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B.Sc. (Pass Course) 1st Semester Examination, February–2022

ENGLISH

Time allowed : 3 hours] *[Maximum marks : 40*

Note : Attempt all questions.

1. Read the passage given below and answer the questions that follows : 4

Death not be proud, though some have called thee

Mighty and Dreadful, for thou art not so,

For those whom thou think'st thou dost overth'ow,

Die not, poor death, not yet canst thou kill me.

Questions :

(i) Name the poem and the poet.

(ii) What have some called death ?

(iii) Why does the poet not agree to their view about death ?

(iv) What does the poet think about death ?

OR

My mother bore me in the southern wild

And I am black, but oh! my soul is white;

White as an angel is the English child :

But I am black, as if bereaved of light.

Questions :

(i) Name the poem and the poet.

(ii) Where was the black boy born ?

(iii) How is the Black boy ?

(iv) Why is an English boy regarded as an angel ?

2. Explain with reference to the context : 4

O' no! it is an ever-fixed mark,

That looks on tempests and is never shaken;

It is the star to every wand' ring bark,

Whose worth's unknown, although his height be taken.

OR

An old, mad, blind, despised, and dying king,–
Princess, the dregs of their dull race, who flow
Through public scorn,–mud from a muddy spring,–
Rulers who neither see, nor feel, nor know,
But leech-like to their fainting country cling,
Till they drop, blind in blood, without a blow,–

3. Answer any *three* of the following questions in about 30 words each : 3×2=6

(i) What is the conflict in Milton's mind in the Sonnet 'On His Blindness' ?

(ii) Why does the poet want to be a child ? (The Retreat).

(iii) Who was Shadwell ?

(iv) Where was the little black boy born ?

(v) Who is the pilot in the poem ? Where does the poet hope to meet him ? (Crossing the Bar)

4. Summarise the poem "On His Blindness". 8

or

Comment on the role of nature in "Three years she Grew....."

5. Translate the following passage into English : 4

विद्यार्थी जीवन मनुष्य जीवन का स्वर्ण-काल है। यही वह समय है जबकि मनुष्य अपने भावी जीवन को सफल बनाने के लिए शक्ति और योग्यता संचित कर सकता है। देश, जाति और समाज का भविष्य आज के विद्यार्थियों पर निर्भर है। हमारी संस्कृति हमें स्वार्थी होना नहीं सिखाती। विद्यार्थियों पर देश, जाति और समाज के अनेक उपकार हैं। अतः विद्यार्थियों को भी चाहिए कि उन उपकारों के बदले में देश, जाति और समाज के प्रति अपने कर्तव्य का पालन करें।

or

(For Non-Hindi Speaking/Foreign Students only)

Read the following passage and answer the questions given at the end :

It is not always easy in company to speak frankly and if you don't want to be considered a bad mannered person, you have to watch constantly for signs. It is not easy,

for example, to listen for long to any person. Try in company to take only a fair share of the conversation. If there are two of you, take half of it. When you have said a little, keep quiet and give your friend a chance to say something. If he does not talk, he probably does not want you to talk either. Many a young man or woman talks away, thinking that the company is delighted to hear him or her and everyone is really exhausted and angry. Don't think you can say unpleasant things about someone behind his back and not be found out. It is surprising how the remarks usually find their way to the person with your name attached, so to speak. Whatever you say, always assume that the person may overhear and modify your remarks accordingly. All experienced people act in this way.

Questions :

(i) Mention *two* characteristics which belong to bad mannered person.

(ii) What good manners should you observe when you are in company ?

(iii) Why shouldn't one say unpleasant things about someone behind his back ?

(iv) What is foolish about the behaviour of a young man or woman who "talks away" all the time ?

6. Write a paragraph in about 250 words on any *one* of the following : 6

(i) Democracy in India

(ii) The College Library

(iii) Sports as a Career

(iv) Rising Prices

(v) Our Examination System

7. (a) Use any *two* in meaningful sentences :

fall through, Look after, See off.

(b) Fill appropriate prepositions in any *two* :

(i) Be contented _____ what you have.

