Question paper - 1

Nutan Arts, Commerce & Science College, Rajapur.

Subject ⇒ Zoology.

Paper - II ⇒ Applied Zoology - II

Class ⇒ S.Y. B.Sc

2019 - 20

[Max. Marks - 30]

Q.1) Attempt the following. (10M)

a) Define Multivoltine.

b) Define ~~Super Secture~~. Stifling.

c) Give uses of bee brush.

d) What is Sun drying.

e) What is the use of Smoker.

f) Mention any two pests of Silk worm.

g) Write biological name of muga silkworm.

h) Name any two brood diseases of honey bee.

i) What is Supersedure.

j) Mention two uses of bee venom.

Q.2) Write short notes on (Any two) (10M)

a) Honey extractor.

b) Economic importance & composition of Royal jelly

c) Standard Langstroth frame.

3) Describe life cycle of Honey bee.

Question paper - 2

Nutan Arts, Commerce & Science College, Rajapur.

Subject = Zoology.

Paper II ⇔ Applied Zoology - II

Class = S.Y.B.Sc

2019 - 20

[Max. Marks - 30]

Q.1) Attempt the following. (10M)

a) What is Apiculture?

b) What is prunning?

c) Enlist any two fungal diseases of silkworm.

d) Mention biological names of any two honey bee species.

e) What is absconding?

f) Mention two uses of royal jelly.

g) Give uses of hive tool.

h) What is pebrine disease.

i) What is swarming?

j) What is hibernating eggs?

Q.2) Write short notes on (Any two) (10M)

a) Composition and uses of bee wax.

b) Duties of worker bees.

c) Smoker

(10 m)

Q. 3) What is harvesting? Describe various methods of mulberry harvesting.

Nutan Arts, Commerce and Science College, Rajapur.

S. Y. BSC.

CHEMISTRY

(CH-221) = Physical and Analytical chemistry (paper I)

2019 - 2020

[Time = 2 Hours] [Max Marks = 30]

Section - I
[physical Chemistry]

Q.1] Answer the following [5M]

a] What are conjugate solutions?

b] Define molality.

c] What is relation between kp and kc ?

d] Define standard free energy of formation.

e] What are Azeotropes ?

Q.2] Attempt any two of the following [6M]

1] Write note on fractionating column.

2] State Henry's law and give its applications.

3] What is chemical equilibrium ? Give its types.

Q.3] Solve the following [4M]

1] The vapour pressure of water 2.5×10^5 pascal at 27°C and 7.5×10^5 pascal at 37°C. Calculate molar heat of vapourization of water
[R = 8.314 J/K/mole]

2] The mixture of immiscible liquid and water boils at 98°C at 755mm Hg. The vapour pressure of water

at the temperature is 712 mm Hg. Find the weight composition of the distillate.
[Given = Mol. wt of Immiscible liquid = 204]

Section II
[Analytical Chemistry]

Q.4] Answer the following [5M]
1] What is parts per thousand?
2] Define Reducing agent.
3] Define Equivalence point.
4] What is universal indicator?
5] Give any two examples of primary standard substance

Q.5] Answer any two of the following [6M]
1] Discuss titration curve between Fe^{+2} and Ce^{4+}
2] What is Titration? Explain the titration curve for a strong acid and a weak base.
3] What is calibration? How will you calibrate volumetric flask?

Q.6] Solve the following [4M]
1] How many ml of 0.1 N HCl are required to neutralise 100 ml of 0.5 N NaOH?
2] What is the normality of solution, when 1000 ml 0.25 N NaOH mixed with 50 ml of 0.1 N NaOH?

Nutan Arts, Commerce and Science College, Rajapur.

S.Y. BSc.

CHEMISTRY

CH-221 = Physical and Analytical chemistry (paper I)

2019-2020

[Time = 2 Hours] [Max Marks = 30]

Section - I

[Physical chemistry]

Q.1 Answer the following [5M]

1] Define Helmholtz free energy.

2] What are Azeotrops?

3] Define the term mole fraction.

