

(B)

Q. 1) Answer the following. [10]

1) state energy equation for particle in three dimensional box.

2) Derive Bragg's equation, $n\lambda = 2d \sin \theta$

Q. 2) Answer the following. [10]

1) The activity of radioactive sample falls to 85% of the initial value in four years. What is the half life of the sample.

2) Define pH of solution? Explain the measurement of pH of solution with reference to quinhydrone electrode.

Q. 3) Answer the following. [10]

1) Calculate e.m.f of the following cell at 25°C
 $\text{Ca} | \text{Ca}^{2+} (a=0.1) | \text{Zn}^{2+} (a=0.01) | \text{Zn}$. The standard oxidation potential are. $E^\circ_{\text{Ca}|\text{Ca}^{2+}} = 2.87 \text{ V}$ & $E^\circ_{\text{Zn}|\text{Zn}^{2+}} = 0.76$

2) ^{232}Rn has a half life of 3.83 days. What fraction of the sample will remain undecomposed at the end of 10 days?

Question Paper - I

Mutan, Art's, commerce and science college, Rajapur

subject → Botany

Paper - III [Bo-343] → Plant Pathology

class - T.Y.B.Sc (Sem - IV)

2019 - 20

Marks 30

Q.1. Attempt any following.

10 marks

- 1] Define etiology.
- 2] What is Inoculum.
- 3] What is ICRI SAF
- 4] Give two control measures of TMV.
- 5] What is Biological control.
- 6] Father of plant pathology.
- 7] Two symptoms of grossy shoot of sugar-cane
- 8] What is sucpet.
- 9] Endophytic disease.
- 10] causal organism of black arm of cotton.

Q.2 Write short note on (Any two) 10 marks

- 1] Imp of disease forecasting.
- 2] Describe the the causal organism, symptoms, & control measure of Black arm of cotton.
- 3] Describe Koch's Postulates.

Q.3 Attempt any one.

- 1] club rot of crucifers, ~~ti~~ black cleasage, downy mildew of grapes, TMV.

OR

What is pure culture, Describe methods of Pure culture use for studying.

Question paper-II

Nutan, Art's, commerce & science college, Rajapur.

sub → Botany

Paper-III [BO-343] → Plant Pathology

class - T.Y.B.Sc (Sem-IV)

2019-20

Mark-30

Q.1 Attempt any following

- 1] Define disease
- 2] What is penetration
- 3] What is pathogen
- 4] Enlist two disease of nematode.
- 5] What is molecular diagnosis.
- 6] Define antibody.
- 7] Any two control measures of viral disease.
- 8] Any two disease of non parasitic plant.
- 9] What is quarantine?
- 10] Define monoclonal antibodies.

Q.2. Write short note on (Any two)

10 marks

- 1] Khaira disease of rice.
- 2] Describe the pre-existing biochemical.
- 3] Describe stages of disease development.

Q.3 Attempt any one.

Leaf spot of turmeric, head smut of
Jawar.

or

What is pure culture method. Describe the
serial dilution method.

question Paper-I

Hutan, Art's, commerce and science college, Rajapur

sub → Botany

Paper - IV [Bo-344] → Medicinal and Economic Botany

Class - T.Y.B.Sc (sem-IV)

2019-20

Marks 30

10 marks

Q-1 Attempt any following

- 1] Define pharmacology
- 2] Uses of *Tinospora cordifolia*.
- 3] Any 2 names of ethnic societies in India.
- 4] What is Prabhava.
- 5] What is percolation technology.
- 6] What is economic botany.
- 7] Give origin of Rice.
- 8] What is unani system of medicine.
- 9] Use of safflower.
- 10] What is harvesting.

Q.2 write short note on (any two)

- 1] Morphological evaluation drug.
- 2] Botanical sources of gums.
- 3] Methods of Preparation of Asava & Arishta.

Q.3 Attempt any one questions.

10 marks

Give economic imp microscopic & macroscopic character of glycyrrhiza.

OE

Give concept and principle of carbohydrate metabolism.

question Papers - II

Nutan, Art's, commerce and science college, Rajapur.

sub → Botany

Paper - IV [BO-344] → Medicinal and Economic Botany

class - T.Y.B.Sc [sem - IV]

2019 - 20

Marks 30

Q.1 Attempt any following.

- 1] Define ethnobotany.
- 2] Give any two uses *Curcuma longa*.
- 3] What is drug alertation.
- 4] Define Biofermaceutical.
- 5] Medicinal use of shilajit.
- 6] Define Tibi system of medicine.
- 7] What is Tridosha.
- 8] Give two name Flower drugs.
- 9] Define pharmacodynamics.
- 10] Give any two uses of Homeoed.

