K21U 1107

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree CBCSS (OBE) Regular Examination, April 2021
(2019 Admission Only)
CORE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
4B06CHE/PCH : Organic Chemistry – II

Time : 3 Hours

Total Marks : 40

Instruction *: Answer the questions in* ***English*** *only.*

SECTION – A

(Very short answer type – **Each** carries **1** mark – Answer **all 4** questions)

1. The intermediate formed in Chugaev elimination is _____
2. Reaction of phenol with chloroform and potassium hydroxide gives _____
3. Lucas reagent is a mixture of _____
4. What is Wittig reagent ?

(4×1=4)

SECTION – B

(Short answer type – **Each** carries **2** marks – Answer **any 7** questions out of 10)

5. Give the structure and name of the product that would obtained from the ionic addition of HBr to 2-methylpropene.
6. Write an electrolytic method of preparation of Alkane.
7. How to convert an alcohol to alkene ?
8. What is Sandmeyer reaction ?
9. Write the reaction steps involved in preparation of isopropanol by Grignard reagent.

P.T.O.

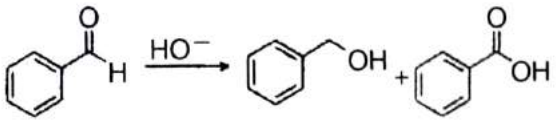
10. What product would you obtain by base catalysed Michael reaction of 3-Buten-2-one with ethyl acetoacetate nucleophile ? Write the reaction.

11. Explain Perkin condensation.

12. What is MPV reduction ? Give an example.

13. Aldehydes are stronger reducing agents than ketones. Why ?

14. Give the mechanism of the following reaction. **(7×2=14)**



SECTION – C

(Short essay/Problem type questions – **Each** question carries **3** marks – Answer **any 4** questions out of 6)

15. What product would you expect to obtain from S_N2 reaction of ^-OH with (S)-2-bromobutane ? Show the stereochemistry of both reactant and product.

16. Explain E2 mechanism with an example.

17. What is Ozonolysis ?

18. How alkynes would react with following reagents ?

    a) Alkaline $KMnO_4$

    b) SeO_2. Write the reaction.

19. Discuss Benzyne mechanism.

20. Write the mechanism of conversion of 2, 3-dimethyl 1-2, 3-butanediol to 3, 3-dimethyl-2-butanone in presence of acid. **(4×3=12)**

SECTION – D

(Long essay type – **Each** carries **5** marks – Answer **any 2** questions out of 4)

21. Differentiate Saytzeff rule and Hofmann's rule citing suitable examples.

22. a) Write the salient steps involved in Haworth synthesis of Naphthalene. **4**

    b) What is Wurtz reaction ? **1**

23. a) How would you convert Glycerol to isopropyl iodide ? **2**

    b) Explain Kolbe-Schmidt reaction. **2**

    c) Give the structure of product forms on nitration of Glycerol. **1**

24. i) What is Etard's reaction ? **1**

    ii) Write the mechanism of the following :

    a) Aldol condensation. **2**

    b) Benzoin Condensation. **2**

(2×5=10)

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K21U 0864

Reg. No. : .....

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IV Semester B.Sc. Degree (CBCSS – Sup./Imp.) Examination, April 2021
(2014-'18 Admissions)
CORE COURSE IN CHEMISTRY
4B06CHE – Organic Chemistry – II

Time : 3 Hours

Max. Marks : 40

Instruction : *Answer the questions in* ***English*** *only.*

SECTION – A

(Very short answer type – **Each** carries **1** mark. Answer **all 4** questions)

1. Give the Haworth formula of α D glucopyranose.
2. Mention the symmetry element the absence of which will make the molecule optically active.
3. Which is the monomer of neoprene ?
4. Name the product obtained when benzene is treated with CH_3COCl in the presence of $AlCl_3$. **(4×1=4)**

SECTION – B

(Short answer type – **Each** carries **2** marks. Answer **7** questions out of 10)

5. Give the mechanism of sulphonation of benzene.
6. Represent the R configuration of lactic acid in Fischer and Wedge formula.
7. What are epimers ? Give one example.
8. Draw the chair forms of axial and equatorial methyl cyclohexanes.
9. Outline the Fischers indole synthesis with proper equation.
10. Glucose and fructose form the same osazone. Why ?
11. What is the basic structural difference between starch and cellulose ?