4] What do you mean by the term ideal solution?

5] Define Molality.

Q2 Answer Any two of the following [6M]

1] Derive Gibbs Helmholtz equation.

2] Derive $\left[\frac{\partial (A/T)}{\partial T}\right]_v = \frac{E}{T^2}$

3] Discuss with the help of neat diagram the distillation of non-ideal binary miscible liquid system with minimum boiling point.

Q.3 Solve the following. [4M]

1. Two moles of an ideal gas are compressed isothermally and reversibly at 90°C from a pressure 1.0×10^{-5} pascal to 3.0×10^{-5} pascal. Find free energy change.

[$R = 8.314\ JK^{-1}\ mole^{-1}$]

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2] A mixture of 'A' and 'B' is prepared in 1:1 by weight. calculate mole fraction of 'A' and 'B' in the above mixture.
[Mol. weight A = 95, B = 18]

Section = II
[Analytical chemistry]

Q.4 Answer the following [5]

1] Define the term end point of titration.
2] Define the term polyacidic base.
3] Define the term reducing agent.
4] What is meant by precipitation titration
5] Give the names of primary standard substance used in acid-base titration.

Q.5 Answer any two of the following [6M]

1] Explain the term available chlorine in bleaching powder
2] Explain the titration curve between strong acid-weak base.
3] How will you calibrate pipette.

Q.6 Solve the following [4M]

1] Calculate the strength of HCl if 15 ml of it required to neutralize 25 ml of 0.1 N NaOH
[equivalent weight of HCl = 36.5]

2] Calculate pOH of the solution after adding 35 ml 0.1M NaOH to 25 ml 0.1 M HCl.

Question paper - I

Nutan Arts. Commerce & Science college, Rajapur.

Sub → Botany

paper - I ⇒ plant Anatomy & Embryology and plant Biotechnology

(Semister - II)

Class - S.Y. BSc

2019 - 20

[Marks - 30]

Q.1 Attempt any following (any five) 10 marks

1. What is anatomy?
2. Enlist types of stomata?
3. What is Epidermis?
4. Define normal secondary growth?
5. Define anomalous secondary growth?
6. Define embryology?

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

1. Write short notes on principle involved in inflexibility.
2. What are vascular tissue? Describe its types?
3. Structure and function of growth rings?
4. State the importance and scope of embryology?

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

1. Explain with example the diffrant type of ovules?
2. Explain the Mechanism of pollination?

Question paper - 2

Nutan Arts, commerce & science college, Rajapur.

Sub → Botany

Paper - I ⇒ plant Anatomy & Embryology and plant Biotechnology

(semister - II)

Class - S.Y. BSc

2019-20

[Marks - 30]

Q.1 Attempt any following (any Five) 10 marks

1. Enlist types of stomata?
2. Define embryology?
3. Define cytokinesis?
4. What is embryo sac?
5. Define pollination?
6. Define fertilization?

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

1. principle involved in shearing stress?
2. Describe normal secondary growth in Helianthus stem?
3. Describe the anamalous secondary growth in Raphanus roots.
4. Describe the role of embryology in taxonomy?

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

1. Describe the process of syngamy and triple fusion?
2. Define embryo? & Describe the structure of dicot and monocot embryo?

Nutan Arts commerce and science College, Rajapur

Class :- S.Y.Bsc

Subject :- Organic and Inorganic Chemistry

Academic Year – 2019-2020 [30M]

Q.1) Answer the following. [10]

1) Why NaOH is a strong Base, $Si(OH)_4$ is weak acid but $HClO_4$ is a strong acid?

2) Explain with the help of a block diagram Metabolism of Cadmium.

Q.2) Answer the following. [10]

1) BF_3 is stronger lewis acid than BH_3 Explain.

2) Explain the mechanism of wacker process.

Q.3) Answer the following. [10]

1) What is spin-only formula? Calculate Magnetic Moments of Fe^{2+} and Cu^{2+} ions using spin only formula.

2) What are Monosaccharides? Explain formation of ring in D-glucose and add a note on Mutarotation in D-glucose.

