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B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS)
Examination: October/November - 2025
Biotechnology in Human Welfare (G05-GE-OE-101)

Max. Marks: 30

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

06

- 1) The term 'Biotechnology' was first coined by: _____.
 - a) Karl Ereky
 - b) Watson
 - c) Norman Borlaug
 - d) Khorana
- 2) Golden rice is rich in: _____.
 - a) Vitamin A
 - b) Vitamin B
 - c) Iron
 - d) Vitamin D
- 3) First cloned animal was: _____.
 - a) Dolly
 - b) Herman
 - c) Oncomouse
 - d) Zebrafish
- 4) PCR is used for: _____.
 - a) DNA amplification
 - b) Protein synthesis
 - c) RNA translation
 - d) Mutation repair
- 5) Surrogate motherhood involves: _____.
 - a) Artificial insemination
 - b) Donated uterus
 - c) IVF
 - d) Egg freezing
- 6) Bt brinjal is developed for resistance against: _____.
 - a) Nematodes
 - b) Bacterial wilt
 - c) Fruit borer
 - d) Rust

06

- Define edible vaccine with one example.
- Write short note on Blue revolution.
- Define immunity and vaccination.
- Explain the importance of Bt cotton.
- Give contribution of Norman Borlaug in biotechnology.

06

- Describe application of biotechnology in medicine.
- Write a note on artificial insemination and IVF.
- Explain role of biotechnology in vermi-technology.

Q.4 Answer the following (Any two) 06

- a) Explain significance of biotechnological revolutions with examples.
- b) Give applications of transgenic animals in human welfare.
- c) Write short note on Indian Biotechnology Institutes.

Q.5 Answer the following (Any one) 06

- a) Discuss role of biotechnology in agriculture with examples.
- b) Explain applications of biotechnology in control of human diseases.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS)
Examination: October/November - 2025
English/ English for communication (ENG-101)

Day & Date: Friday, 07-11-2025
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 Choose correct alternative from the given options. 06

- 1) _____ is useful because it can be saved and referred to later.
 - a) written communication
 - b) gesture
 - c) facial expressions
 - d) oral communication
- 2) _____ barriers are caused by the feelings of the sender or receiver.
 - a) attitudinal
 - b) cultural
 - c) perceptual
 - d) emotional
- 3) _____ is key during an interview.
 - a) Aggressiveness
 - b) Authenticity
 - c) Confidence
 - d) Calmness
- 4) Arriving late to an interview shows _____.
 - a) A lack of time
 - b) A lack of money
 - c) A lack of knowledge
 - d) A lack of respect
- 5) What is the main purpose of a group discussion?
 - a) To identify the smartest participant
 - b) To evaluate one's appearance
 - c) To assess teamwork and leadership skill
 - d) To assess individual communication skills
- 6) Which of the following is positive body language in a group discussion?
 - a) Slouching
 - b) Making eye contact and nodding
 - c) Crossing arms
 - d) Fidgeting

Q.2 Answer the following questions. (Any Two) 06

- a) Write the different between verbal and non-verbal communication with examples.
- b) Write the importance of communication in personal and professional life.
- c) Dos in interview.
- d) What is group discussion?

- Q.3 Answer the following questions. (Any One)** **06**
- a) Describe the process of communication.
 - b) Write a detail note on 7 Cs of communication.
- Q.4 Answer the following questions. (Any One)** **12**
- a) Explain the key steps in preparing for an interview?
 - b) Write a group discussion on the topic, "Impact of mobile on youth: Positive or Negative?" Include different perspectives, agreements, disagreements, and concluding statements.

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Set P

B.Sc. (Biotechnology) (सत्र - I) (नवीन) (NEP CBCS) परीक्षा:

ऑक्टोबर/नोव्हेंबर – २०२५

Constitution of India/ Indian Constitution and Democracy (ICD-101)

वार, दिनांक: शनिवार, ०८-११-२०२५

कमाल गुण: ३०

वेळ: दुपारी १२:०० ते १:३०

- सूचना :** १) सर्व प्रश्न अनिवार्य आहेत.
२) उजवीकडील अंक पूर्ण गुण दर्शवितात.

प्र.१ रिकाम्या जागा भरा.

०६

- १) भारतीय राज्यघटना कधी लागू झाली?
 अ) १५ ऑगस्ट १९४७ ब) २६ जानेवारी १९५०
 क) २६ नोव्हेंबर १९४९ ड) २ ऑक्टोबर १९५०
- २) 'धर्मनिरपेक्ष' हा शब्द प्रस्तावनेत कोणत्या दुरुस्तीने समाविष्ट केला गेला?
 अ) ४२ वी ब) ४४ वी
 क) ५२ वी ड) ७३ वी
- ३) भारतीय राज्यघटनेने किती मूलभूत अधिकार हमी दिले आहेत?
 अ) ५ ब) ६
 क) ७ ड) ८
- ४) भारताची निवडणूक आयोग ही कोणत्या प्रकारची संस्था आहे?
 अ) वैधानिक संस्था ब) खाजगी संस्था
 क) घटनात्मक संस्था ड) सरकारी विभाग
- ५) सुशासनाचा भर कोणत्या गोष्टीवर असतो?
 अ) कायद्याचे राज्य ब) पारदर्शकता
 क) जबाबदारी ड) वरील सर्व
- ६) भारतात मतदानाबाबत जागरूकता कोणत्या मोहिमेद्वारे वाढवली जाते?
 अ) बेटी बचाओ ब) मतदार ओळखपत्र मोहीम
 क) SVEEP ड) नीति आयोग

- प्र.२ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही तीन) 0६
- १) भारतीय राज्यघटनेची कोणतीही दोन वैशिष्ट्ये लिहा.
 - २) भारतीय नागरिकांचे कोणतेही दोन मूलभूत कर्तव्ये लिहा.
 - ३) लोकशाहीची संक्षिप्त व्याख्या द्या.
 - ४) भारताच्या निवडणूक आयोगाचे कोणतेही दोन अधिकार लिहा.
 - ५) SVEEP कार्यक्रमाचे उद्दिष्ट काय आहे?
- प्र.३ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) 0६
- १) प्रस्तावनेचे महत्त्व स्पष्ट करा.
 - २) लोकशाहीचे प्रकार वर्णन करा.
 - ३) भारताच्या निवडणूक आयोगाची रचना सांगा.
- प्र.४ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) 0६
- १) सुशासनाची वैशिष्ट्ये स्पष्ट करा.
 - २) मूलभूत अधिकारांवर लघुनिबंध लिहा.
 - ३) निवडणूक आयोगाच्या कार्याचे वर्णन करा.
- प्र.५ खालील उत्तर द्या. (कोणताही एक) 0६
- १) भारतीय नागरिकांच्या मूलभूत कर्तव्यांवर सविस्तर चर्चा करा.
 - २) भारतातील लोकशाहीची वैशिष्ट्ये व महत्त्व स्पष्ट करा.

Seat No.	
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Set **P****B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS)****Examination: October/November – 2025****Constitution of India/ Indian Constitution and Democracy (ICD-101)**

Day & Date: Saturday, 08-11-2025

Max. Marks: 30

Time: 12:00 PM To 01:30 PM

- Instructions:** 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Choose the correct alternative:**06**

- 1) The Constitution of India came into force on: _____.
a) 15th August 1947 b) 26th January 1950
c) 26th November 1949 d) 2nd October 1950
- 2) The term 'Secular' was added to the Preamble by which amendment?
a) 42nd b) 44th
c) 52nd d) 73rd
- 3) How many fundamental rights are guaranteed by the Indian Constitution?
a) 5 b) 6
c) 7 d) 8
- 4) The Election Commission of India is a/an: _____.
a) Statutory body b) Private body
c) Constitutional body d) Government department
- 5) Good Governance emphasizes: _____.
a) Rule of law b) Transparency
c) Accountability d) All of these
- 6) Voting awareness in India is promoted through which campaign?
a) Beti Bachao b) Voter ID Drive
c) SVEEP d) NITI Aayog

Q.2 Answer the Following (Any Three)**06**

- a) State any two features of the Indian Constitution.
- b) Mention two fundamental duties of an Indian citizen.
- c) Define democracy in brief.
- d) Write any two powers of the Election Commission of India.
- e) What is the objective of the SVEEP program?

