

Roll No.
Total No. of Questions : 09

Total No. of Pages : 02

**B.Sc.(BT) (Sem.-1)
BASICS OF BIOSCIENCES
Subject Code : BSBT-107-18
M.Code : 75330**

Time : 3 Hrs.
Date of Examination : 20-06-2024

Max. Marks : 30

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying 2½ (Two and Half) marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying FIVE marks each and students has to attempt any TWO questions.

SECTION-A

1. Answer briefly :

- (a) Binomial nomenclature
- (b) Essential amino acids
- (c) Interphase
- (d) Role of Flagella in Bacteria
- (e) Thermoacidophiles
- (f) Syngamy
- (g) Smallest living prokaryotes
- (h) Function of palisade parenchyma
- (i) Cytokinesis
- (j) Saturated fatty acids.

SECTION-B

2. Explain the economic importance of Bacteria and its role in Agriculture and Industry.
 3. Describe Placentation. Explain its different types.
 4. Draw the structure of neuron and describe the function of each part.
 5. Distinguish between the Prokaryotic and Eukaryotic cells.
 6. Describe the classification of carbohydrates as monosaccharides, disaccharides and polysaccharides.
- SECTION-C**
7. Explain the differences in reproductive structures, fertilization processes and mechanisms between Gymnosperms and angiosperms.
 8. Describe the structural - organization of animal tissues, including Epithelial, Connective and Muscular tissues along with the characteristics and functions.
 9. Describe the function of Cell Organelles, Endoplasmic Reticulum (ER), Golgi Apparatus, Mitochondria and Lysosomes.

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June-2024

2 | M-75330

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Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (BT) (2018 Batch) (Sem.-1)

INORGANIC CHEMISTRY

Subject Code : BSBT-101-18

M.Code : 75324

Date of Examination : 07-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :

- a) What do you mean by Paramagnetism?
- b) What do you mean by covalent bond?
- c) What is Valence bond theory?
- d) Define the Hydrogen bonding.
- e) What do you mean by geometrical isomers?
- f) Define the electro neutrality.
- g) Define the Vander wall forces.
- h) Define the Coordination bond.
- i) Explain the hybridization in PF_6 .
- j) Define the hybridization.

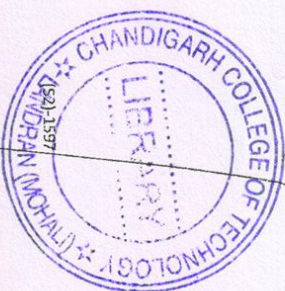
SECTION-B

2. Explain the directional characteristics of covalent.
3. Explain the hybridization of IF_7 , BF_3 .
4. Explain the optical isomers.
5. What do you mean by effective nuclear charge?
6. Explain the back bonding.

SECTION-C

7. Explain Werner's coordination theory.
8. Explain the limitations of Valence bond theory.
9. Explain the Crystal field theory.

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Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
Total No. of Questions : 11

Total No. of Pages : 04

B.Voc. (Child Caregiver)/B.A. (JAMC)/BBA/BBA (SIM)/B.Com (Honours)/
BCA/BHMT (UGC)/B.Sc. - Honours (Nutrition and Dietetics)/B.Sc.
(AI&ML)/B.Sc. (Bio Technology)/B.Sc. (Fashion Design)/B.Sc. (Graphics
& Web Designing)/B.Sc. (IT)/B.Sc. (Medical Lab Sciences)/B.Sc.
(Operation Theatre Technology)/B.Sc. (Radiotherapy Technology)/

BTM (Sem-1)

HUMAN VALUES, DE-ADDICTION AND TRAFFIC RULES

Subject Code : HYPE-101-18

M.Code : 93322

Date of Examination : 24-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. Section-A is compulsory.
3. Section-B contains five questions of four marks each. Attempt all.
4. Section-C contains five questions of six marks each. Attempt all.

SECTION-A

(10 × 1 = 10)

1. Write briefly :

- i) What is Utility-Value?
उपयोगिता-मूल्य क्या है?
ऐपकीतिता-मूल्य की है?
- ii) Explain Natural Acceptance.
सहज स्वीकृति समझाओ।
'सुखदही' मनुष्यी भाषा है।
- iii) How the value "care" is related with body?
मूल्य "स्वास्थ्य" शरीर के साथ कैसे संबंधित है?
मूल्य ध्यान सरीर के ठाक बिन्दु संबंधित है?
- iv) What do you mean by Respect?
आपका सम्मान से क्या मतलब है?
हुराहुरा भावदंड को महलब है?

[M-93322]



June-2024

v) What is Perseverance?
अटलता क्या है?

धीरम की है?

vi) What is the difference between prosperity and wealth?
समृद्धि और धन के बीच क्या अंतर है?