Q.2. Write short note (Any two)

10 marks

- 1] scop & Imp of economic botany.
- 2] Methods of churma, leha.
- 3] NWFFE forest plant with reference to paper making.

Q.3. Attempt any one

10 marks

Give economic imp geographical distribution, microscopic, macroscopic character of Adhathoda vasika.

OR

Give significance, evolutionary sources & uses.

atan Arts, Commerce and Science College, Rajapur

T. Y. Bsc

CHEMISTRY

CH-344 - Analytical Chemistry

[Paper IV]

2019 - 2020

[Time = 2 Hours]

[Max Marks = 30]

Q.1] Answer the following [10M]

- 1] State Nernst distribution law.
- 2] Define electrophoresis.
- 3] Give the principle of Nephelometry.
- 4] Give the equation for turbidimetric coefficient.
- 5] What do you mean by term Retention time?
- 6] Name the detectors used in GC.
- 7] Name the stationary phase and mobile phase used in paper chromatography.
- 8] Define the term 'migration velocity' in electrophoresis.
- 9] At what angle the radiant power of scattered radiation is measured in Nephelometry.
- 10] Define Isoelectric point.

Q.2] Answer Any four of the following [12M]

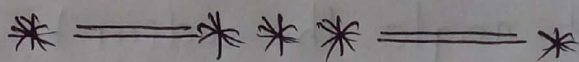
- 1] Explain the method of purification of water with ion-exchange resins.
- 2] What do you understand by zone electrophoresis.
- 3] Derive the relation between distribution coefficient

and distribution ratio.

- 4) calculate the turbidance of sulphate ion at $\lambda = 254 \text{ nm}$ gave a transmittance of 0.7568.
- 5) Calculate the distribution ratio when a concentration of solute in organic layer is 0.52 M and a aqueous layer is 0.062 M.

Q3] Answer any Two of the following. [8 M]

- 1] Write a note on Match-Box Model.
- 2] Explain the SFC. How it is superior than HPLC.
- 3] calculate R_f value of compound 'X' which migrate 3.4 cm from base line and the solvent front migrates 25.4 cm. Also calculate the distance from base line if solvent front migrates 29.2 cm instead of 25.4 cm.



T. Y. Bsc

CHEMISTRY

CH-344 = Analytical chemistry

[paper - IV]

2019 - 2020

[Time = 2 Hours]

[Max. Marks = 30]

Q.1] Answer the following [10M]

- 1] What is SFC?
- 2] Give the principle of turbidimetry.
- 3] What is HETP.
- 4] Define distribution ratio.
- 5] What is the migration velocity in electrophoresis.
- 6] What is the role of mobile phase in chromatography.
- 7] Define the term 'Retardation factor'.
- 8] State the principle of electrophoresis.
- 9] What is the stationary phase and mobile phase in GSC?
- 10] Define the isoelectric point.

Q.2] Answer any four of the following [12M]

- 1] Discuss the various applications of HPLC.
- 2] Explain the injection port in GC.
- 3] Explain in brief moving boundary electrophoresis.
- 4] Calculate distribution ratio when concentration of solute in organic layer is 0.325 M and in aqueous layer 0.0375 M.
- 5] Calculate the turbidance of chloride ion at 415 nm.

gave a transmittance of 0.625.

Q.3] Answer any Two of the following

- 1] Explain the thermal conductivity detector in GC
- 2] Sketch schematic diagram of HPLC and explain its various components.
- 3] In the experiment of paper chromatography separation silver, lead and mercury. The solvent front was 30 cm. While from due to these metals were 24, 20 and 9 cm respectively. Calculate R_f value of these metals.

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Question paper - 2

Nutan Arts, Commerce & Science College, Rajapur.

Subject → Botany

Paper - I ⇒ Plant Physiology and Biochemistry
(BO, 341)

Class :- T.Y. BSc

2019 - 20

[Marks - 30]

Q.1. Attempt any following (any five)

10 marks

- ① What is photosynthesis?
- ② What is ~~R~~respiration?
- ③ What is CAM plant?
- ④ Define the Translocation of Organic solutes?
- ⑤ Define the stress physiology?
- ⑥ Enlist the type of Respiration?

Q.2. Write short notes on any two of the following 10 marks

- ① Write the photosynthetic pigment, their colour and distribution?
- ② Explain the Types of ~~R~~respiration?
- ③ Explain the detail of the phloem loading and unloading?
- ④ Explain the effect of stresser on the plant growth?