(ii) We have been living here _____ 1983.

(iii) I prefer tea _____ coffee.

(c) Correct any *four* of the following : 4

(i) I don't hardly know this girl.

(ii) He comes late often to college.

(iii) I enjoy to watch T.V. Programmes.

(iv) The cholera is a dangerous disease.

(v) He is senior than her at college.

(vi) Mohan and Sohan help one another.

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B .Sc. 1st Semester w.e.f. 2012-13
Examination, February–2022
BIO-TECHNOLOGY
Plant Diversity I & Bio-prospecting
Paper–BT 102

Time allowed : 3 hours] *[Maximum marks : 40*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : *Attempt **five** questions in all, selecting **one** question from each unit. **Question No. 1 is compulsory.***

1. Answer the following questions. 10×1=10

(a) What is Apospory ?

(b) What is dolipore Septum ?

(c) What is a Coenocytic Structure ?

(d) What are corticolous lichens ?

(e) Differentiate between Spores and elaters.

(f) How the bryophytes are used as Pollution indicators ?

(g) Name the order to which Marchantia belongs ?

(h) What type of life cycle is present in Mucor ?

(i) What is Gemma cup ?

(j) What is Peat moss ?

[P.T.O.

Unit–I

2. Write note on : $3\frac{1}{2}+4=7\frac{1}{2}$

   (a) Macrandrous species

   (b) Economic importance of algae.

3. Explain the development of sex organs in Vaucheria and describe the process of sexual reproduction. $7\frac{1}{2}$

Unit–II

4. Write note on : $3\frac{1}{2}+4=7\frac{1}{2}$

   (a) Asexual reproduction in Mucor

   (b) Heterothallism in Mucor.

5. Write note on : $3\frac{1}{2}+4=7\frac{1}{2}$

   (a) Graphic life cycle of Phytophthora.

   (b) Economic importance of fungi.

Unit–III

6. Write note on : $3\frac{1}{2}+4=7\frac{1}{2}$

   (a) Economic importance of lichens

   (b) Dual association of lichens.

7. Write note on : $3\frac{1}{2}+4=7\frac{1}{2}$

   (a) Red rot of sugarcane

   (b) Rust of wheat.

Unit–IV

8. Write note on : $2+3\frac{1}{2}+2=7\frac{1}{2}$

   (a) Rhizoids.

   (b) Elaters and Pseudoelaters

   (c) Protonema.

9. Draw and explain Structure of capsule of fuaria. $7\frac{1}{2}$

B.Sc. 1st Semester (w.e.f. 2012-13)
Examination, February–2022
BIOTECHNOLOGY
Paper–BT-103
Cell Biology

Time allowed : 3 hours] *[Maximum marks : 40*

Note : *Attempt five questions in all, selecting at least one question from each unit.* ***Question Number 1 is compulsory.*** *All questions carry equal marks.*

1. Write the short notes on the following : 4×2=8

(a) Cellular Receptor

(b) Polyribosome

(c) Semiautonomous cell organelles

(d) Name of two viruses causes cancer

Unit–I

2. What is the plasma membrane ? Describe the functions of the plasma membrane in detail. 8

3. Write the short note on any *two* : 2×4=8

(a) Fluid Mosaic Model

(b) Cellular Transport

(c) Dynamic nature of the plasma membrane

Unit–II

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4. Write the short note on any *two* : 2×4=8

   (a) Biogenesis of Golgi complex

   (b) Microfilaments

   (c) Function of Golgi complex

5. Describe the structure and functions of endoplasmic reticulum in detail. 8

Unit–III

6. Write the short note on any *two* : 2×4=8

   (a) Lysosome

   (b) Ribosome

   (c) Chloroplast

7. What is the cell cycle ? Describe the regulation and importance of the cell cycle in detailed. 8

Unit–IV

8. Write the short note on any *two* : 2×4=8

   (a) Macromolecule

   (b) Extra-cellular Matrix

   (c) Cellular Junction

9. What is Cancer ? Describe the characteristics of cancer cells. 8

B.Sc. 1st Semester (w.e.f. 2012-13) Examination,

February–2022

BIOTECHNOLOGY

Paper–BT-104

Bio-Chemistry and Metabolism

Time allowed : 3 hours] *[Maximum marks : 40*

Note : *There are nine questions in all. Students are required to attempt five questions including compulsory question.* ***Question Number 1 is compulsory.***

1. Define/attempt the following terms : 10×1=10

(i) Write structure of tyrosine and alanine.