धनराही अडे अभीरी से विंच की अंडर है?

vii) What is Holistic System?
समग्र प्रणाली क्या है?

सर्वदृष्टिकोण प्रणाली की है?

viii) What is Cyclic Production?
चक्रीय उत्पादन क्या है?

चकरी उत्पादन की है?

ix) What is Existence?
अस्तित्व क्या है?

अस्तित्व क्या है?

x) What is value of any Unit in the larger order?
बड़े आदेश में किसी भी इकाई का क्या मूल्य है?

बड़े आदेश विंच बिसे की विवारी दार की मूल्य है?

SECTION-B

(5 × 4 = 20)

2. What is the need for value education in technical and other professional Institutions?
तकनीकी एवं अन्य व्यावसायिक संस्थानों में मूल्यपरक शिक्षा की क्या आवश्यकता है?

उकनीकी अडे रीर प्रमेदर मसवाद विंच मूल्य की सिंधिआ की की लंड है?

3. Self-exploration is a process of dialogue between 'What you are' and 'What you really want to be. Explain and illustrate.

आत्म-अन्वेषण 'आप क्या हैं' आप वास्तव में क्या बनना चाहते हैं' में आपस संवाद की एक प्रक्रिया है। समझाओ और व्याख्या करो।

मह-धन 'हमी की है' अडे 'हमी आगल विंच की घटन चहुंदि है' विंच आपस मंदर की विंच प्रविता है। भाषा अडे विआधिआ वरो।

[M-93322]

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Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Sc.(BT) (Sem.-1)
INTRODUCTION TO BIOTECHNOLOGY**

Subject Code : BSBT-102-18

M.Code : 75325

Date of Examination : 14-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Define :

- i) What are Biopharmaceuticals?
- ii) List names of GM foods.
- iii) What are Fermenters?
- iv) List some microbes involved in Fermentation.
- v) What are Pre - Processed foods?
- vi) What is Marine BioTechnology?
- vii) List names of Yeast and Bacteria involved in Food Processing.
- viii) Cite some examples of Commercially approved GM crops.
- ix) What is Downstream Processing?
- x) List some names of Biotech Companies in India.

SECTION-B

2. Write a note on Biotech Success stories in India.
3. Differentiate between Traditional and Modern Biotechnology.
4. Write a note on GM foods.
5. What are BT Crops? Explain their significance.
6. Discuss role of Microbes in Food Quality Enhancement.

SECTION-C

7. Elaborate on Industrial Production of Antibiotics and Enzymes.
8. Write a note on Yeast and Bacterial Based Food Products and Processes.
9. Discuss the process for industrial production of Chemicals.

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June-2024

To (No. of Pages : 02

To (No. of Pages : 02

B.Com.(Hons.)/BA(JAMC)/ BHMCT/B.Sc.(Hons.)(Nutrition and Dietetics)/(AI & ML)/(BT)/(FD)(G&WD)/(IT)/(MLS)/ B.Voc. (Beauty Therapy and Aesthetics)/BTMT/BBA(SIM)/BCA(Sem.-1)

ENGLISH

Subject Code : BTHU103-18

M.Code : 75085

Date of Examination : 15-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. All questions are **COMPULSORY**.
2. Q1, Q2 and Q3 carry **TEN** marks each.
3. Q4 and Q5 carry **FIFTEEN** marks each.

1. What do you mean by Communication? Discuss in detail, the types of Communication.
2. Explain in detail the barriers to communication. Also, suggest the ways to overcome these barriers.

3. Paraphrase the following:

The proliferation of smartphones have revolutionized the way people communicate and access information. With the advent of mobile technology, individuals can now connect with others instantly, regardless of their location. Smartphones serve as multifunctional devices, providing access to social media platforms, email, web browsing, and countless apps for entertainment and productivity. As a result, people have become increasingly reliant on their smartphones for daily tasks and communication, blurring the lines between work and leisure.

4. On the basis of your reading of the following paragraph, answer the questions:

The melting of polar ice caps due to global warming poses significant threats to both wildlife and human populations inhabiting coastal regions. As polar ice melts, sea levels rise, increasing the risk of flooding in low-lying areas and displacing communities. Furthermore, the loss of sea ice deprives species such as polar bears and seals of crucial habitat, leading to declines in their populations and disrupting entire marine ecosystems. Additionally, the influx of freshwater from melting ice alters ocean currents and salinity levels, affecting global climate patterns and exacerbating extreme weather events. Addressing the melting polar ice caps requires urgent action to mitigate greenhouse gas emissions, promote sustainable energy sources, and implement adaptation strategies for vulnerable communities.