- Q.3 Answer the following. (Any Two) 06**
- a) Explain the importance of the Preamble.
 - b) Describe the types of democracy.
 - c) State the structure of the Election Commission of India.
- Q.4 Answer the following. (Any Two) 06**
- a) Explain the features of good governance.
 - b) Write a short note on fundamental rights.
 - c) Describe the functions of the Election Commission.
- Q.5 Answer the following. (Any One) 06**
- a) Discuss in detail the fundamental duties of Indian citizens.
 - b) Explain the features and importance of democracy in India.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS)
Examination: October/November – 2025
Indian Knowledge System/ General IKS (G05-IKS-101)

Day & Date: Monday, 10-11-2025
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 Choose the correct alternative:**06**

- 1) Chanakya was an alumni of _____ university
 - a) Takshshila
 - b) Vikramsinha
 - c) Nalanda
 - d) Vallabhi
- 2) Which philosophy emphasized non-violence (ahimsa) and self discipline for liberation?
 - a) Jainism
 - b) Buddhism
 - c) Yoga
 - d) Nyaya
- 3) What was the significant contribution of the Bodhayana Sutra in ancient Indian mathematics?
 - a) Development of geometry
 - b) Calculation of square roots
 - c) The concept of zero
 - d) Introduction of calculus
- 4) Which traditional Indian medical system emphasizes the balance of bodily elements doshas?
 - a) Unani
 - b) Ayurveda
 - c) Homeopathy
 - d) Naturopathy
- 5) What is one of the primary practices of sustainability in traditional Indian agriculture?
 - a) Monocropping
 - b) Crop rotation
 - c) Use of chemical pesticides
 - d) Large-scale mechanization
- 6) What was the role of sacred groves in ancient India?
 - a) To serve as places of worship and environmental conservation
 - b) To serve as agricultural fields
 - c) To serve as military based
 - d) To serve as market places

Q.2 Answer the Following (Any Three)**06**

- a) What were the main subjects taught as Takṣaśīlā?
- b) Give any two Indian traditions in IKS?
- c) What is the first source of Indian knowledge tradition?

- d) Which metal alloy was developed in India, known for its exceptional quality?
- e) Where did Indus civilization originate?

Q.3 Answer the following. (Any Two) 06

- a) Explain the innovations in ancient India in chemistry?
- b) Discuss the significance of the concept of zero in Indian mathematics.
- c) Describe the traditional Indian approach to water conservation and management

Q.4 Answer the following. (Any Two) 06

- a) How does Ayurveda integrate the concept of balance in health with environmental sustainability
- b) Discuss the role of ancient Indian practices in sustainable agriculture
- c) Explain the role of guru-shishya tradition in the Indian Knowledge System

Q.5 Answer the following. (Any One) 06

- a) Explain characteristic of Indian philosophical and IKS.
- b) Explain the concept of Sattvic food in Ayurveda and its importance for health.

Set P

**B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS) Examination:
October/November - 2025
Biophysics and Chemical Science (G05-0101)**

Max. Marks: 30

- Instructions:** 1) All questions are compulsory.
2) Draw neat diagram and give equations wherever necessary.
3) Figures to the right indicate full marks.

06

- pH of solution is less than 7 the solution is _____.
a) basic b) acidic
c) neutral d) alcoholic
- Phenolphthalein shows pink colour in _____ Medium.
a) basic b) acidic
c) neutral d) alcoholic
- _____ is colligative property.
a) Mass b) Weight
c) Volume d) Osmotic pressure
- What is the unit of entropy?
a) J mol⁻¹ b) JKmol⁻¹
c) J -1k - 1mol-1 d) JK-1 mol-1
- The H-O-H bond angle in water molecule is _____.
a) 104.0 b) 104.5
c) 105.0 d) 105.5
- Energy is measured in _____ units.
a) Joule b) Kelvin
c) Pascal d) Mol

06

- Define Buffer.
- Define Enthalpy.
- Define Centrifugal force.
- What is normality?
- Define Surface Tension.

- Q.3 Answer the following questions. (Any Two) 06**
- a) Write a short note on Molecular structure and function of water.
 - b) Explain physicochemical properties of water.
 - c) Define Colligative properties and explain osmosis and osmotic pressure.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Explain types of bonds in bio-molecules.
 - b) Explain in detail Beer Lambert's Law.
 - c) Write a note on Handerson Hasselbalch equation.
- Q.5 Answer the following questions. (Any One) 06**
- a) Explain in detail Laws of Thermodynamics.
 - b) Describe the sp^3 hybridization with respect to CH_4 as example.

Set P

**B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS) Examination:
October/November - 2025
Biochemistry (G05-0102)**

Max. Marks: 30

Instructions: 1) All questions are compulsory.
2) Draw neat diagram and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and calculator is allowed.
(At. Wts. : H=1, C=12, O=16, N= 14, Na =23, Cl = 35.5)

Q.1 Choose the correct alternative and rewrite the following sentences. 06

- 1) Fat soluble Vitamins are _____.
a) Vitamin A
b) Vitamin B
c) Vitamin B6
d) Vitamin C
- 2) The sugar molecule in a nucleotide is _____.
a) Pentose
b) Hexose
c) Tetrose
d) Triose
- 3) _____ form of lipids are also referred as neutral lipids.
a) Triacylglycerol
b) Steroid
c) Phospholipids
d) Wax
- 4) _____ is the purine base of nucleic acids.
a) Cytosine
b) Thymine
c) Uracil
d) Adenine
- 5) Carbohydrates are also known as _____.
a) Hydrates of carbon
b) Carbonates
c) Glycolipids
d) Polysaccharides
- 6) α -helix has _____.
a) 3.4 amino acid residues/turn
b) 3.6 amino acid residues/turn
c) 3.8 amino acid residues/turn
d) 3.0 amino acid residues/turn

Q.2 Answer the following questions. (Any Three) 06

- Define Monosaccharides with example.
- Define Apoenzyme.
- Explain lock and Key model.
- Draw Structure of B-form of DNA.
- Define Membrane lipids.
- Define hyper-vitaminosis.

- Q.3 Write short notes on the following. (Any Two)** **06**
- a) Define RNA and Explain its types.
 - b) Write a note on properties and function of Monosaccharide.
 - c) Explain water soluble Vitamins.
- Q.4 Answer the following questions. (Any Two)** **06**
- a) Add a note on Structure and Properties of Fatty Acids.
 - b) Discuss classification of proteins based on composition.
 - c) Write a detailed note on adrenal and gonadotropic hormones.
- Q.5 Answer the following questions. (Any One)** **06**
- a) Define Amino acids and write a detailed note on its classification.
 - b) Define Nucleic acids and explain in detail about Composition, structure and nomenclature of nucleotides.

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Set **P**

**B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS) Examination:
October/November - 2025
Fundamentals of Microbiology (G05-0103)**

Day & Date: Wednesday, 12-11-2025
Time: 12:00 PM To 01:30 PM

Max. Marks: 30

- Instructions:** 1) All questions are compulsory.
2) Draw neat diagram and give equations wherever necessary.
3) Figures to the right indicate full marks.

Q.1 Choose correct alternative.**06**

- 1) _____ reproduces by fragmentation. Budding and production of Spores.
 - a) Fungi
 - b) Algae
 - c) Yeast
 - d) Bacteria
- 2) Peptidoglycan is a component of _____.
 - a) Cell membrane
 - b) Cell wall
 - c) Flagella
 - d) Capsule
- 3) Mitochondria is absent in _____ Cell.
 - a) Prokaryotic
 - b) Eukaryotic
 - c) Plant
 - d) Animal
- 4) The structure of _____ is explained by fluid mosaic model.
 - a) Cell wall
 - b) Cell membrane
 - c) Flagella
 - d) Capsule
- 5) The basic taxonomic group in microbial taxonomy is _____.
 - a) Kingdom
 - b) Order
 - c) Species
 - d) Class
- 6) _____ antibiotic was discovered by Alexander Fleming.
 - a) Streptomycin
 - b) Penicillin
 - c) Neomycin
 - d) Tetracycline

Q.2 Answer the following questions. (Any Three)**06**

- a) Write any two functions of cell membrane.
- b) Define viruses and write one example.
- c) Enlist any two names of Gram-negative bacteria.
- d) What is Spontaneous generation?
- e) Define taxonomy.

- Q.3 Answer the following questions. (Any Two) 06**
- a) Write a note on Koch's postulates.
 - b) Write general characters of Archaeobacteria.
 - c) Explain general principles of bacterial nomenclature.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Explain scope of microbiology in different fields.
 - b) Write a note on morphological arrangement of bacteria.
 - c) Write general characters of fungi.
- Q.5 Answer the following questions. (Any One) 06**
- a) Write a note on contribution of Louis Pasteur.
 - b) Differentiate between prokaryotic and eukaryotic cell.

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**B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS) Examination:
October/November - 2025
Taxonomy and Classification (G05-0104)**

Max. Marks: 30

Instructions: 1) All questions are compulsory.
2) Draw neat diagram and give equations wherever necessary.
3) Figures to the right indicate full marks.