(ii) Name four monosaccharides.

(iii) Prostaglandins

(iv) Z-DNA

(v) Cofactor

(vi) Ribozymes

(vii) Holoenzyme

(viii) Mucopolysaccharides

(ix) Name two inhibitors of ETC.

(x) What is oxidative phosphorylation ?

Unit–I

2. Write note on :

(a) Bacterial cell wall polysaccharides 3½

(b) Glycoproteins 4

3. Discuss various types and classification of proteins. 7½

Unit–II

4. Discuss classification, nomenclature and properties of fatty acids. 7½

5. Write note on :

   (a) Nucleosides and nucleotides 3½

   (b) Denaturation and annealing of DNA 4

Unit–III

6. Write note on :

   (a) Role of tetrahydrofolate as cofactor in enzyme reactions 4

   (b) Enzyme specificity 3½

7. Discuss nomenclature and classification of enzymes. 7½

Unit–IV

8. Discuss various reactions of TCA in detail. 7½

9. Write note on :

   (a) Glycogenesis 3½

   (b) Beta oxidation of fatty acids 4

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B.Sc. 1st Semester w.e.f. 2012-13

Examination, February–2022

BIO-TECHNOLOGY

Paper–BT–105

(Physical Chemistry)

Time allowed : 3 hours] *[Maximum marks : 40*

Note : *Attempt five questions in all, selecting one question from each section. Question No. 1 is compulsory. All questions carry equal marks.*

1. (a) Give two applications of liquid crystals. 8×1=8

(b) Mention various elements of symmetry present in a cube.

(c) How does viscosity vary with temperature ?

(d) Why ether has higher vapour pressure than benzene at the same temperature ?

(e) What is Gay-Lussac's law ?

(f) Why air is less dense at a hill station than at sea level ?

(g) Describe Graham's law of diffusion.

(h) Define Boyle's Temperature.

Section–A

2. (a) Explain diagrammatically how the molecular velocities changes with increase in temperature ? 3

(b) What are the causes of deviation of real gases from ideal behavior ? 3

(c) Write the SI units of :

(i) Gas constant 'R' and

(ii) Coefficient of viscosity 2

3. (a) Define mean free path. 2

(b) Discuss the cause of deviations of real gases from ideality. 3

(c) Calculate the volume occupied by 1 mole of NO_2 gas at 300 K and 4 atm pressure. The compressibility factor under these conditions is 0.502. 3

Section–B

4. (a) What is critical temperature ? How can it be determined experimentally ? 4

(b) State the 'law of corresponding states' and give its significance. 4

4

5. (a) Derive $(\pi + 3/\phi^2)(3\phi - 1) = 8\theta$.

(b) Discuss the principles which are widely used for liquefaction of gases. 4

Section–C

6. (a) Briefly describe the structure of liquids. 4

(b) Define surface tension. What are the factors which affect surface tension ? 4

7. (a) Express the relationship between boiling point and critical temperature. 2

(b) What is vapour pressure ? Give one method for the measurement of vapour pressure. 3

(c) Write short note on Rheochor and its applications. 3

Section–D

8. (a) What are liquid crystals ? Describe the applications of liquid crystals briefly. 4

(b) Explain, why NaC*l* and KC*l* have different X-ray powder diffraction patterns. 4

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B.Sc. 1st Semester Examination, February–2022

BIO-TECHNOLOGY

Paper–BT–106

Inorganic Chemistry

w.e.f. 2012-13

Time allowed : 3 hours] *[Maximum marks : 40*

Note : *Attempt **five** questions in all, selecting **one** question from each section. **Question No. 1 is compulsory.***

1. (a) What is the shape of dyz orbital ?