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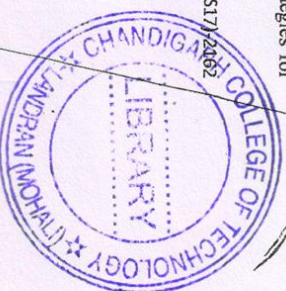
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Answer the questions:

- i) What are the primary threats posed by the melting of polar ice caps to both wildlife and human populations?
 - ii) How does the loss of sea ice impact marine ecosystems?
 - iii) What are some of the broader consequences of melting polar ice caps on global climate patterns and weather?
 - iv) What actions are suggested to address the issue of melting polar ice caps and its associated impacts?
- v) **Write the meaning of the words: deprives and exacerbating.**
5. Write a report on the impact of urbanization on local ecosystems.

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June-2024

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Total No. of Pages : 02

Total No. of Questions : 09

**B.Sc.(BT) (Sem.-1)
BIOCHEMISTRY AND METABOLISM**

Subject Code : BSBT-103-18

M.Code : 75326

Date of Examination : 18-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

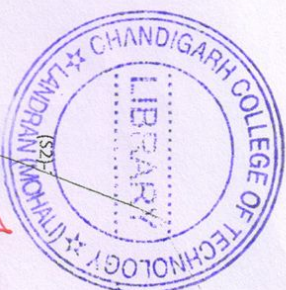
SECTION-A

1. Answer briefly :

- i) Oligosaccharides
- ii) Prostacyclins
- iii) Purines and Pyrimidines
- iv) Activation energy
- v) Glycoproteins
- vi) Gluconeogenesis
- vii) Oligomeric enzymes
- viii) Cerebrosides
- ix) Isomerases
- x) Aliphatic and Aromatic aminoacids.

SECTION-B

2. Discuss properties of Polysaccharides.
 3. What are the types of Proteins? How are Proteins classified?
 4. Discuss structure and function of Cholesterol.
 5. What are common and important features of Enzyme Active site?
 6. Discuss fate of Pyruvate under Anaerobic conditions.
- SECTION-C**
7. What is Oxidative Phosphorylation? Discuss its significance and the steps involved.
 8. Discuss significance of Gluconeogenesis and the steps of the pathway.
 9. Discuss classification, nomenclature and properties of fatty acids.



June-2024

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Total No. of Pages : 02

Total No. of Pages : 02

BASICS OF BIOSCIENCES

M.Code : 75330

Time : 3 Hrs.

Max. Marks : 30

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying 2½, (Two and Half) marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying FIVE marks each and students has to attempt any TWO questions.

SECTION-A

1. Answer briefly :

- (a) Binomial nomenclature
- (b) Essential amino acids
- (c) Interphase
- (d) Role of Flagella in Bacteria
- (e) Thermoacidophiles
- (f) Syngamy
- (g) Smallest living prokaryotes
- (h) Function of palisade parenchyma
- (i) Cytokinesis
- (j) Saturated fatty acids.



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SECTION-B

2. Explain the economic importance of Bacteria and its role in Agriculture and Industry.
3. Describe Placentation. Explain its different types.
4. Draw the structure of neuron and describe the function of each part.
5. Distinguish between the Prokaryotic and Eukaryotic cells.

SECTION-C

7. Explain the differences in reproductive structures, fertilization processes and mechanisms between gymnosperms and angiosperms.

8. Describe the structural - organization of animal tissues, including Epithelial, Connective and Muscular tissues along with the characteristics and functions.

9. Describe the function of Cell Organelles, Endoplasmic Reticulum (ER), Golgi Apparatus, Mitochondria and Lysosomes.

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Roll No.
Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (BT) (Sem.-2)

BIOSTATISTICS

Subject Code : BSBT-203-18

M.Code : 75874

Date of Examination : 15-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What are the advantages of Tabular representation of data?
- b) How simultaneous equations can be solved by Matrices.
- c) Define method of averages.
- d) What do you understand by rejection of observations?
- e) Define Null Hypothesis and Alternate Hypothesis.
- f) What is the significance of curve smoothing?
- g) What do you mean by Relative Frequency?
- h) Give merits and limitations of polynomial fitting.
- i) Give properties of Determinants.
- j) Three bags contain 3 red, 7 black, 8 red, 2 black, and 4 red & 6 black balls respectively. 1 of the bags is selected at random and a ball is drawn from it. If the ball drawn is red, find the probability that it is drawn from the third bag.

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SECTION-B

2. Calculate the value of mean and standard deviation from the following frequency distribution.

Variable	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	16	20	23	46	8	3

3. Describe various methods of numerical integration.
4. Write a detailed note on Fourier transformation.
5. Find the matrix inverse of $\begin{bmatrix} 4 & -2 & 1 \\ 5 & 0 & 3 \\ -1 & 2 & 6 \end{bmatrix}$
6. Explain Analysis of variance for one and two-way classification.