Q.3 Write a long Answers of the following (any one) 10 marks

Q.1 Explain the classification of carbohydrates?

Q.2 state any five function of proteins?

Q.3 Explain the CAM-pathway?

question paper - 2

Wan, Arts, Commerce & Science college, Rajapur.

sub → Botany

paper - I → plant physiology and Biochemistry
(BO. 341)

class → T.Y. BSc

2019 - 20

[Marks - 30]

Q.1 Attempt any following (any five)

10 marks

- ① two example of C₃ plants?
- ② What is Kranz anatomy?
- ③ Define the Respiratory substrate?
- ④ What is source and sinks region?
- ⑤ What is biotic stress?
- ⑥ Define the protein?

Q.2 Write short notes on any two of the following

10 marks

- ① Enlist the types of stress?
- ② Write the salient features of C₄ plants?
- ③ Explain the clinical significance of carbohydrates?
- ④ Define and describe types of secondary metabolites?

Q.3. Write a long answers of the following (any one) 10 marks

- ① Explain H₂O₂ pathway?
- ② Explain the effect of stresser on the plant growth?
- ③ Explain in detail the phloem loading and unloading?

Question paper - I

Jutan, Arts, Commerce & Science College, Rajapur

Sub → Botany

paper → VI → plant Breeding and Seed Technology
(Bo. 346)

Class - T.Y. BSc

2019-20

[Marks - 30]

Q.1 Attempt any following (any five)

10 marks

- ① What is plant Breeding?
- ② define the hybridization?
- ③ define stress?
- ④ define seed technology?
- ⑤ What is nuclear seed?
- ⑥ What is seed certification?

Q.2 Write short notes on any two of the following

10 marks

- ① Give the importance of plant Breeding?
- ② Write short note on G- Garden concept (Gamma Garden) and desine?
- ③ Write a short note on Nature of insect resistance?
- ④ Discuss the stages of seed production?

Q.3 Write a long answer of the following (any one)

10 marks

- Q.1 Explain in detail the different classes of seed Technology
- ② Discuss the duties of a seed inspectors?
- ③ Explain the clonal selection method?

Question paper - 2

Nutan, Arts, Commerce & Science College, Rajapurse

Sub → Botany

Paper → VI → Plant Breeding and Seed Technology

(Bo.346)

Class - T.Y. BSc

2019-20

[Marks-30]

Q.1 Attempt any following (any five)

10 marks

- ① What is plant Breeding?
- ② What is acclimatization?
- ③ What is mutation breeding?
- ④ Define Biotic stress?
- ⑤ What are breeder seed?
- ⑥ What is Field Inspection?

Q.2 Write short notes on any two of the following

10 marks

- ① Discuss the general procedure of seed certification?
- ② Explain the step of seed processing?
- ③ Explain the general procedure of seed sampling?
- ④ Discuss the importance of seed storage

Q.3 Write a long answers of the following (any one)

10 marks

- ① What is moisture testing? Describe the air oven method and moisture meter method of seed testing?
- ② Explain the mass selection method?
- ③ Discuss the general procedure of Hybridization?

PRAGTIK SHIKSHAN SANSTH

NUTAN ARTS, COMMERCE AND SCIENCE COLLAGE, RAJAPUR

Department of chemistry

T. Y. Bsc (2018-19)

Sub-dairy chemistry. 30m

Q. 1 answer the followings. 10m

- 1.define term market milk.
- 2.what is major constituents of milk
- 3.define pasteurization of milk.
- 4.define homogenization of milk
- 5.define sterilization of milk.

Q. 2 answers the followings. 20m

- 1.what are major and minor constituent of milk?
- 2."milk is almost ideal food"justify the sentence.
- 3.describe the manufacture of pasteurized milk with the help of flow sheet.
- 4.compare glass bottle and paper packing of milk.

PRAGTIK SHIKSHAN SANSTHA

NUTAN ART, COMMERCE AND SCIENCE COLLEGE RAJAPUR

DEPARTMENT OF CHEMISTRY

T. Y. BSC (2018-19)

SUB. INDUSTRIAL CHEMISTRY. 30M

Q. 1 Answers the followings. 10m

1. What is detergent?

2. Define the term surfactant?

3. What are medicated soaps?

4. What are chromophores?

5. Write the structure of methylene blue.

Q. 2 answer the followings. 20m

1. What are the differences between soap and detergent?

2. What are the advantages and disadvantages of detergent.

3. Give the synthesis and uses of phenolphthalein and alizarin.

4. Give the synthesis and use of indigo.

PRAGTIK SHIKSHAN SANSTHA
NUTAN ARTS COMMERCE AND SCIENCE COLLEGE RAJAPUR

Department of chemistry

T. Y bsc (2018-19)

Sub-organic chemistry. 30m

Q. 1 answers the followings. 10m

1. what is rearrangement reaction.
2. define the term spectroscopy.
3. give relationship between energy and wavelength.
4. calculate the fundamental modes of vibrations for C_2H_5OH molecule.
5. calculate the fundamental modes of vibrations for C_2H_6 molecule.