06

- 1) Phylum Porifera is classified based on _____.
 - a) Branching
 - b) Symmetry
 - c) Spicules
 - d) Reproduction
- 2) The canal system in sponges develops due to _____.
 - a) Porous walls
 - b) Gastrovascular system
 - c) Reproduction
 - d) Folding of inner walls
- 3) Notochord occurs throughout life and all through the length of the body in _____.
 - a) Cephalochordata
 - b) Hemichordata
 - c) Urochordata
 - d) Vertebrata
- 4) In the five-kingdom system of classification, into which kingdom would you classify nitrogen-fixing organisms and archaea?
 - a) Fungi
 - b) Plantae
 - c) Protista
 - d) Monera
- 5) Which system of classification was used by Linnaeus?
 - a) Phylogenetic system
 - b) Natural system
 - c) Artificial system
 - d) Asexual system
- 6) _____ is the study of the evolutionary history and relationships among individuals or groups of organisms.
 - a) Taxonomy
 - b) Phylogenetics
 - c) Organization
 - d) Nomenclature

06

- Define phylogeny.
- Define chordates and give suitable examples of mammals.
- Write concept of domain.
- Write any 2 Salient features of ICBN.
- Differentiate between Conventional and Numerical Taxonomy.

- Q.3 Answer the following questions. (Any Two) 06**
- a) Write down Economic Importance of Fungi.
 - b) Explain characters of Archaeobacteria.
 - c) Write a short note Introduction to the classification by G. M. Smith.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Discuss Salient features of nonchordates.
 - b) Explain general characters of amphibian.
 - c) Write a note on Binomial Nomenclature.
- Q.5 Answer the following questions. (Any One) 06**
- a) Explain in detail General characters and Economical importance of Algae.
 - b) Discuss General organization and classification of chordates.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS)
Examination: October/November - 2025
Animal Physiology (G05-0105)

Day & Date: Thursday, 13-11-2025
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

- Instructions:**
- 1) All questions are compulsory.
 - 2) Draw neat diagram and give equations wherever necessary.
 - 3) Figures to the right indicate full marks.
 - 4) Use of logarithmic table and calculator is allowed.
- (At. Wts. : H=1, C=12, O=16, N= 14, Na =23, Cl = 35.5)

Q.1 Choose correct alternative and rewrite the following sentence. 06

- 1) Respiration is a _____.
 a) Reductive process b) Catabolite repression
 c) Intermediate process d) Oxidative process
- 2) Na^+ and other carrier ions facilitate absorption of _____.
 a) amino acids and glucose b) fatty acids and glucose
 c) amino acids and fructose d) fatty acids and glycerol
- 3) _____ carries deoxygenated blood to the lungs from the right ventricle.
 a) Aorta b) Pulmonary artery
 c) Pulmonary vein d) None of the above
- 4) This is the functional unit of the kidney _____.
 a) Nephrons b) Medulla
 c) Hilum d) Neurons
- 5) _____ artery passes blood to the kidney.
 a) Coeliac b) common iliac
 c) Renal d) Cystic
- 6) The outer layer of the kidney is called _____.
 a) Medulla b) Cortex
 c) Pelvis d) Capsule

Q.2 Answer the following questions. (Any Three) 06

- a) Define Chloride shift.
- b) Explain Composition of Blood.
- c) Explain Composition of Bile.
- d) Draw structure of Nerve Cell.
- e) Define Cardiac cycle.

- Q.3 Write short notes on the following. (Any Two) 06**
- a) Add a note on Mechanism of digestion.
 - b) Explain Male and female reproductive system with hormonal regulation.
 - c) Write a note on Mechanism of coagulation of blood.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Write a note on Endocrine gland and their hormones.
 - b) Define Circulation and explain Mechanism of working of heart.
 - c) Write a note on absorption and assimilation of carbohydrates.
- Q.5 Answer the following questions. (Any One) 06**
- a) Define Respiration and explain respiratory system, mechanism and exchange of gases.
 - b) Define Excretory System and explain its structure and ultrafiltration of kidney.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS)
Examination: October/November - 2025
Plant Physiology (G05-0106)

Day & Date: Thursday, 13-11-2025
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

- Instructions:** 1) All questions are compulsory.
 2) Draw neat diagram and give equations wherever necessary.
 3) Figures to the right indicate full marks.

Q.1 Choose correct alternative.**06**

- 1) Which one of the following is the complex tissues?
 - a) Parenchyma
 - b) Collenchyma
 - c) Sclerenchyma
 - d) Xylem
- 2) _____ is a function of stomata.
 - a) Transpiration
 - b) Photosynthesis
 - c) Transport
 - d) Perspiration
- 3) In rainy season, doors get swelled up due to _____.
 - a) Diffusion
 - b) Transpiration
 - c) Imbibition
 - d) Respiration
- 4) _____ is a plant macronutrient.
 - a) Nitrogen
 - b) Zinc
 - c) Cobalt
 - d) Copper
- 5) _____ is a simple plant tissue.
 - a) Mesophyll
 - b) Xylem
 - c) Phloem
 - d) Cambium
- 6) _____ is the process of converting atmospheric nitrogen (N₂) into a form that plants can use.
 - a) Denitrification
 - b) Nitrogen fixation
 - c) Nitrogen evaporation
 - d) Composting

Q.2 Answer the following questions. (Any Three)**06**

- a) Define osmosis.
- b) What is a complex plant tissue? Give example of it.
- c) Define transpiration.
- d) Enlist plant growth hormones.
- e) Which are the plant utilizable forms of nitrogen?

- Q.3 Answer the following questions. (Any Two) 06**
- a) Describe growth curve.
 - b) Explain Calvin cycle.
 - c) Write a note on Stomata- mechanism of opening & closing.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Write about ammonium assimilation in plant.
 - b) Explain in brief Nitrogen fixation.
 - c) Write about leaf anatomy.
- Q.5 Answer the following questions. (Any One) 06**
- a) What are essentiality of plant nutrients? Explain roles and deficiency systems of nutrients.
 - b) Explain concept of two photo systems and add a note on photophosphorylation.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - II) (New) (NEP CBCS)
Examination: October/November – 2025
Basic Computer Science (G05-GE-OE-201)

Day & Date: Thursday, 06-11-2025

Max. Marks: 30

Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 Choose correct alternative.**06**

- 1) The two kinds of main memory are _____.
 a) Primary and secondary b) Random and sequential
 c) ROM and RAM d) All of above
- 2) A byte consists of _____.
 a) One bit b) Four bits
 c) Eight bits d) Sixteen bits
- 3) Properly arranged data is called _____.
 a) Information b) Words
 c) Field d) File
- 4) People often call _____ as the brain of computer system.
 a) Control Unit b) Arithmetic Logic Unit
 c) Central Processing Unit d) Storage Unit
- 5) _____ short cut key used for Open find box.
 a) Ctrl + P b) Ctrl + F
 c) Ctrl + O d) Ctrl + M
- 6) The data we enter into the computer is called the _____.
 a) Output b) Database
 c) Notes d) Input

Q.2 Answer the following questions. (Any Three)**06**

- a) Define memory unit.
- b) What is meant by Website?
- c) Write types of computers.
- d) Explain page formatting in MS Word.
- e) Write a short note on online security.

- Q.3 Answer the following questions. (Any Two) 06**
- a) Write and explain Functions of Computer.
 - b) Write brief account on introduction and history of computer.
 - c) Explain types of software with examples.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Write a brief account on MS-Office and its products.
 - b) Give note on Computer organization with schematic diagram.
 - c) Describe in detail computer networking with its type.
- Q.5 Answer the following questions. (Any One) 06**
- a) Write brief account on generation of computers and research oriented applications.
 - b) Give note on programming languages.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - II) (New) (NEP CBCS)
Examination: October/November – 2025
English/ English for communication (ENG-201)

Day & Date: Friday, 07-11-2025
 Time: 03:00 PM To 04:30 PM

Max. Marks: 30

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 Choose correct alternative.**06**

- 1) Which tone is used in Yes/no questions?
 - a) Falling
 - b) Neutral
 - c) Flat
 - d) Rising
- 2) What can block effective listening?
 - a) Active focus
 - b) Personal bias
 - c) Clear speech
 - d) Interest in the topic
- 3) What is the first step in the listening process?
 - a) Responding
 - b) Evaluating
 - c) Receiving
 - d) Remembering
- 4) What is the key purpose of formal writing?
 - a) Casual conversation
 - b) Sharing structured and professional communication
 - c) Expressing emotions informally
 - d) Using slang and abbreviations
- 5) Which of the following is NOT a characteristic of a good newspaper report?
 - a) Objectivity
 - b) Concise information
 - c) Personal opinions
 - d) Fact-based reporting
- 6) Which of the following is essential in an email subject line?
 - a) Long sentences
 - b) Clear and concise information
 - c) Personal greetings
 - d) irrelevant details

Q.2 Answer the following questions. (Any Two)**06**

- a) When to use the falling tone.
- b) What is newspaper report?
- c) Write practice exercises to improve tone usage.
- d) Write three tips for blog writing?