SECTION-C

7. a) Write a note on graphical representation of data.

b) There are two series of index numbers P for price index and S for stock of 05 the commodity. The mean and standard deviation of P are 100 and 8 and of S are 103 and 4 respectively. The correlation coefficient between the two series is 0.4. With these data obtain the regression lines of P on S and S on P.

8. Write notes on :

- (a) Method of Least Squares
- (b) Completely randomized and randomized block designs.
9. (a) How do you evaluate 3×3 determinant?
- (b) What are the different methods and uses of Interpolation?

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June-2024

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Total No. of Pages : 02

Total No. of Questions : 07

B. Com (Hons/BA/JAMC)/BHMCT/B.Sc.BT/BD/MLS/BBA(SIM)/BTM
(Sem.-2)

ENVIRONMENTAL STUDIES

Subject Code : EVS/102/18

M.Code : 75831

Date of Examination : 21-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. Attempt ALL questions in SECTION-A. Each question carries 2 marks.
2. Attempt any FOUR questions from SECTION-B out of SIX. Each question carries TEN marks.

SECTION-A

1. Write briefly :

- a) Public Awareness
- b) Cyclones
- c) Ecological Pyramids
- d) Forest Ecosystem
- e) Reason of deforestation
- f) Air pollution
- g) Global warming
- h) Causes of Natural disaster
- i) Causes of floods
- j) Sources of Noise pollution.

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SECTION-B

2. Discuss the type's causes and effects of Air pollution.
3. Explain the various types of Bio-diversity.
4. Discuss the inter-disciplinary nature of Environmental studies.
5. Explain the link between Environment and Human.
6. Discuss in detail "India as a Mega Diversity Nation".
7. Write a short note on Forest Conservation Act.

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(S17)-896



June-2024

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (Multimedia) (Sem.-2)
COMMUNICATION SKILL

Subject Code : AMT/2071

M.Code : 14009

Date of Examination : 08-05-2024

Max. Marks : 60

Time : 3 Hrs.

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :
 - a) List important components of communication.
 - b) What are salient features of effective communication?
 - c) Write a note on listening skills.
 - d) What are the features of a good resume?
 - e) Define an effective business message.
 - f) What are salient features of a report?
 - g) Differentiate between a long and a short report.
 - h) "*Punctuation is important*". Explain with an example.
 - i) Briefly explain the role of style in communication.
 - j) Discuss essential steps in reading skills.

SECTION-B

2. Discuss different types of reports.
 3. Elaborate strategies for improving oral presentation.
 4. How to prepare for interviews? Discuss.
 5. How do we plan and write documents?
 6. Give in detail the importance of communication in professional life.
- SECTION-C**
7. Discuss various barriers to communication.
 8. Write a business letter asking a firm to give rates of certain computer items required by your company. Imagine details.
 9. Draft an application along with resume for the post of a manager in an organization. Invent relevant details.

SECTION-C

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June - 2024

Total No. of Pages : 02

B.Sc. (BT) (Sem.-2)

INTRODUCTION TO MICROBIOLOGY

Subject Code : BSBT/202/18

M.Code : 75873

Date of Examination : 11-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Answer briefly :
 - a) Define resolving power.
 - b) Explain principle of Gram's staining.
 - c) How steady state is established in a continuous culture?
 - d) Discuss morphological characteristics of algae and fungi.
 - e) What is spontaneous generation theory and how was it disproved?
 - f) Difference between sterilization and disinfection.
 - g) Explain briefly "functions of bacterial cell wall."
 - h) Explain applications of fluorescence microscopy.
 - i) Define synchronous growth.
 - j) Discuss relationship between germ theory of fermentation and germ theory of disease.

SECTION-B

2. Define generation time. Derive an expression for calculating specific growth rate and generation time of a bacterial population.
3. Discuss the various methods of sterilization.
4. Explain the morphology and structure of bacterial cell with the aid of a neatly labeled diagram.
5. Discuss the contribution of Louis Pasteur and Robert Koch in the development of microbiology.
6. Discuss the diseases caused by bacterial pathogens.

SECTION-C

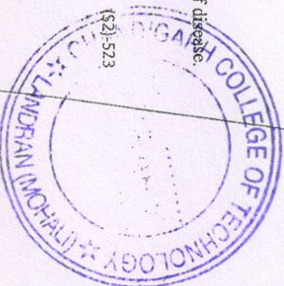
7. How do nitrogen-fixing microbes establish symbiotic relationship with plants, and what are the benefits of these interactions for both the microbes and plants?
8. Write a working principle and applications of :
 - a) Phase contrast microscopy.
 - b) Dark field microscopy.
9. Discuss the microbial classification of fungi.