——— Best of Luck ———

Nutan Arts commerce and science college Rajapur.

class :- S.Y.BSc

(B) Subject :- Organic and Inorganic chemistry

Academic Year - 2019-2020 [30M]

Q.1) Answer the following. [10]

1) What are epoxides? How are they formed? Give two important uses of epoxides.

2) Give synthesis of pyridine. what is the action of following of pyridine?

a) KNO_3 / H_2SO_4 at 300°c b) H_2 /Pt at 25°c

Q.2) Answer the following. [10]

1) What are carbohydrates? Discuss the classification of carbohydrates with suitable examples.

2) write names and outer electronic configuration of first transition series of d-block elements and comment on complex formation ability?

Q.3) Answer the following. [10]

1) Explain the hydroformylation reaction with its Mechanism.

2) Explain the concept of conjugate acid and base pair with suitable examples.

—— Best of Luck ——

Nutan Art's Commerce & Science college,
Rajapur.

1. B Sc

Tal :- Sangamner Dist :- A. Nagar.

(A)

Sub- Physic II

(optics)

Time - 1 hrs Roll no :-

Q.1 Attempt the following Question (30 M)
(any six)

1) Derive Lens maker's formula for a thin lens

2) Describe how you determine the principal plane is an optical system.

3) Calculate the focal length of a ♭ double convex lens for which the radius of curvature of each surface is 25 cm & R.I of the material of the lens is 1.5

4) Describe comatic aberration.

5) Describe astigmatism. How it is minimized?

6) What is curvature? Explain how it is reduced.

7) Two thin lense of focal length 10 cm & 6 cm are placed Co-axially at a certain distance apart. Calculate the distance bet^n the lenses if these lense form an chromatic combination.

S.Y.B.Sc

(B)

Nutan Arts Commerce & Science Colleg

Tal:- Sangmner Dist:- A.Nagar

Sub:- Physics II

Time - 1 hrs. (optics)

Roll no:-

Q. Attempt the following Question (30M)

(Attempt all)

i) Comparision bet" Ramsden's Eye-Piece with Huygen's Eye-Piece.

2) Calculate the magnifying power of a magnifying glass of 5cm focal length Distance of distinct Vision is 25 cm.

3) Comparision bet" Fraunhoffer's Diffraction & Fresnel's Diffraction.

4) Stokes' ~~th~~ Treatment Explain.

5) Comparision bet" positive crystal & Negative Crystal.

6) The polarizing angle for air & transparent material is 60°. calculate R.I. of material what is the angle of refraction in the medium.

Nutan Adl's commerce And science college. Rajapur.

Tal- sangamner Dist - A-Nagar

F.Y.B.Sc

(2)

time - 1 hr sub- physics - I Roll No -

Oscillations, waves And sound.

Q.1. Attempt the following six questions. (each 5M)

1) obtain the expression of period and frequency for linear simple Harmonic motion.

2) two particle are executing S.H.M.s of same amplitude 'a' and frequency 'ν' they across each other in opposite directions when their displacement is $\frac{a}{\sqrt{2}}$ from mean position what will be the phase difference between them?

3) Determine the expressions for amplitude, angular frequency and frequency for the oscillations in damped oscillatory motion.

4) i) Define quality factor.

ii) what is meant by resonance? Give three examples.

5) What is doppler effect in light & sound?

6) A spectral line of wavelength 5890 A° in the spectrum of a star is found to be displaced by 1.178 A° from it's normal position towards the red end of the spectrum. determine the velocity of the star and mention sense of the motion.

7) Explain the terms:-
i) Seismology
ii) seismic waves
iii) seismograph.

8) What do you mean by wave velocity and particle velocity? Show that wave velocity

$$C = \frac{\omega}{k}$$

9) What are damped oscillations? And Distinguish between damping force and restoring force.

F.Y.B.Sc

(1)

Nutan Adt's commerce And scienie college,
Rajapur.

Tal- sangamner Dist - A. Nagar

time - 1 hr Roll No-

sub- physics - I

oscillations, waves And sound.