- Q.3 Answer the following questions. (Any One) 06**
- a) Write definition of rising tone? When to Use the Rising Tone?
 - b) What are the types of listening?
- Q.4 Answer the following questions. (Any One) 12**
- a) What are the essential parts of an email? Explain their purpose and importance.
 - b) Write parts of newspaper reports and explain guidelines for writing newspaper reports.

Set **P**

B.Sc. (Biotechnology) (Semester - II) (New) (NEP CBCS)
Examination: October/November – 2025
Environmental Studies (ENS-24)

Day & Date: Saturday, 08-11-2025
Time: 03:00 PM To 04:30 PM

Max. Marks: 30

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate marks.

Q.1 Choose the Correct Alternative:

06

- 1) The World Environment Day _____.
 - a) 5th June
 - b) 5th May
 - c) 5th October
 - d) 5th July
- 2) The term "Ecosystem" was first introduced by _____.
 - a) Robert hook
 - b) Watson
 - c) A. G. Tansley
 - d) E. P. Odum
- 3) Study of interrelationship between organism & environment is called _____.
 - a) Ecology
 - b) Energy flow
 - c) Food chain
 - d) Biodiversity
- 4) Transfer of Food material from one organism to next organism is called as _____.
 - a) Food Web
 - b) Food Chain
 - c) Ecosystem
 - d) Ecology
- 5) Green Plant is also called as _____.
 - a) Autotrophic
 - b) Heterotrophic
 - c) Chemotrophic
 - d) Consumer
- 6) Bacteria, virus, fungi include in _____.
 - a) Consumer
 - b) Decomposer
 - c) Producer
 - d) Plant

Q.2 Answer the following. (Any Three)

06

- Define- Environment.
- Example of Food Chain.
- Types of Biodiversity.
- Causes of Noise Pollution.
- Types of Environments.

- Q.3 Answer the following. (Any Two) 06**
- a) Explain detail causes of Air Pollution.
 - b) Explain-Types of Ecosystems.
 - c) Explain in detail Scope of Environment.
- Q.4 Answer the following. (Any Two) 06**
- a) Explain Renewable Energy.
 - b) Explain- Causes & Effect of Soil Pollution.
 - c) Nature of Environment.
- Q.5 Answer the following. (Any One) 06**
- a) Explain in detail term of Biodiversity.
 - b) Explain in detail Water Pollution -causes, effect, & control measure.

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B.Sc. (Biotechnology) (सत्र - II) (नवीन) (NEP CBCS) परीक्षा:
ऑक्टोबर/नोव्हेंबर – २०२५
Co-Curricular Course
National Service Scheme (CC-201)

कमाल गुणः ३०

वेळ: दुपारी ०३:०० ते ०४:३०

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.

૨) ઉજવીકડીલ અંક પૂર્ણ ગુણ દર્શવિતાત.

प्र.१ खालील दिलेले योग्य पर्याय निवडून गाळलेल्या जागा भरा.

03

- १) ——— हा दिवस राष्ट्रीय सेवा योजना दिन म्हणून साजरा केला जातो.
अ) २४ सप्टेंबर
ब) १२ जानेवारी
क) १५ ऑगस्ट
ड) २६ जून
- २) एन. एस. एस प्रतीक चक्र हे ——— कडून घेतले आहे.
अ) लाल किल्ला
ब) अशोक चक्र
क) सूर्य मंदिर
ड) कुतुबमिनार
- ३) राष्ट्रीय सेवा योजनेची सुरुवात ——— या वर्षी झाली.
अ) १९७५
ब) १९५०
क) १९६९
ड) १९४७
- ४) राष्ट्रीय सेवा योजनेच्या एका वर्षात ——— तास काम करणे अपेक्षित असते.
अ) १००
ब) २४०
क) ८०
ड) १५०
- ५) रा.से.यो च्या विशष शिबिराचे आयोजन ——— दिवस केले जाते.
अ) ७
ब) ८
क) ९
ड) १०
- ६) “ मी माझ्यासाठी नसून इतरांसाठी ” हे घोषवाक्य ——— चे आहे.
अ) राष्ट्रीय सेवा योजना
ब) रोजगार हमी योजना
क) एनजीओ
ड) स्वयं बचत गट

- प्र.२ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही तीन) 0६
- अ) रा.से.या.कार्यक्रमाचे वर्गीकरण सांगा.
 ब) रक्तदानाची आवश्यकता का आहे?
 क) राष्ट्रीय सेवा योजनेची उद्दिष्टे लिहा.
 ड) महिला सक्षमीकरणाची गरज का आहे?
 इ) माय भारत पोर्टलची संकल्पना सांगा.
- प्र.३ खालील प्रश्नांची थोडक्यात उत्तरे लिहा. (कोणतेही दोन) 0६
- अ) दत्तक खेड्यामध्ये नियमित उपक्रमावर चर्चा करा.
 ब) विशेष शिबिर कार्यक्रमातील पूर्वतयारी लिहा.
 क) रा.से.यो.चा इतिहास लिहा.
- प्र.४ खालील प्रश्नाचे सविस्तर उत्तर लिहा. (कोणताही एक) 0६
- अ) रा.से.यो. चे महत्व स्पष्ट करा.
 ब) मतदार जनजागृती आणि नावनोंदणी शिबीर यावर चर्चा करा
- प्र.५ दीर्घोत्तरी प्रश्नाची उत्तरे लिहा. 0६
- वृक्षरोपण आणि स्वच्छता मोहीम यावर वृत्तात द्या.

Seat No.	
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Set **P**

**B.Sc. (Biotechnology) (Semester-II) (New) (NEP CBCS) Examination:
October/November - 2025
Co-Curricular Course
National Service Scheme (CC-201)**

Day & Date: Monday, 10-11-2025
Time: 03:00 PM To 04:30 PM

Max. Marks: 30

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Choose the correct alternative.**06**

- 1) _____ is celebrated as the N.S.S. day.
 - a) 24th September
 - b) 12th January
 - c) 15th August
 - d) 26th June
- 2) The N.S.S. emblem chakra has been taken from _____.
 - a) Red Fort
 - b) Ashok Chakra
 - c) Surya temple
 - d) Kutubminar
- 3) The National Service Scheme is started in the year of _____.
 - a) 1975
 - b) 1950
 - c) 1969
 - d) 1947
- 4) _____ is the number of hours the N.S.S. volunteers expected to work during the year.
 - a) 100
 - b) 240
 - c) 80
 - d) 150
- 5) The N.S.S. special camp is held for _____ days.
 - a) 7
 - b) 8
 - c) 9
 - d) 10
- 6) "Not me but you" is a motto of _____.
 - a) N.S.S.
 - b) Employment Guarantee Scheme
 - c) N.G.O
 - d) Self-Saving Group

Q.2 Write answer of the following questions. (Any Three)**06**

- a) State the Classification of NSS Programme
- b) Why is important of Blood Donation.
- c) Write the Objective of NSS
- d) Why need is Women empowerment.
- e) State of Concept of My Bharat Portal.

- Q.3 Write Short answers to questions. (Any Two) 06**
- a) Discuss the Regular activities in Adopted Village
 - b) Write the Preparation of Special Camping Programme
 - c) Write the History of NSS
- Q.4 Write answers to broad questions. (Any One) 06**
- a) Explain the Importance of NSS.
- OR**
- b) Discuss the Voter Awareness and Registration Camp.
- Q.5 Write answers to broad questions. 06**
- Give account of a Tree Plantation and Cleanup drive.

Set

P

B.Sc. (Biotechnology) (सत्र - II) (नवीन) (NEP CBCS) परीक्षा:

ऑक्टोबर/नोव्हेंबर - २०२५

Co-Curricular Course

National Cadet Corps (CC-202)

वार, दिनांक: सोमवार, १०-११-२०२५

कमाल गुणः १५

वेळ: दुपारी ०३:०० ते ०४:३०

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.

૨) ઉજવીકડીલ અંક પૂર્ણ ગુણ દર્શવિતાત.

प्र.१ खालील दिलेल्या योग्य पर्याय निवडून गाळलेल्या जागा भरा.

0%

१) काही — गुण बदलता येत नाहीत.

अ) नविन

ब) दत्तक

ક) જન્મજાત

ड) नैसर्गिक

२) एखाद्याला ---- मार्फत व्यक्त करता येते.