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June-2024

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Sc. (BT) (Sem.-3)
INTRODUCTION TO COMPUTERS**

Subject Code : BSBT-307-18

M.Code : 76614

Date of Examination : 19-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :

- a) Digital Computer
- b) Software
- c) Algorithm
- d) CU
- e) RAM
- f) Floppy vs HDD
- g) Light pen
- h) Dot Matrix Printer
- i) Sequence alignment
- j) Mouse.

SECTION-B

2. Explain the block diagram of computer.
3. Write a note on functional units and their interrelation.
4. Differentiate between primary storage and secondary storage.
5. Describe any 3 output devices.
6. What is GCG? Explain sequence analysis using GCG.
7. Write a detailed note on sequence alignment and database searching.
8. Discuss with help of a diagram any 4 output devices.
9. Diagrammatically explain the concept of memory hierarchy.

SECTION-C

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June-2024

Total No. of Pages : 03

Total No. of Questions : 09

B.Sc. (BT) (Sem.-3)
MOLECULAR BIOLOGY
Subject Code : BSBT/303/18

M.Code : 76610

Date of Examination : 15-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Write briefly :

- (a) What are introns?
- (b) What is genetic code?
- (c) Explain the elongation step of replication.
- (d) Write a short note on spontaneous mutation.
- (e) What is central dogma of molecular biology?
- (f) Write a short note on amino acid activation.
- (g) Write a short note on regulation of lactose operon.
- (h) What is photoreactivation?
- (i) What is DNA replication?
- (j) Physical and chemical mutagens.

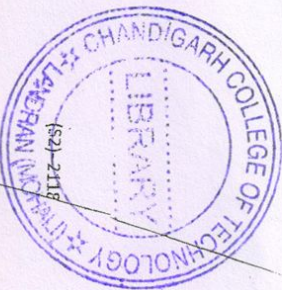
SECTION-B

2. What is the purpose of DNA replication in cells? Describe the semi-conservative model of DNA replication.
3. Describe the process of transcription, including the role of RNA polymerase.
4. Explain the concept of genome organization including the role of histone and non-histone proteins.
5. What do you mean by DNA repair? Give different types of DNA repair mechanism.
6. Explain the positive and negative regulation of lac operon.

SECTION-C

7. Explain the concept of mutations. How do they contribute to genetic diversity in a population and give some genetic disorders caused by mutations?
8. Describe the structure and components of lac operon. How does it function and regulated in bacteria?
9. What is translation, where does it occur in cell? What are key steps of translation and what happen during each step?

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Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (BT) (Sem.-3)

IMMUNOLOGY

Subject Code : BSBT-302-18

M.Code : 76609

Date of Examination : 13-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Write briefly :

- (a) Specific immune response
- (b) Monocytes
- (c) Paratope
- (d) Antibody Diversity
- (e) Complement fixing antibodies
- (f) IgM
- (g) MALT
- (h) T-cell subsets
- (i) Antibody
- (j) Humoral Immunity.

SECTION-B

2. What is Non-Specific immunity and how it is developed in the body?
 3. Draw diagram and discuss role of thymus as organ of immune system.
 4. Discuss molecular mechanism of antibody generation.
 5. Describe mechanism of recognition of antigen by T cells.
 6. Discuss major milestones in immunology.
- SECTION-C**
7. Discuss in detail structure and function of Secondary lymphoid organs.
 8. What are Immunoglobulins? Draw structure of IgE and IgA . Also, explain their functions.
 9. Discuss structure and function of T cell antigen receptors.

SECTION-C

7. Discuss in detail structure and function of Secondary lymphoid organs.
8. What are Immunoglobulins? Draw structure of IgE and IgA. Also, explain their functions.
9. Discuss structure and function of T cell antigen receptors.

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June-2024

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (BT) (Sem.-3)

ORGANIC CHEMISTRY

M.Code : 76608

Date of Examination : 11-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :
 - a) What do you mean by Inductive effect?
 - b) What do you mean by carbocation?
 - c) Explain two physical properties of alcohols.
 - d) Define the Dienes.
 - e) What do you mean by Kekule structure?
 - f) Difference between the singlet and triplet carbene.
 - g) Define the electrophile.
 - h) Define the Hyperconjugation.
 - i) Explain the Reimer Tiemann reaction.
 - j) Define the Resonance.

SECTION-B

2. Explain the acidity of alcohol.
 3. Explain the stability of carbocations.
 4. Explain the mechanism of Kolbe's reaction.
 5. What do you mean by conformation of alkenes?
 6. Difference between electrophile and nucleophile.
- SECTION-C**
7. Explain types of organic reagents.
 8. Explain the methods of formation of cycloalkanes.
 9. Explain the structure of benzene.

SECTION-C

7. Explain types of organic reagents.
8. Explain the methods of formation of cyclonkanes
9. Explain the structure of benzene.