(b) Why half filled and full-filled orbitals have extra stability ?

(c) What is Screening effect ?

(d) What is electron affinity ?

(e) Draw the structure of H_3O^+.

(f) What is dipole moment ?

(g) What is Schottky defect ?

(h) Define polarizability. 8×1=8

Section–A

2. (a) State and explain Heisenberg Uncertainty principle. 4

(b) If the velocity of electron is 2.19×10^6 ms^{-1}, calculate the de-Broglie wavelength associated with it. (Mass of electron = 9.1×10^{-31} Kg and $h = 6.63 \times 10^{-34}$ Kg m^2 s^{-1}) 4

3. (a) Explain the radial probability distribution curves for : 3

(i) 1s (ii) 2s (iii) 3s

(b) Name the orbital possible for : 3

(i) $n = 3$, $\ell = 2$

(ii) $n = 2$, $\ell = 0$

(iii) $n = 4$, $\ell = 1$

(c) Explain $(n + \ell)$ rule with example. 2

Section–B

4. (a) Give reason : 4

(i) Electron affinity of noble gases are zero.

(ii) The second electron affinity of oxygen is negative.

(b) Describe : 4

(i) Aufbau Principle

(ii) Pauli exclusion Principle

5. (a) What is ionization energy ? Explain its variation in a period and a group in periodic table. 4

(b) Using Slater's rule, calculate effective nuclear charge of : 4

(i) 4s electron in potassium

(ii) 3p electron in phosphorus

Section–C

6. (a) Explain the hybridization and shape of SF_4 molecule. 4

(b) Draw the MO diagram of NO and explain its bond order. 4

7. (a) Compare the structure of NH_3 and H_2O using VSEPR Theory. 4

(b) Explain the hybridization and Shape of $C\ell O_4^-$ 4

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B.Sc. 1st Semester Examination, February–2022

BIO-TECHNOLOGY

Organic Chemistry

Paper–BT 107

w.e.f. 2012-13

Time allowed : 3 hours] *[Maximum marks : 40*

Note : *Attempt **five** questions in all, selecting atleast **one** question from each section. **Question No. 1 is compulsory.***

1. (a) Why aniline is weaker base than ethylamine ?

(b) What are meso compounds ? Give example.

(c) Why twist boat conformation of cyclohexane is more stable than boat conformation ?

(d) Define geometrical isomerism.

(e) What are neutral nucleophiles ? Give example.

(f) What is trapylium ion ?

(g) Why alkanes are known as paraffins ?

(h) What is Blanc's rule ? 8×1=8

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Section–A

2. (a) De scribe : 3,3

(i) Hyperconjugation

(ii) Van der Waals interactions

(b) Explain Inductive effect with examples. 2

3. (a) Explain : 6

(i) Metamerism

(ii) Resolution of racemic mixture

(iii) Plane of Symmetry

(b) Differentiate between erythro and threo diastereomers. 2

Section–B

4. (a) Describe the sequence rule for assigning R and S configuration to Stereoisomers. 4

(b) Differentiate between : 4

(i) Relative and absolute configuration

(ii) Configuration and conformation

5. (a) Describe the different conformations of cyclohexane and discuss their relative stability. 4

(b) Explain : 4

(i) E and Z nomenclature in geometrical isomers

(ii) Different conformations of ethane

Section–C

6. (a) Describe the generation of carbenes. 2

(b) Explain the structure and stability of carbanions. 4

(c) Describe the structure and stability of Singlet and triplet carbenes. 2

7. (a) Describe : 4

(i) Addition reactions

(ii) Generation of free radicals

(b) Differentiate between : 4

(i) Homolytic and heterolytic bond fission

(ii) Electrophiles and nucleophiles

Section–D

8. (a) Why n-alkanes with even number of carbon atoms melt at a higher temperature than those with odd number of carbon atoms ? 2

(b) Describe Baeyer's Strain theory. 4

(c) Write any two methods of formation of cycloalkanes. 2

8

9. Describe :

(i) Carey - House reaction

(ii) Wurtz reaction

(iii) Kolbe reaction

(iv) Cycloaddition reaction