અ) તોંડી

ब) हावभाव

क) लेखी

ड) वरीलपैकी सर्व

३) व्यक्तिमत्त्व ---- नुसार बदलते.

अ) प्रत्येक व्यक्ती

ब) वेळ

क) काम

ड) वरीलपैकी कोणतेही नाही.

૪) સ્વતઃલા ખુપ વેગલે સમજણે મ્હણજે ---.

अ) अतिअहंकारी व्यक्तिमत्त्व

ब) स्वयःप्रेरित

क) आनंदी

ड) वास्तव

प्र.२ खालील प्रश्नांची उत्तरे लिहा (कोणतेही दोन)

08

अ) व्यक्तिमत्व विकासासाठी कोणत्याही दोन टिप सांगा.

ब) व्यक्तिमत्त्व विकासासाठीचे कोणतेही दोन घटक सांगा.

क) 'समर्थन आणि आदर' ची उदाहरणे द्या.

ड) प्रामाणिकपणाची उदाहरणे द्या.

प्र.३ चारित्र कसे सुधारावे? यावर टिप लिहा.

0३

प्र.४ व्यक्तिमत्व विकासामध्ये एन.सी.सी. कॅडेट ची भूमिका स्पष्ट करा.

08

किंवा

उत्तम नेतृत्वासाठी महत्वाची मूल्ये स्पष्ट करा.

Seat No.	
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Set	P
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**B.Sc. (Biotechnology) (Semester-II) (New) (NEP CBCS) Examination:
October/November - 2025
Co-Curricular Course
National Cadet Corps (CC-202)**

Day & Date: Monday, 10-11-2025
Time: 03:00 PM To 04:30 PM

Max. Marks: 15

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Choose the correct Alternative and fill in the blanks **04**

- 1) Few _____ traits can not changed.

a) new	b) adopted
c) inborn	d) natural
- 2) One can express through _____.

a) oral	b) gestures
c) written	d) all of the above
- 3) The personality vary as per _____.

a) Individuals	b) time
c) work	d) None of these
- 4) Thinking oneself very different is _____.

a) superego	b) self motivation
c) pleasure	d) reality

Q.2 Attempt of the following questions. (Any Two) **04**

- a) Mention any two tips for personality development
- b) State any two factors for personality development
- c) Give example of support & respect.
- d) Give examples of honesty.

Q.3 Write a note on How to improve character? **03**

Q.4 Explain role of NCC cadet in personality development **04**

OR

Explain important values for a good leader.

Seat No.	
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Set	P
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B.Sc. (Biotechnology) (सत्र - II) (नवीन) (NEP CBCS) परीक्षा:
ऑक्टोबर/नोव्हेंबर - २०२५
Co-Curricular Course
Sports (CC-203)

वार, दिनांक: सोमवार, १०-११-२०२५
वेळ: दुपारी ०३:०० ते ०४:३०

कमाल गुण: १५

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.
२) उजवीकडील अंक पूर्ण गुण दर्शवितात.

प्र.१ खालील दिलेल्या योग्य पर्याय निवडून गाळलेल्या जागा भरा.

०४

- १) खेळामध्ये एक अद्वितीय — असतो.

अ) तंत्राचा संच	ब) हालचालीचा संच
क) तंत्राचा व हालचालीचा संच	ड) यापैकी काहीही नाही
- २) सांघिक खेळासाठी — आवश्यक आहे.

अ) समन्वय	ब) रणनिती
क) सांघीक कार्य	ड) वरील सर्व
- ३) सचिन तेंडुलकर हा — खेळातील प्रसिद्ध खेळाडू आहे.

अ) फुटबॉल	ब) टेनिस
क) क्रिकेट	ड) हॉकी
- ४) खेळ हा — प्रकारचा उपक्रम आहे.

अ) मानसिक	ब) शारिरीक
क) सामाजिक	ड) वरील सर्व

प्र.२ टिपा लिहा. (कोणत्याही तीन)

०६

- अ) खेळाचे मानसिक फायदे
- ब) वैयक्तिक खेळाची यादी
- क) खेळाद्वारे शारिरीक विकास
- ड) खेळाचा आधुनिक इतिहास
- इ) खेळातील शारिरीक हालचाली

प्र.३ खालील प्रश्नांची उत्तरे लिहा. (कोणताही एक)

०५

- अ) खेळाची संकल्पना स्पष्ट करा.
- ब) सांघीक खेळाविषयी सविस्तर माहिती लिहा.

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**B.Sc. (Biotechnology) (Semester-II) (New) (NEP CBCS) Examination:
October/November – 2025
Co-Curricular Course
Sports (CC-203)**

Day & Date: Monday, 10-11-2025
Time: 03:00 PM To 04:30 PM

Max. Marks: 15

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Choose the correct Alternative and fill in the blanks **04**

- 1) Sport involves a unique _____.
 a) set of techniques
 b) set of movements
 c) set of technique and movements
 d) none of These

- 2) Team sport is requires _____.
 a) Coordination
 b) Strategy
 c) teamwork
 d) Above all

- 3) Sachin Tendulkar is popular sportsmen of _____ sports.
 a) Football
 b) Tennis
 c) Cricket
 d) Hockey

- 4) A sport is _____ Activity.
 a) Mental
 b) Physical
 c) Social
 d) Above all

Q.2 Write short notes. (Any Three) **06**

- a) Mental Benefits of sports.
- b) List of individual sports
- c) Physical Development in sports
- d) Modern History of sports
- e) Physical movements in sports.

Q.3 Answer the following questions. (Any One) **05**

- a) Explain the concept of sports.

OR

- b) Explain about Team sports.

Set	P
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B.Sc. (Biotechnology) (सत्र - II) (नवीन) (NEP CBCS) परीक्षा:
ऑक्टोबर/नोव्हेंबर – २०२५
Co-Curricular Course
Culture (CC-204)

कमाल गुणः ३०

वेळ: दुपारी ०३:०० ते ०४:३०

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.

૨) ઉજવીકડીલ અંક પૂર્ણ ગુણ દર્શવિતાત.

03

- १) संवाद न करता केवळ हावभाव याद्वारे अभिनय केला जातो त्यास ---- म्हणतात.
अ) लावणी
ब) अभिनय
क) मुकनाट्य
ड) एकांकी
- २) अजिंठा येथे कोरलेल्या लेण्या ---- प्रकारात येतात.
अ) संगीत
ब) शिल्पकला
क) नाट्यकला
ड) वास्तुकला
- ३) ---- हे उत्कृष्ट तबलावादक म्हणून ओळखले जातात.
अ) अजय अतुल
ब) उस्ताद जाकिरहुसेन
क) राम कदम
ड) यापैकी नाही
- ४) खालील वादय भजनात वापरले जाते नाही ----.
अ) पखवाज
ब) हार्मोनियम
क) टाळ
ड) गिटार
- ५) ---- नाट्य प्रकार रस्त्यावर करता येतो.
अ) एकांकिका
ब) लघुनाट्य
क) पथनाट्य
ड) एकपात्री
- ६) काव्य सादरीकरणास ---- म्हणतात.
अ) कवितावाचन
ब) भजन
क) मुकनाट्य
ड) लेखन

- प्र.२ टिपा लिहा. (कोणत्याही दोन) 0६
- अ) संगीत या विषयाची व्याख्या लिहा.
- ब) तुम्हाला माहिती असलेल्या कोणत्याही चार शिल्पांची नावे लिहा.
- क) भारतातील कोणत्याही चार प्रसिद्ध गायकांची नावे लिहा.
- ड) भारतातील कोणत्याही चार प्रसिद्ध वादकांची नावे लिहा.
-
- प्र.३ खालील प्रश्न सोडवा. 0६
- भजनात वापरल्या जाणाऱ्या साहित्याचा नावे लिहा व तुम्हाला माहित असलेल्या एकादया भजनाचा (भक्तीगीत) सारांश लिहा.
-
- प्र.४ खालील प्रश्नाचे उत्तर लिहा. (कोणताही एक) १२
- अ) अभिनय म्हणजे काय सांगा व अभिनयाचे प्रकार सांगून सविस्तर उत्तर लिहा.
- किंवा**
- ब) रांगोळी या कला प्रकाराचे भारतीय समाजातील स्थान लिहा व रांगोळी कोणत्या ठिकाणी व कोणत्या प्रसंगात काढली जाते सविस्तर उत्तर लिहा.