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June-2024

Total No. of Pages : 02

B.Sc. (BT) (Sem.-4)

ANALYTICAL TECHNIQUES IN BIOTECHNOLOGY

Subject Code : BSBT407-18

M.Code : 77696

Date of Examination : 17-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :
 - a) What is ion exchange chromatography?
 - b) What is capillary electrophoresis?
 - c) What is preparative centrifugation?
 - d) What is dark field microscopy?
 - e) Define electrophoretic mobility.
 - f) Define chromophore.
 - g) What is sedimentation coefficient?
 - h) Define K_f value.
 - i) What is Western blotting used for?
 - j) Define molecular polarizability.

SECTION-B

2. Describe the technique of GLC.
3. Discuss Raman spectra of a linear molecule.
4. Write a note on ultracentrifugation.
5. Describe two-dimensional gel electrophoresis.
6. Explain Beer-Lambert law. Discuss principle and applications of absorption spectroscopy.

SECTION-C

7. Describe the principle and applications of nuclear magnetic resonance spectroscopy.
8. Discuss chromatographic techniques used in protein purification.
9. Write a note on :
 - a) PAGE
 - b) SEM.



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June-2024

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Sc. (Biotechnology) (Sem.-4)
INDUSTRIAL BIOTECHNOLOGY**

Subject Code : BSBT/403/18

M. Code : 77692

Date of Examination : 14-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a. Role of carrier in Biofertilizers
- b. Biosafety levels and their significance
- c. Biohazards
- d. Entrapment
- e. Biocatalysis
- f. Biotransformation
- g. VVM
- h. Role of Baffles in bioreactor
- i. Cryogenic Preservation of cultures
- j. Hops.

SECTION-B

2. Describe the role of yeast in industry.
3. Differentiate between beer and wine.
4. Discuss about the key components required for the preparation of growth media.
5. Discuss the function of fringes generator with the help of diagram for microbial production of acetic acid.
6. How bio-fertilizers are better than chemical fertilizers?

SECTION-C

7. Define transformation. Discuss various procedures for yeast transformation.
8. Describe the construction of fermenter with the help of diagrams.
9. Describe the up-streaming and down-streaming process for the production of citric acid.

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June-2024

Roll No.

Total No. of Pages : 02

Total No. of Questions : 07

B.Sc (G&WD) (Sem.-5)

LIGHTING AND RENDERING

Subject Code : UGWD1914

M.Code : 90378

Date of Examination : 18-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.

SECTION-A

1. Write briefly :

- a) What are the primary properties of light in CG rendering?
- b) Define Maya shaders.
- c) List the common types of lights used in CG rendering.
- d) Define the term "Decay rate" in the context of spotlights.
- e) What is the significance of resolution settings in rendering?
- f) What is a three-point light setup in CG?
- g) What is the significance of render quality settings in CG rendering?
- h) What is Global Illumination in rendering?
- i) What is "Caustics" in rendering?
- j) Define "Image Based Lighting" and its significance.

SECTION-B

2. Discuss the importance of shader properties such as ambient, diffuse, and specular in creating realistic CG renders.
3. Explain the importance of depth maps and ray-traced shadows in CG lighting setups, considering their impact on scene accuracy and render times.
4. What are the essential requirements for rendering an image and also explain the steps involved in it?
5. Compare natural and artificial lighting in CG, highlighting their differences and suitability for different scenarios.
6. How would you differentiate between reflection and refraction? Describe the methods for sampling in rendering.
7. Discuss the role of frame range and camera settings in improving rendering quality.

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June-2024

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc (Bio Technology) (Sem.-5)

RENEWABLE ENERGY RESOURCES

Subject Code : BSBT-138/18

M.Code : 78349

Date of Examination : 14-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Write briefly :**
 - a) What environmental benefits does solar energy offer?
 - b) What are the advantages of concentrating collectors?
 - c) Compose the Sunshine Recorder principle.
 - d) What benefits do mini and micro hydro resources offer?
 - e) What are the main drawbacks of wind energy?
 - f) Define the principle of energy conservation.
 - g) How a biogas digester's gas production is quantified?
 - h) Define solar cells.
 - i) Compare and contrast different types of tides.
 - j) Write about different types of wave energy systems.

SECTION-B

2. Describe the solar photovoltaic power generation principle. Talk about how solar PV is used in today's society as well?
3. Discuss the advantages of improved cooking stoves compared to traditional cooking stoves.
4. Explain the fundamental ideas underlying the conversion of wind energy. How is wind energy transformed from kinetic to electrical energy?
5. Clarify the principle operations of OTEC power plant and give the status of OTEC plants in India.
6. Which are the most important design factors for mini-hydropower plants? Write the primary disadvantage of mini-hydropower plants as well.