Q. 1. Attempt the following questions. (10 M)

1) What is equilibria & it's different types.

2) Define quality factor.

3) What is coupled oscillations ?

4) what is Dopplet effect ?

5) compare the acoustic intensities in air and in water for the same frequency and amplitude. $\rho_{air} = 1.29\ kg/m^3$, $\rho_{water} = 10^3\ kg/m^3$, $V_{air} = 340\ m/s$, $V_{water} = 1470\ m/s$.

Q. 2. Attempt the four questions. (20 M)

1) A particle is subjected to two rectangular directions such that the displacement at any instant is given by $x = 2 \sin(\omega t + \pi/4)$ and $y = 2 \sin \omega t$. find the nature and equation of the path.

2) A capacitor of 0.4 μf, an inductor of 80mH and a resistor of 400 ohms are joined in series. can the electrical circuit be oscillatory ?

3) A spectral line of wavelength 5890 A° in the spectrum of a star is found to be displaced by 1.178 A° from it's normal position towards the red end of the spectrum. determine the velocity of the star and mention sense of the motion.

4) The equation of forced oscillations of an oscillator is given as

$$4\left(\frac{d^2x}{dt^2}\right) + 2\left(\frac{dx}{dt}\right) + 144x = 25 \sin qt$$

determine the resonant frequency at which velocity resonance takes place. Also determine quality factor at resonance and half width.

5) what is transverse & longitudinal wave.

6) distinguish between forced oscillations and damped oscillations.

प्रगतिक शिक्षण संस्थेचे,

नूतन कला, वाणिज्य व विज्ञान महाविद्यालय, राजापूर.

द्वितीय सत्र - सराव प्रश्नपत्रिका क्र-2

वेळ - 2 तास सन - 2019-20 गुण - 30

विषय - मराठी, वर्ग - SYBSC

प्र-1 ला - खालील इंग्रजी उताऱ्याचे मराठी भाषांतर करा. गुण-10

I saw that bad handwriting should be regarded as a sign of imperfect education. I tried later to Improve mine. but it was too late. Let every young man and woman be warned by my example and understand that good handwriting is a necessary part of Education.

प्र-2 रा खालील उता-याचे 1/3 भागामध्ये सारांशलेखन करा. गुण-10

हास्यवदनाची थोडी फारच थोड्या लोकांना देवते. कीर्तिमान असावे, असा उपदेश, आपल्या कानीकपाळी नित्य होत असतो. पण माणसाने नेहमी सुहास्यवदन असावे, असे कोणी कोणाला सांगताना मेकू येत नाही. म्हणेच म्हटले तर कठोर कर्म माणसापेक्षा नेहमी हसतमुख असणारा मनुष्य अधिक योग्यतेचा असाला पाहिजे सकाळ-संध्याकाळ चार चार घंटका जपजाप्य करणारा माणूस नेहमी ओंगळ चेहरा करून राहत असेल, आजूबाजूच्या माणसांवर खेकसत असेल व प्रत्येक कामात चिरचिर करीत असेल, तर त्याच्या धर्ममार्तंडामुळे समाजाचे व त्याचे कोणते कल्याण होईल? उलट सदा हसतमुख असणारा मनुष्य केवळ आपल्या सान्निध्याने, लोकांच्या दुःखाने आरंभलेल्या अंतःकरणात आशेची ज्योत निर्माण करील. याचीच जग हे कडू गोळ्यांनी, अनुभवाने भरपूर भरलेले आहे. अनंत संकटांनी, व्याधींनी व यातनांनी गांजलेल्या या

या जगात दुःखी कष्टी चेहऱ्यांचा अंधार सर्वत्र भरलेला आहे. हसऱ्या चेहऱ्याचे सूर्यकिरण या जगात दुर्मिळ आहेत ते किरण जेथून प्रसृत होतील त्या चेहऱ्याचे पावित्र्य, शेकडो धर्मक्षेत्रांहून अधिक क्षमतेचे वाटते.