Set

P

**B.Sc. (Biotechnology) (Semester-II) (New) (NEP CBCS) Examination:
October/November - 2025
Co-Curricular Course
Culture (CC-204)**

Max. Marks: 30

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Choose the correct alternative. **06**

- 1) Acting without dialogue is done only through gestures and is called _____

 - a) Lavani
 - b) Acting
 - c) Mute
 - d) Ekaanki
- 2) The caves carved at Ajanta are of _____ type

 - a) Music
 - b) Sculpture
 - c) Drama
 - d) Architecture
- 3) _____ He is Known as an excellent tabla player

 - a) Ajay Atul
 - b) Ustad Zakir Hussain
 - c) Ram Kadam
 - d) None of these
- 4) The following instrument is not used in Bhajan _____

 - a) Pakhwaj
 - b) Harmonium
 - c) Tal
 - d) Guitar
- 5) _____ Drama can be performed on the street.

 - a) Ekaanki
 - b) Short play
 - c) Pathanatthi
 - d) Ekapatri
- 6) Poetry presentation is called _____

 - a) Poetry recitation
 - b) Bhajan
 - c) Mute
 - d) Writing

Q.2 Write Notes. (Any Two) **06**

- Write a definition of the subject of music.
- Write the names of any four sculptures that you know.
- Write the names of any four famous singers in India.
- Write the names of any four famous musicians in India.

Q.3 Solve the following questions. 06

Write the names of the materials used in Bhajans and write a summary of the Ekadaya Bhajan (Bhakti Geet) that you know.

Q.4 Solve the following questions (Any One)

12

- a)** Explain what is acting and write a detailed answer by mentioning the types of acting.

OR

- b)** Write the place of the art form Rangoli in Indian Society and write a detailed answer in which place and on which occasion Rangoli is drawn.

Seat No.	
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Set	P
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B.Sc. (Biotechnology) (सत्र - II) (नवीन) (NEP CBCS) परीक्षा:

ऑक्टोबर / नोव्हेंबर — २०२५

Co-Curricular Course

Health Wellness, Fitness (CC-205)

वार, दिनांक: सोमवार, १०-११-२०२५

कमाल गुण: १५

वेळ: दुपारी ०३:०० ते ०४:३०

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.

२) उजवीकडील अंक पूर्ण गुण दर्शवितात.

प्र.१ योग्य पर्याय लिहा.

०४

१) ——— हे रोगप्रतिकारक शक्तीचे प्राथमिक कार्य आहे?

- अ) शरीराचे तापमान नियंत्रित करणे
- ब) रक्तातील ऑक्सिजन वाहतूक चालणे.
- क) संसर्गजन्य रोगाविरुद्ध
- ड) वरील सर्व

२) ——— जीवनसत्त्वा अभावी स्कर्वी हा रोग होतो.

- अ) क
- ब) ड
- क) ब
- ड) अ

३) जागतिक आरोग्य संघटनेचे मुख्यालय ——— या ठिकाणी आहे.

- अ) ढाका
- ब) कतार
- क) भोपाळ
- ड) जिनेव्हा

४) ——— याला वैयक्तिक स्वच्छता म्हणता येईल.

- अ) हात धुणे
- ब) नखे काढणे
- क) दात घासणे
- ड) वरील सर्व

प्र.२ खालील प्रश्नांची थोडक्यात उत्तरे लिहा. (कोणतेही तीन)

०६

- अ) आरोग्याची व्याख्या लिहा.
- ब) शारीरिक तंदुरुस्तीचे घटक लिहा.
- क) वैयक्तिक स्वच्छता मधील दोन घटक लिहा.
- ड) एन. आय. एच. चे कार्य लिहा.

प्र.३ सविस्तर उत्तरे लिहा. (कोणताही एक)

०५

- अ) समतोल आहार म्हणजे काय सविस्तर लिहा.
- ब) जागतिक आरोग्य संघटनेचे कार्य लिहा.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - II) (New) (NEP CBCS)
Examination: October/November - 2025
Co-Curricular Course
Health Wellness, Fitness (CC-205)

Day & Date: Monday, 10-11-2025
 Time: 03:00 PM To 04:30 PM

Max. Marks: 15

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 Choose the correct alternative.**04**

- 1) _____ is the primary function of the immune system?
 - a) Regulating body temperature
 - b) Transporting oxygen in the blood
 - c) Fighting infectious diseases
 - d) All of the above.
- 2) _____ Vitamin deficiency causes scurvy.

a) C	b) D
c) B	d) A
- 3) The headquarter of the World Health Organization is located in _____.

a) Dhaka	b) Qatar
c) Bhopal	d) Geneva
- 4) _____ can be called personal hygiene.

a) Washing hands	b) Cutting nails
c) Brushing teeth	d) All of the above

Q.2 Write short answers. (Any Three)**06**

- a) Write the definition of Health.
- b) Write the components of physical fitness.
- c) Write two components of personal hygiene.
- d) Write the functions of NIH.

Q.3 Write the detail answer (Any One)**05**

- a) Describe the balanced diet in detail?
- b) Write the Functions of World Health Organization?

Set	P
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B.Sc. (Biotechnology) (सत्र - II) (नवीन) (NEP CBCS) परीक्षा:

ऑक्टोबर / नोव्हेंबर - २०२५

Co-Curricular Course

Yoga Edu./Performing Arts (CC-206)

वार, दिनांक: सोमवार, १०-११-२०२५

कमाल गुणः १५

वेळ: दुपारी ०३:०० ते ०४:३०

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.

૨) ઉજવીકડીલ અંક પૂર્ણ ગુણ દર્શવિતાત.

प्र.१ योग्य पर्याय लिहा.

08

१) प्राणायाम ही क्रिया ---- यांच्याशी निगडित आहे.

अ) स्नायू संस्था

ब) श्वसन संस्था

क) मज्जा संस्था

ड) रक्ताभिसरण संस्था

२) — हे पोटावरील आसन आहे.

अ) भुजंगासन

ब) पद्मासन

क) वक्रासन

ड) शवासन

३) योग दिवस म्हणून खालीलपैकी कोणता दिवस साजरा केला जातो?

अ) ८ मार्च

ब) १ मे

क) २१ जून

ड) १५ ऑगस्ट

४) — हे बैठ्या स्थितीतील आसन आहे.

अ) पद्मासन

ब) भूजंगासन

क) ताडासन

ड) शवासन

प्र.२ खालील प्रश्नांची उत्तरे लिहा (कोणतेही तीन)

03

अ) योग साधनेचे फायदे सांगा.

ब) योगाच्या व्याख्या लिहा

क) शीतली प्राणायाम कृती लिहा.

ड) वक्रासन या आसना विषयी कृती लिहा.

प्र.३ सविस्तर उत्तरे लिहा. (कोणताही एक)

04

अ) कोणत्याही पाच आसनांची कृती लिहा व त्याचे फायदे सांगा.

किंवा

ब) प्राणयामाची व्याख्या देऊन माहिती लिहा.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - II) (New) (NEP CBCS)
Examination: October/November - 2025
Co-Curricular Course
Yoga Edu./Performing Arts (CC-206)

Day & Date: Monday, 10-11-2025
 Time: 03:00 PM To 04:30 PM

Max. Marks: 15

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 Choose the correct alternative. 04

- 1) Pranayama is associated with the _____ system.

a) Muscular system	b) Respiratory system
c) Nervous system	d) Circulatory system
- 2) _____ is a posture done on the abdomen.

a) Bhujangasana	b) Padmasana
c) Vakrasana	d) Shavasana
- 3) Which of the following days is celebrated as Yoga Day?

a) 8th March	b) 1st May
c) 21st June	d) 15 th August
- 4) _____ is a seated posture.

a) Padmasana	b) Bhujangasana
c) Tadasana	d) Shavasana

Q.2 Answers the following. (Any Three) 06

- a) Explain the benefits of yoga practice.
- b) Write the definitions of yoga.
- c) Write the procedure for Sheetal Pranayama.
- d) Write the procedure of Vakrasana (twisting pose).

Q.3 Write the detail answer. (Any One) 05

- a) Write the procedure and benefits of any five yoga postures.
- OR**
- b) Give the definition of Pranayama and explain it.

Seat No.	
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Set **P**

**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
October/November - 2025
Developmental Biology (G05-0201)**

Day & Date: Tuesday, 11-11-2025
Time: 03:00 PM To 04:30 PM

Max. Marks: 30

- Instructions:**
- 1) All questions are compulsory.
 - 2) Draw neat diagram and give equations wherever necessary.
 - 3) Figures to the right indicate full marks.