SECTION-C

- Discuss the different types of solar collectors, such as flat-plate collectors, evacuated tube collectors, and concentrating collectors. What are the distinguishing features and applications of each type?
- What does the term "energy conservation" mean? Describe the connection between environmental sustainability and the protection of natural resources and energy conservation.
- Geothermal resource definition. Describe the many designs of geothermal wells that are used to get energy from the earth.

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June-2024

Total No. of Pages : 02

B.Sc. (Bio Technology) (Sem-6)
DEVELOPMENTAL BIOLOGY
Subject Code : BSBT147/18

M.Code : 79458

Date of Examination : 29-04-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Write briefly :
 - a) Gametogenesis
 - b) Tertiary embryonic induction
 - c) Organogenesis
 - d) Neural induction
 - e) Epiboly
 - f) Holoblastic cleavage
 - g) De-lamination
 - h) Types of eggs
 - i) Noto-genesis
 - j) Implantation.

SECTION-B

2. Differentiate between holoblastic and meroblastic cleavages.
3. Write a note on development of vertebrate eye.
4. Discuss briefly about organized embryo sac with diagram.
5. Describe mechanism of blastulation. Also enlist its types.
6. Give a short note on various types of fertilization.

SECTION-C

7. Illustrate the stages of spermatogenesis with the help of diagram.
8. What are the different types of morphogenetic processes involved in development of organs?
9. Write a detailed note on types of embryonic induction.



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June-2024-24

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (Bio Technology) (Sem.-6)

BIOINFORMATICS

Subject Code : BSBT149-18

M.Code : 79460

Date of Examination : 04-05-2024

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE marks each.
2. SECTION-B contains FIVE questions carrying TWO AND A HALF marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) Limitations of bioinformatics.
- b) Protein databases
- c) Similarity in sequence alignment
- d) Proteomics
- e) Phylogeny
- f) Tools used for structure visualization
- g) e-value of alignment scores
- h) UPGMA
- i) Significance of sequence alignment
- j) Genomics.

SECTION-B

2. Differentiate between local and global alignment.
3. What is BLAST? Give the different types of BLAST.
4. Write a note on genome annotation tools.
5. Discuss Needleman-Wunsch algorithm.
6. Write a note on protein databases with special emphasis on protein data bank.

SECTION-C

7. Discuss in detail / various programs used in heuristic method of sequence alignment.
8. What is homology modeling? Describe various steps involved in modeling of protein by this.
9. Write a detailed note on docking.



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June-2024

SECTION-B

B.Sc. (BT) (Sem.-6)

Subject Code : BSBT/601/18

Date of Examination : 25-04-2024

Time : 3 Hrs.

INSTRUCTIONS TO CANDIDATES:

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What is the difference between technical writing and routine writing?
- b) How do we write a definition?
- c) What points should we keep in mind while analyzing material?
- d) What points should we keep in mind while describing any process?
- e) What are secondary sources?
- f) What is a final draft?
- g) What are professional ethics?
- h) Elaborate one technical writing style.
- i) What is a research report?
- j) List two important points for preparing notes.

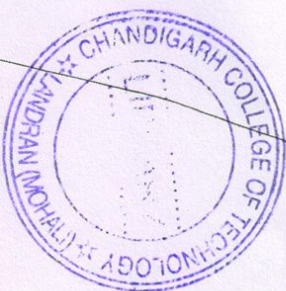
SECTION-B

2. Elaborate different ways of collecting material.
 3. How do we revise a paper?
 4. Discuss writing rough drafts.
 5. Discuss various library resources and how to utilize these?
 6. Elaborate proposal writing.
- SECTION-C**
7. Elaborate how do we describe mechanisms?
 8. Write an application for the post of a Supervisor in a reputed company. Draft your resume. Imagine all details.
 9. Discuss plagiarism in detail.

SECTION-C

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June-2024

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (Bio Technology) (Sem.-6)

PLANT BIOTECHNOLOGY

Subject Code : BSBT151-18

M.Code : 79462

Date of Examination : 16-05-2024

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying TWO and HALF marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Define the following :

- Callus
- Totipotent
- Hydiogenesis
- Chromosome doubling
- Embryonic stem cell
- Suspension culture
- Nodulation
- Ovule culture
- Protoplast
- Embryo.

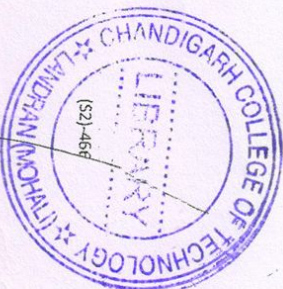
SECTION-B

2. What do you understand by organogenesis? Give detail.
 3. How haploids are produced in cereals?
 4. Describe identification and selection of hybrid cells.
 5. Write a short note on nitrogen fixation.
 6. Discuss about protoplast fusion.
- SECTION-C**
7. Write short notes on embryogenesis and micropropagation.
 8. What are the steps involved in anther culture? Explain in detail.
 9. Give an account of somaclonal variation. Give its application.