[प्र. ना. सी कडके]

प्र-३ब- वृत्तपत्रासाठी बातमीचे संहितालेखन करा. गुण-०५

तुमच्या महाविद्यालयात 'अंधश्रद्धा निर्मूलन' या विषयावर झालेल्या व्याख्यानाचा वृत्तांत वर्तमानपत्रात प्रसिद्धीस देण्यासाठी लिहा.

किंवा

प्र-३क पुढील इंग्रजी पारिभाषिक शब्दांचे मराठी अर्थ लिहा गुण-०५

१) Advertisement -
२) Secretary -
३) Editor -
४) Engineer -
५) Eligible -
६) Seminar -

प्रागतिक शिक्षण संस्थेचे
नूतन कला, वाणिज्य व विज्ञान महाविद्यालय, राजापूर
द्वितीय सत्र - सराव प्रश्नपत्रिका क्र-१

वेळ-१ तास- सन - २०१९-२०२० एकूण गुण-३०
विषय - मराठी वर्ग - SYBSC गुण-४०

प्र-१ ला खालील इंग्रजी उताऱ्याचे मराठी भाषांतर रूपांतर करा.

No one has been the wind, It is a Mysterious thing. yet it is everywhere. It can dash a ship to Pieces or gently fan the flowers. It bears Perfumes. We call it the wind, but, like our own Minds, It can not be fully understood. There are many such Wonderful things around us.

प्र-२ रा खालील उताऱ्याचे १/३ भागामध्ये सारांशलेखन करा. गुण-१५

मनुष्य हा समाजप्रिय प्राणी आहे, असे शास्त्रज्ञ सांगतात. काही शास्त्रज्ञांच्या मते नर समाज करून राहण्याची प्रवृत्ती ही मानवाच्या उपजत प्रवृत्तीपैकीच एक प्रवृत्ती आहे. मनुष्याला समाज करून राहणे आवडते, इतकाच याचा अर्थ असेल, तर या विधानाला हरकत घेण्याची कारण नाही. पण समाज एकत्र टिकवून धरण्यास जे गुण अंगी लागतात. ते मानवाच्या अंगी सहजच असतात उपजतच ते त्याला प्राप्त झालेले असतात. असा जर शास्त्रज्ञांचा अभिप्राय असेल, तर मग मात्र त्यांच्या विधानावर अनेक शंका कुशंका अनेक आक्षेप मनात निर्माण होऊन त्याची सत्यता मनाला पटेनाशी होते. आतापर्यंतच्या मानवाच्या इतिहासाकडे पाहिले तर स्वार्थ, मत्सर, अहंभाव, संकुचित दृष्टी इत्यादी गुणांमुळे माणसाची स्वभावतः विभक्त होण्याकडे प्रवृत्ती असते. आणि संघटना बळकट्यासाठी त्याला अनेक प्रयत्न करावे लागतात. जिवाचा आटापिटा करावा लागतो आणि इतके करूनही पुष्कळ वेळा अपयश पदरी येते असे दिसते.

प्र-३ रा- वृत्तपत्रासाठी बातमीचे संहिता लेखन करा. गुण-१५

अ) एम.पी.एस.सी परीक्षेतून तुमच्या गावची राधिका गुंजाळ ही PSI पदासाठी निवड झाल्याबद्दल, सरपंच व ग्रामस्थ यांचेही सहकार्य मिळाले.

किंवा -

ब) गुजाकवाडी गावातील हरीभाऊ अकोलेकर यांना शासनाकडे विहीरसाठी मंजूर, सरपंच सर्व शिक्षक, ग्रामसेवक व कुटुंबीय यांचेही सहकार्य! थोडक्यात आकाशवाणीवर झालेला संवाद लिहा. [लोकप्रतिनिधी व अकोलेकर] गुण-०५

प्र. ५ वा - खालील इंग्रजी शब्दांचे मराठी पारिभाषिक संज्ञा लिहा. कोणतेही ०५ गुण-०५

१) Management -
२) Message -
३) Cyclone -
४) Hard cash -
५) In-charge -
६) Joint Account -