Q.1 Choose correct alternative.**06**

- 1) A person with tetraploidy will have _____ set of chromosomes in their Spermatids.

a) haploid	b) triploid
c) diploid	d) polyploid
- 2) Embryo sac is found in _____.

a) Ovary	b) Embryo
c) Endosperm	d) Ovule
- 3) _____ layer of egg cell prevents entry of other sperms.

a) Corpus luteum	b) Zona pellucida
c) Endometrium	d) Corona radiata
- 4) All the cells of the plant are descendants of _____ of the following.

a) Apical tissue	b) Intercalary tissue
c) Meristem	d) Zygote
- 5) Hormones that cause uterus to contract are _____.

a) FSH and LH	b) Prolactin and progesterone
c) Estrogen and progesterone	d) Oxytocin and prostaglandins
- 6) The root and shoot apex of a plant represent _____ phase of the growth.

a) Maturation	b) Elongation
c) Meristematic	d) Elevation

Q.2 Answer the following questions. (Any Three)**06**

- a) Define organ polarity.
- b) Define insemination.
- c) Define Embryogenesis.
- d) Draw neat and labelled diagram of sperm.
- e) Draw neat and labelled diagram of seed.

- Q.3 Write short notes. (Any Two)** **06**
- a) Spermatogenesis.
 - b) Double fertilization in angiosperms.
 - c) Migration of pronuclei.
- Q.4 Answer the following questions. (Any Two)** **06**
- a) Write a note on establishment of symmetry in plants.
 - b) Write a note on embryo sac development.
 - c) Write a note on types of eggs.
- Q.5 Answer the following questions. (Any One)** **06**
- a) What is cleavage? Explain in details its mechanism including steps.
 - b) What is organogenesis? Describe in details floral meristem and floral development in *Arabidopsis*.

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**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
October/November - 2025
Ecology (G05-0202)**

Max. Marks: 30

Instructions: 1) All questions are compulsory.
2) Draw neat diagram and give equations wherever necessary.
3) Figures to the right indicate full marks.

Q.1 Select the most correct alternative from among those given below. 06

- 1) The set of ecosystems is called as _____.
a) Biosphere b) Atmosphere
c) Ecosphere d) Hydrosphere
- 2) The relationship between Algae and Fungi in lichens is _____.
a) Parasitism b) Symbiosis
c) Commensalism d) Protocooperation
- 3) _____ organism always obtain their energy from dead organic matter.
a) Consumer b) Decomposer
c) Fungi d) Producer
- 4) The most important reason for decrease in biodiversity is _____.
a) Habitat Pollution b) Introduction of Exotic Species
c) Habitat destruction d) over-exploitation
- 5) The second trophic level in a Lake is _____.
a) Benthos b) Zooplanktons
c) Phytoplankton d) Fungi
- 6) _____ biodiversity hotspots are in India.
a) Four b) Three
c) Two d) Five

Q.2 Answer the following questions. (Any Three) **06**

- Define Mortality.
- Define Autecology.
- Define Energy flow.
- Define Ecosystem.
- Define Biodiversity.
- Define Parasitism.

- Q.3 Write Short Notes. (Any Two)** **06**
- a) Explain about the Interspecific associations in animals.
 - b) Give a note on Attributes of populations.
 - c) Give a brief account on the community characteristics.
- Q.4 Answer the following questions. (Any Two)** **06**
- a) Describe in detail about the abiotic factors and its effects on animals.
 - b) Describe about the faunal adaptation in aquatic ecosystem.
 - c) Explain in brief about the food chain with reference to pond ecosystem.
- Q.5 Answer the following questions. (Any One)** **06**
- a) Describe in detail about the biodiversity hot-spot and scared groves in India with examples.
 - b) Write about the history and scope of ecology.

Seat No.	
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Set **P**

**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
October/November - 2025
Cell Biology (G05-0203)**

Day & Date: Wednesday, 12-11-2025
Time: 03:00 PM To 04:30 PM

Max. Marks: 30

- Instructions:** 1) All questions are compulsory.
2) Draw neat diagram and give equations wherever necessary.
3) Figures to the right indicate full marks.

Q.1 Choose correct alternative.**06**

- 1) _____ organelle functions in cellular respiration.
 - a) Lysosome
 - b) endoplasmic reticulum
 - c) Mitochondrion
 - d) Golgi apparatus
- 2) Which of the following is found in plant cells, but not animal cells?
 - a) cell wall
 - b) Vacuole
 - c) Mitochondria
 - d) endoplasmic reticulum
- 3) The region of a chromosome where two sister chromatids are held together is called a _____.
 - a) Spindle
 - b) Centromere
 - c) Nucleosome
 - d) Centriole
- 4) Eukaryotic cells contain a variety of specialized structures known collectively as _____.
 - a) Cell membranes
 - b) Tissues
 - c) Organs
 - d) Organelles
- 5) Cytoskeleton is made up of _____.
 - a) calcium carbonate
 - b) cellulose deposits
 - c) lipid chains
 - d) protein filaments
- 6) _____ are the agent's promoting carcinogenesis.
 - a) Fusagens
 - b) Cryoprotectants
 - c) Osmoticum
 - d) Carcinogens

Q.2 Answer the following questions. (Any Three)**06**

- a) What are eukaryotes? Give an example.
- b) Discuss the significance of meiosis.
- c) Draw a labeled diagram of ultra structure of chloroplast.
- d) Differentiate between plant and animal cell.
- e) State the principles of cell theory.

- Q.3 Answer the following questions. (Any Two) 06**
- a) Explain organization of bacterial cell.
 - b) Describe types of chromosomes based on centromere.
 - c) Explain Structure and function of microfilament.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Explain in brief Cell cycle.
 - b) Describe Structure of Endoplasmic Reticulum.
 - c) Write Characteristics of cancer.
- Q.5 Answer the following questions. (Any One) 06**
- a) Give a detailed account on Mitosis and write its significance.
 - b) Explain in detail ultrastructure and functions of mitochondrion.

Seat No.	
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Set **P**

**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
October/November - 2025
Cell Physiology (G05-0204)**

Day & Date: Wednesday, 12-11-2025
Time: 03:00 PM To 04:30 PM

Max. Marks: 30

- Instructions:**
- 1) All questions are compulsory.
 - 2) Draw neat diagram and give equations wherever necessary.
 - 3) Figures to the right indicate full marks.

Q.1 Multiple choice questions**06**

- 1) _____ is the process by which cells interact and attach to neighboring cells through specialized molecules of the cell surface.
 - a) Cell Migration
 - b) Cell Division
 - c) Cell Development
 - d) Cell adhesion
- 2) Which of the following is not a feature of the chemical synapse?
 - a) Slow
 - b) Common
 - c) Neurotransmitters
 - d) Multidirectional
- 3) _____ type of signaling, the cell that expresses messenger molecules also produces receptors.
 - a) Autocrine
 - b) Heterocrine
 - c) Paracrine
 - d) Endocrine
- 4) Name the tissues that are involved in the formation of membranes.
 - a) Epithelial tissue
 - b) Nervous tissue
 - c) Muscular tissue
 - d) Connective tissue
- 5) The process in which cell uptakes extracellular material bound to cell surface receptors is known as _____.
 - a) Phagocytosis
 - b) Pinocytosis
 - c) receptor mediated endocytosis
 - d) bulk phase endocytosis
- 6) Semi-permeable membrane is selective membrane which does not permit the passage of dissolved _____ particles.
 - a) Solvent
 - b) Solute
 - c) Anhydrous
 - d) Saturated

- Q.2 Answer the following questions. (Any Three) 06**
- a) Define osmosis.
 - b) Define quorum sensing.
 - c) Define endocytosis.
 - d) Define ligand.
 - e) Draw neat and labelled diagram of Nerve cell.
- Q.3 Write short notes on the following. (Any Two) 06**
- a) Secondary messengers.
 - b) Extracellular matrix.
 - c) Lipid bilayer.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Write a note on membrane pumps.
 - b) Write a note on Microbial growth rate and growth yield.
 - c) Write a note on signal transduction pathway.
- Q.5 Answer the following questions. (Any One) 06**
- a) What is organelle? Explain in details role of Golgi and ER in protein synthesis.
 - b) Describe in details structure and function of Muscle and Connective tissue.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - II) (New) (NEP CBCS)
Examination: October/November - 2025
Plant Tissue Culture (G05-0205)

Day & Date: Thursday, 13-11-2025
 Time: 03:00 PM To 04:30 PM

Max. Marks: 30

- Instructions:** 1) All questions are compulsory.
 2) Draw neat diagram and give equations wherever necessary.
 3) Figures to the right indicate full marks.