SECTION-C

7. Write short notes on embryogenesis and micropropagation.
8. What are the steps involved in anther culture? Explain in detail
9. Give an account of somaclonal variation. Give its application.

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June-2020

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (B.T) (Sem.-6)
BIOTECHNOLOGY AND HUMAN WELFARE

Subject Code : BSBT14B/18

M.Code : 79459

Date of Examination : 30-04-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) Name any two recombinant live vaccines.
- b) Define PHB.
- c) Define Protein engineering.
- d) Name substances used for production of industrial alcohol.
- e) Define Immunogenicity.
- f) Define Electroporation.
- g) Uses of enzymes in food industry.
- h) Define Germ line gene therapy.
- i) Define site directed mutagenesis
- j) Name any two anti-biotic producing bacteria.

SECTION-B

2. Discuss the process of nitrogen fixation with microflora involved and give importance of nitrogen fixation.
3. Discuss briefly degradation pathway of non-chlorinated organic pollutants.
4. Discuss preparation of any one recombinant live vaccine.
5. Discuss the role of forensic science in solving violent crimes.
6. Discuss one biotechnological method for improvement of livestock.

SECTION-C

7. Discuss the method of integrating pest resistance genes into plants citing one example.
8. Discuss the development of PHB.
9. Write short notes on the following :
 - a) Applications of Monoclonal antibodies
 - b) Human Genome Project.



June-2024

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Roll No.
Total No. of Questions : 09

Total No. of Pages : 02

**B.Sc. (BT) (Sem-6)
ENVIRONMENT BIOTECHNOLOGY**

Subject Code : BSBT-150-18

M.Code : 79461

Date of Examination : 07-05-2024

Time: 3 Hrs.

Max. Marks: 40

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying 2½ (Two and Half) marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. Answer briefly:

- i. Define phyto-remediation.
- ii. Enlist harmful effects of chlorinated hydrocarbons.
- iii. Give examples of lignin degrading microorganisms.
- iv. What do you understand by symbiotic nitrogen fixation?
- v. Give composition of biogas.
- vi. What are algal biofertilizers?
- vii. Name important ores of gold.
- viii. Compare conventional and modern fuels.
- ix. What is the environmental significance of plants?
- x. What is municipal waste? Give its composition.

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SECTION-B

2. Write a short note on the microbial remediation of heavy metal ions.
3. What are Biofertilizers? Explain their microbial production and role in environment sustainability.
4. What are Conventional Fuels? How do they differ from modern day fuels? Give examples.
5. Discuss the important methods of producing gasohol from sugars.
6. Define the term Biobleaching. Give methods of extracting gold from its respective ore.

SECTION-C

7. Give a detailed account of microbial degradation of hydrocarbons and oil spills.
8. Explain various methods of treating industrial effluents.
9. What are Biofuels? Explain biochemistry and microbiology of biogas production.



June-2024

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Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (BT) (Sem.-6)

MEDICAL MICROBIOLOGY

Subject Code : BSBT152/18

M.Code : 79463

Date of Examination : 14-05-2024

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying TWO & HALF marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :

- a) What is a septic shock?
- b) What are enterotoxins?
- c) What is food-borne intoxication?
- d) Which is the causative agent of pneumonia?
- e) Define vaccination.
- f) What is systemic infection?
- g) Which is the causative agent of dermatophytosis?
- h) What is the role of probiotics in maintaining gut health?
- i) Which chemotherapeutic agents are administered against *S. aureus* infections?
- j) Describe the characteristics of rhinoviruses.

SECTION-B

2. How can blood-borne infections be detected?
3. Describe the infection caused by *Cryptococcus*.
4. Which disease is caused by the following :
 - a) *N. Gonorrhea*
 - b) *S. Typhi*
 - c) *S. dysenteriae*
 - d) *S. pyogenes*
 - e) *C. perfringens*
5. What are mycotoxins?
6. Write a note on pathogenesis and control of retroviruses.

SECTION -C

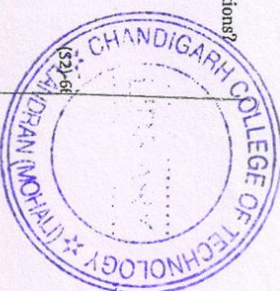
7. Discuss host defense mechanism against invading pathogens.
8. Describe symptoms, treatment and control of protozoal infections.
9. Write short notes on :
 - a) Anthrax
 - b) Candidiasis

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June-2024