P.T.O.

12. Discuss geometrical isomerism in maleic and fumaric acids.

13. Represent the erythro/meso and threo diastereomers of tartaric acid in Newman formula.

14. Explain benzyne mechanism. **(7×2=14)**

SECTION – C

(Short essay type – **Each** carries **3** marks. Answer **4** questions out of 6)

15. Discuss the orientation and reactivity of aniline.

16. Outline the steps in Hoffmanns exhaustive methylation of piperidine.

17. What are the different methods of resolution of enantiomers ?

18. Write a note on optical acitivity in biphenyls.

19. How is D arabinose converted to D glucose ?

20. Compare basic character of pyridine and piperidine. **(4×3=12)**

SECTION – D

(Long essay type – **Each** carries **5** marks. Answer **any 2** questions out of 4)

21. Explain the synthesis of
    a) Polyethylene
    b) Polypropylene
    c) PVC
    d) Polystyrene and
    e) Polyurethanes.

22. Illustrate the following :
    a) Conformational analysis of n-butane and
    b) The stability of the chair and boat conformers of cyclohexane

23. Discuss Huckels rule with regard to non-benzenoid aromatic compounds.

24. How are the following conversions carried out ?
    a) Glucose to fructose
    b) Fructose to glucose
    c) Glucose to mannose and
    d) Glucose to arabinose.

(2×5=10)

K19U 0562

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree (CBCSS-Reg./Supp./Imp.) Examination, April 2019
(2014 Admission Onwards)
COMPLEMENTARY COURSE IN CHEMISTRY
4C04 CHE (PS) : Chemistry (For Physical Sciences)

Time : 3 Hours

Max. Marks : 32

SECTION – A

Answer **all** questions. **Each** question carries 1 mark.

1. Define common ion effect.
2. State Ostwalds dilution law.
3. Expand DTA.
4. What are azeotropes ?
5. Write Braggs equation and explain the terms.

(1×5=5)

SECTION – B

Answer **any four** questions. **Each** question carries **2** marks.

6. What are ideal and non ideal solutions ?
7. Explain the term relaxation effect.
8. Give any two applications of AAS.
9. What are concentration cells ? Give example.
10. Why do real gases deviate from ideal behaviour ?
11. Construct the phase diagram of sulphur.

(2×4=8)

P.T.O.

SECTION – C

Answer **any three** questions. **Each** question carries **3** marks.

12. Explain the principle and construction of standard hydrogen electrode.
13. Derive an expression for the hydrolysis of salt of strong acid and weak base.
14. Give an account of Pattinsons process.
15. Explain Debye Huckel theory of strong electrolytes.
16. Explain the RMS velocity, average velocity and most probable velocity. **(3×3=9)**

SECTION – D

Answer **any two** questions. **Each** question carries **5** marks.

17. What are critical constants ? Explain their determination.
18. a) How are X rays useful in the study of crystals ?
    b) What are the applications of liquid crystals ?
19. Discuss the instrumentation and applications of TGA.
20. Draw and interpret the boiling point diagram for binary mixtures. **(5×2=10)**

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IV Semester B.Sc. Degree CBCSS (OBE) Regular Examination, April 2021
(2019 Admission Only)
COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
4C04CHE/PCH(PS) : Chemistry (For Physical Science)

Time : 3 Hours Max. Marks : 32

SECTION – A

(Very short answer type - **Each** carries **1** mark. Answer **all 5** questions) :

