answer any **three** of the following : **6**
- (1) What is misch metal.
 - (2) Write two physical properties of Ketone.
 - (3) Derive Eigenvalue & Eigenfunction.
 - (4) Explain Orthogonality of Wave Function.
 - (5) Write two chemical properties of aldehyde.
 - (6) Give any two applications of Lanthanide element.
- (B) Answer any **three** of the following : **9**
- (1) Explain normalization condition of Wavefunction.
 - (2) Explain hydrolysis of Ester.
 - (3) Explain physical property of aldehyde.
 - (4) Describe effects of Substituents on acidity of Carboxylic acid.
 - (5) Give any three chemical reactions of Carboxylic acid.
 - (6) Explain spectral (colour) properties of Lanthanide.
- (C) Answer any **two** of the following : **10**
- (1) Derive Schrodinger wave equation.
 - (2) Give reaction & mechanism of Aldol condensation.
 - (3) Explain magnetic properties of Lanthanide ions.
 - (4) Explain Wolf-Kishnar reduction reaction with mechanism.
 - (5) Give uses of Lanthanide & their compound.

- 3 (A) Answer any **three** of the following : 6
- (1) Define : Phase & component.
 - (2) Give synthesis of Indigo:
 - (3) Give synthesis of Phenacetin.
 - (4) Define coal gas & give its composition.
 - (5) Give two examples of natural & artificial fuel.
 - (6) Why Carbon dioxide molecule has no dipole moment.
- (B) Answer any **three** of the following : 9
- (1) Give classification of fuels.
 - (2) Give synthesis of Chloramphenicol.
 - (3) Discuss drop method to determine surface tension.
 - (4) Write a note on Biogas.
 - (5) Explain simple eutectic Pb-Ag system.
 - (6) Give characteristic of an ideal fuel.
- (C) Answer any **two** of the following : 10
- (1) Explain steam distillation with figure.
 - (2) Discuss optical activity & specific reaction.
 - (3) Define refractive index. Discuss method to determine it.
 - (4) Give synthesis of veronal & Diamond Black-F.
 - (5) Discuss advantages & disadvantages of solid, liquid & gas fuel.
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