Q. 2 Answers the followings. 20m

1. An Organic compound C_5H_8 shows I. R. band at 2100cm^{-1} . suggest the structure of compound.
2. Write nagai synthesis of ephedrine.
3. write note on alkaloids.
4. give synthesis of ephedrine from benzaldehyde.

PRAGTIK SHIKSHAN SANSTHA
NUTAN ARTS COMMERCE AND SCIENCE COLLEGE RAJAPUR

Department of chemistry

T. Y bsc (2018-19)

Sub-organic chemistry. 30m

Q. 1 answers the followings. 10m

1. define carbanion.
2. what is ylide
3. What do you mean by reactive methylene group?
4. Define disconnection.
5. Define synthetic equivalent

Q. 2 Answers the followings. 20m

1. What are ylide? explain use of life for synthesis of alkenes with one suitable example.
2. Explain Perkins reaction with mechanism.
3. Explain witting reaction with example.
4. write retrosynthesis and synthesis for,



class: T.Y.BSc

subject: Inorganic chemistry

Academic year: 2019-20

Marks: 30

Q.1 Answer the following. (10)

1) Calculate lattice energy of NaI from following data:
 $\Delta H_f(\text{NaI}) = -289 \text{ kJ/mole}$, $S_{\text{Na}^+} = +108.8 \text{ kJ/mole}$

$I_{\text{Na}^+} = +493.8 \text{ kJ/mole}$, $\frac{1}{2}DI_2 = 106.6 \text{ kJ/mole}$

$E_{A_1} = -305.9 \text{ kJ/mole}$

2) Discuss the mechanism of polymerisation by Ziegler-Natta catalyst.

Q.2) Answer the following. (10)

1) Discuss in brief the properties and uses of terephthalic acid.

2) Write a note on vit. B₁₂ and write a note on myoglobin.

Q.3) Answer the following. (10)

1) Explain the term nuclear fuels? Give the applications of the lanthanides and their compounds.

2) Write a note on intrinsic semiconductors.

— Best of Luck —

Nutan arts, commerce and science Senior College Rajapur

Class: T.Y. BSc

Subject: Inorganic chemistry

Year: 2019-2020

Marks: 30

Q. 1. Answer the following Questions. (10)

- 1) Explain the Monsanto process with its Mechanism to Prepare acetic acid.
- 2) What is Heterogeneous catalysis? Distinguish betⁿ heterogeneous and Homogeneous catalysis.

Q. 2. Answer the following Questions. (10)

- 1) Discuss in brief the biological role of Ca, Mg, Fe and Co.
- 2) Why separation of Lanthanides is difficult? Explain solvent extraction Method for their separation.

Q. 3. Answer the following questions. (10)

- 1) What are n-type and p-type semiconductors? Explain with suitable examples.
- 2) Calculate the Pauling's univalent radii of Na^+ and F^- in NaF. Given: inter nuclear distance $d = 2.31 \text{ \AA}$ and screening constant for Ne configuration = 4.5

— Best of Luck —

(A)

- Q.1) Answer the following. [10]
- 1) Draw the labelled diagram of Weston saturated standard cell. Describe it with reference to its construction, working.
 - 2) Calculate reduction potential of the following electrode at 25°C . If standard potential of the $\text{Sn}|\text{Sn}^{2+}$ electrode is 1400V . [$\text{Sn}|\text{Sn}^{2+} a=0.01$].

- Q.2) Answer the following. [10]
- 1) Describe construction and working of standard hydrogen electrode.
 - 2) Derive the expression for the decay of radio element. Explain the term half life period.

- Q.3) Answer the following. [10]
- 1) Density of CaF_2 is 3.18 g/cc . Atomic weights of Ca and F are 40 and 19 respectively. Unit cell of CaF_2 is face centered and contain 4 of Ca^{++} and 8 of F^- ions. Calculate the length of the edge of the unit cell.
 - 2) State time independent Schrodinger equation. Explain the terms involved in it and discuss de Broglie's hypothesis.

———— Best of luck ————