1. How does the vapour pressure of a liquid vary with temperature ?
2. The SI unit of Van der Waal's constant b is _____
3. Name the unit cell which resembles a match box in its shape.
4. What is concentration of H^+ ion in SHE ?
5. How specific conductance is related to specific resistance ? **(5×1=5)**

SECTION – B

(Short answer type. **Each** carries **2** marks. Answer **any 4** questions out of 6) :

6. Calculate the RMS velocity of oxygen at 25.
7. What is fluidity ? What are the units of fluidity ?
8. Why are water droplets spherical in shape ?
9. A lattice plane intercepts the three crystallographic axes at distances 3/2, 2 and 1. What are the Miller indices ?
10. Define unit cell.
11. Define cell constant. Give the SI unit. **(4×2=8)**

P.T.O.

SECTION – C

(Short essay type. **Each** carries **3** marks. Answer **any 3** questions out of 5) :

12. What are the causes of deviation of real gas from ideal behavior ?

13. Describe the construction and function of a calomel electrode.

14. The first order reflection of a beam of X rays of wavelength 1.54Å from the (1 0 0) plane of NaCl occurs at an angle 15.9°. Calculate the edge length of the unit cell.

15. Calculate the EMF of the cell $Cu/Cu^{2+}(0.25M)||Ag^{+}(0.6M)/Ag$ at 298K, given $E^{\circ}_{Cu^{2+}/Cu} = 0.34$ V and $E^{\circ}_{Ag^{+}/Ag} = 0.80$V.

16. Write a short note on sol gel synthesis of nanoparticles. **(3×3=9)**

SECTION – D

(Long essay type - **Each** carries **5** marks. Answer **any 2** question out of 4) :

17. Give the postulates of kinetic theory of gases.

18. What are liquid crystals ? How are they classified ?

19. Explain an analytical technique which is based on Beer-Lambert's law.

20. State and explain Kohlrausch's law. How is it useful in the determination of molar conductance at infinite dilution of acetic acid ? **(2×5=10)**

Reg. No. : .....

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K19U 0561

IV Semester B.Sc. Degree (CBCSS – Reg./Supp./Imp.) Examination, April 2019
(2014 Admission Onwards)
COMPLEMENTARY COURSE IN CHEMISTRY
4C04 CHE (BS) : Chemistry (For Biological Sciences)

Time : 3 Hours

Max. Marks : 32

SECTION – A

Answer **all** questions. **Each** question carries **1** mark :

1. What are epimers ?
2. What is meant by codon ?
3. What is cis platin ?
4. Give the chemical names of vitamine B_2 and B_{12}.
5. Give the structure of two five membered heterocyclic compounds. **(1×5=5)**

SECTION – B

Answer **any four** questions. **Each** question carries **2** marks :

6. What is meant by mutarotation ?
7. Explain the role Ca in biological 'systems.
8. How can you separate aminoacids by chromatographic method ?
9. Compare the reactivity of thiophene and furan ?
10. Give the structure of adrenaline and thyroxine.
11. What are the functions of nucleic acids ? **(2×4=8)**

P.T.O.

SECTION – C

Answer **any three** questions. **Each** question carries **3** marks :

12 Discuss the structure and uses of cellulose.

13. Explain the substitution reactions of pyrrole.

14. Give the classification of aminoacids with examples.

15. Explain Na- K pump.

16. Give any three tests for carbohydrates. **(3×3=9)**

SECTION – D

Answer **any two** questions. **Each** question carries **5** marks :

17. Explain the role of Hb and Mb in the transport and storage of O_2 and CO_2.

18 a) What are the characters of enzyme catalysis ? **2**

b) Write a note on enzyme deficiency disease. **3**

19. Discuss the preparation, structure and reactions of quinoline.

20. How are proteins classified ? Explain the structure of proteins. **(5×2=10)**

Reg. No. : .....

Name : .....

K19U 0561

IV Semester B.Sc. Degree (CBCSS – Reg./Supp./Imp.) Examination, April 2019
(2014 Admission Onwards)
COMPLEMENTARY COURSE IN CHEMISTRY
4C04 CHE (BS) : Chemistry (For Biological Sciences)

Time : 3 Hours

Max. Marks : 32

SECTION – A

Answer **all** questions. **Each** question carries **1** mark :

1. What are epimers ?
2. What is meant by codon ?
3. What is cis platin ?
4. Give the chemical names of vitamine B_2 and B_{12}.
5. Give the structure of two five membered heterocyclic compounds. (1×5=5)

SECTION – B

Answer **any four** questions. **Each** question carries **2** marks :

6. What is meant by mutarotation ?
7. Explain the role Ca in biological 'systems.
8. How can you separate aminoacids by chromatographic method ?
9. Compare the reactivity of thiophene and furan ?
10. Give the structure of adrenaline and thyroxine.
11. What are the functions of nucleic acids ? (2×4=8)

P.T.O.

SECTION – C

Answer **any three** questions. **Each** question carries **3** marks :

12 Discuss the structure and uses of cellulose.

13. Explain the substitution reactions of pyrrole.

14. Give the classification of aminoacids with examples.

15. Explain Na- K pump.

16. Give any three tests for carbohydrates. **(3×3=9)**

SECTION – D

Answer **any two** questions. **Each** question carries **5** marks :

17. Explain the role of Hb and Mb in the transport and storage of O_2 and CO_2.

18 a) What are the characters of enzyme catalysis ? **2**

b) Write a note on enzyme deficiency disease. **3**

19. Discuss the preparation, structure and reactions of quinoline.

20. How are proteins classified ? Explain the structure of proteins. **(5×2=10)**

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Reg. No. : .....

Name : .....

K21U 1108

IV Semester B.Sc. Degree CBCSS (OBE) Regular Examination, April 2021
(2019 Admission Only)
COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
4C04CHE/PCH (BS) Chemistry (for Biological Science)

Time : 3 Hours

Max. Marks : 32

Instruction : *Write* ***only*** *in* ***English***.

SECTION – A

(Very short answer type – **Each** carries **1** mark – Answer **all 5** questions).

1. The heteroatom in furan is _____
2. Which sugar unit is present in RNA ?
3. Draw the structure of progesterone.
4. Give the Michaelis-Menten equation.
5. Name the metal present in Myoglobin.

SECTION – B

(Short answer type – **Each** carries **2** marks – Answer **4** questions out of 6).

6. Give a laboratory test illustrating the reducing action of fructose.
7. How to convert Quinoline to pyridine ?
8. Draw the structure of pyrimidine bases present in DNA.
9. What is a Zwitter ion ?
10. Write a short note on biochemistry of cobalt.
11. Explain the importance of Hemoglobin in Oxygen transport.

P.T.O.

SECTION – C

(Short essay type – **Each** carries **3** marks – Answer **3** questions out of 5).

12. What is meant by Mutarotation ?
13. Write a short note on DNA replication.
14. Illustrate the classification of amino acid by citing an example for each.
15. Why Vitamin A and Vitamin C are essential to us ? Provide their important sources.
16. Describe the mechanism of Sodium-Potassium pump.

SECTION – D

(Long essay type – **Each** carries **5** marks – Answer **2** questions out of 4).

17. Explain the following conversions with suitable equations
    i) Glucose to Fructose and
    ii) Fructose to Glucose
18. Give the products of the following reactions
    i) Friedel-Crafts acetylation of Pyrrole
    ii) Nitration of Furan
    iii) Conversion of Furan to Thiophene
    iv) Sulphonation of Pyridine
    v) Bromination of Quinoline.
19. Discuss the primary, secondary and tertiary structure of Proteins.
20. Describe the mechanism of Enzyme action.