Q.1 Choose correct alternative.**06**

- 1) Dry heat sterilization required _____ temperature for sterilization of equipment.
 - a) 45 minutes at 160 °C
 - b) 18 minutes at 110 °C
 - c) 7.5 minutes at 120 °C
 - d) 8 minutes at 120 °C
- 2) Somaclonal variation can be obtained by _____.
 - a) Application of colchicine
 - b) Hybridization
 - c) Irradiation with gamma rays
 - d) Tissue culture
- 3) The tissue obtained from a plant to be cultured is called an _____.
 - a) Callus
 - b) Explant
 - c) Plant
 - d) Cultured plant
- 4) Laboratory fumigation can be done by using _____.
 - a) 95% ethanol
 - b) Formalin and Potassium permanganate
 - c) Sterile water
 - d) Autoclave
- 5) _____ is a macronutrient required for plant growth.
 - a) Nitrogen
 - b) Iron
 - c) Copper
 - d) Zinc
- 6) Single cells with their walls stripped off are known as _____.
 - a) Protoplasts
 - b) Endosperm
 - c) Hybrids
 - d) Cybrids

Q.2 Answer the following questions. (Any Three)**06**

- a) Define Plant tissue culture.
- b) What is totipotency?
- c) Define Callus.
- d) Define hybrid plants.
- e) What is Plant hardening?

- Q.3 Answer the following questions. (Any Two) 06**
- a) Write a note on Cryopreservation.
 - b) What are the applications of micropropagation?
 - c) Explain Culture media composition and their significance.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Write a short note on callus culture and its application.
 - b) Explain in brief artificial seed production.
 - c) Explain in brief Protoplast isolation.
- Q.5 Answer the following questions. (Any One) 06**
- a) Give a detailed account on somatic embryogenesis and discuss factors affecting somatic embryogenesis.
 - b) Explain various sterilization techniques and add a note on maintenance of aseptic conditions and practices in plant tissue culture laboratory.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - II) (New) (NEP CBCS)
Examination: October/November - 2025
Animal Tissue Culture (G05-0206)

Day & Date: Thursday, 13-11-2025
 Time: 03:00 PM To 04:30 PM

Max. Marks: 30

- Instructions:** 1) All questions are compulsory.
 2) Draw neat diagram and give equations wherever necessary.
 3) Figures to the right indicate full marks.

Q.1 Choose correct alternative. 06

- 1) _____ prepared by inoculating directly from the tissue of an organism to culture media.
 - a) Primary cell culture
 - b) Secondary cell culture
 - c) Cell lines
 - d) Transformed cell culture
- 2) _____ minutes it takes for the autoclave to complete its cycle.
 - a) 30-35
 - b) 50- 60
 - c) 15-20
 - d) 120
- 3) _____ is the characteristics of a normal cell.
 - a) Anchorage independent
 - b) Continuous cell lines
 - c) Dependent on external growth factor
 - d) No contact inhibition
- 4) _____ is a cell line.
 - a) Multilayer culture
 - b) Transformed cells
 - c) Multiple growth of cells
 - d) Sub culturing of primary culture
- 5) Which of the following is NOT the part of growth medium for animal culture?
 - a) Starch
 - b) Serum
 - c) Carbon source
 - d) Inorganic salts
- 6) Viability is defined as a percentage of _____ in a whole population.
 - a) non-living cells
 - b) Dead cells
 - c) live cells
 - d) Unstained cells

Q.2 Answer the following questions. (Any Three) 06

- a) Draw neat, labelled diagram of LAF.
- b) Write short note on serum.
- c) Define Cell synchronization.
- d) Define natural media give one example.

- Q.3 Write Short note of the following: (Any Two) 06**
- a) Explain in details the criterion for subculture.
 - b) Explain in details the cell counting methods.
 - c) Explain in details the karyotyping as a cell identification test.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Explain in details the strategies to maintain cell line.
 - b) Write a note on substrate for cell growth.
 - c) Write a note on balanced salt solution.
- Q.5 Answer the following questions. (Any One) 06**
- a) Explain in details the layout ATC lab along with its application.
 - b) What is trypsinization? Explain its method in details.

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Set **P**

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: October/November - 2025
Nutrition and Balanced Diet (G05-GE-OE-0301)

Day & Date: Tuesday, 28-10-2025
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

Instructions: 1) All questions are compulsory.
 2) Draw neat diagram and give equations wherever necessary.
 3) Figures to the right indicate full marks.

Q.1 Choose correct alternative. 06

- 1) _____ term for insufficient intake of nutrients over a prolonged period.
 - a) Overnutrition
 - b) Undernutrition
 - c) Balanced diet
 - d) Thermic effect
- 2) _____ methods involves heating food to a high temperature to kill all microorganisms, including spores.
 - a) Blanching
 - b) Pasteurization
 - c) Sterilization
 - d) Freezing
- 3) The Food Safety and Standards Act in India was enacted in which year?
 - a) 1998
 - b) 2001
 - c) 2011
 - d) 2006
- 4) _____ factors does not affect Basal Metabolic Rate.
 - a) Color of food
 - b) Age
 - c) Gender
 - d) Body composition
- 5) _____ fat-soluble vitamin is essential for blood clotting.
 - a) Vitamin A
 - b) Vitamin K
 - c) Vitamin D
 - d) Vitamin E
- 6) _____ mineral is primarily stored in bones and required for muscle function.
 - a) Iron
 - b) Zinc
 - c) Calcium
 - d) Iodine

Q.2 Attempt the following. (Any Three) 06

- a) Define canning.
- b) Define hypertonic.
- c) Define lipid.
- d) Define blanching.
- e) Give names of fat-soluble vitamins.

- Q.3 Write short note. (Any Two)** **06**
- a) Explain dietary fiber.
 - b) Explain scopes of food preservation.
 - c) Explain mandatory and voluntary food law.
- Q.4 Write short note. (Any Two)** **06**
- a) Explain composition of body fluids.
 - b) Explain factors affecting BMR.
 - c) Explain contraction of ECF.
- Q.5 Answer the following questions. (Any One)** **06**
- a) What is nutrition? Explain in details food and nutrient supplement.
 - b) What is protein? Explain in details its classification and function.

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Set

P

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: October/November - 2025
Health and Hygiene (G05-GE-OE-0302)

Day & Date: Tuesday, 28-10-2025
Time: 12:00 PM To 01:30 PM

Max. Marks: 30

- Instructions:** 1) All questions are compulsory.
2) Draw neat diagram and give equations wherever necessary.
3) Figures to the right indicate full marks.

Q.1 Choose correct alternative.**06**

- 1) _____ does not affect health.
 - a) Genetic disorders
 - b) Infections
 - c) Life Style
 - d) Health Insurance
- 2) Which of the following is not considered to be a nutrient in food?
 - a) Lipids
 - b) Protein
 - c) Water
 - d) Minerals
- 3) Importance of handwashing _____.
 - a) It removes dirt but not germs
 - b) It removes germs and prevents their spread
 - c) It makes hands smell good
 - d) It strengthens the nails
- 4) _____ is purpose of food hygiene.
 - a) To make food taste better
 - b) To prevent food contamination and spoilage
 - c) To reduce the cost of food
 - d) To make food look more appealing
- 5) "Hygiene" refers to _____.
 - a) only cleanliness of body
 - b) Eating healthy food
 - c) Doing regular exercise
 - d) Practice and habits that maintain health and prevent disease
- 6) _____ is the primary aim of practicing personal hygiene.
 - a) To improve social status
 - b) To maintain physical, mental, and social well-being
 - c) To impress others
 - d) To avoid medical check-up

- Q.2 Answer the following questions. (Any Three) 06**
- a) Define dynamicity.
 - b) Define nutrition.
 - c) Define infection.
 - d) Define social hygiene.
 - e) Explain importance of water.
- Q.3 Write short notes on the following. (Any Two) 06**
- a) Explain body odour.
 - b) Explain effects of lack of exercise.
 - c) Explain life style habits.
- Q.4 Write short notes on the following. (Any Two) 06**
- a) Explain factors influencing health.
 - b) Explain culinary hygiene.
 - c) Differentiation between good and Mal nutrition
- Q.5 Answer the following questions. (Any One) 06**
- a) What is medical hygiene? Explain in details food and water borne disease.
 - b) Define health. Explain in details its various types.

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Set P

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: October/November - 2025
English (G05-ENG-301)

Day & Date: Wednesday, 29-10-2025
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 A) Multiple choice questions. 06

- 1) "The Ghagra in Spate" is poem written by _____.
 a) Keki N. Daruwalla b) R. Parthasarathy
 c) Shiv K. Kumar d) Toru Dutt
- 2) According to Gieve Patel the Process of Killing a Tree is _____.
 a) Not simple b) Not difficult
 c) Easy d) None of these
- 3) The poem 'A Goodbye Party for Miss Pushpa T.S.' is a _____ by Nissim Ezeikel.
 a) love poem b) spiritual poem
 c) satirical poem d) religious poem
- 4) Who is the author of the short story "The Doctor's Word"?
 a) Ruskin Bond b) Mulk Raj Anand
 c) R. K. Narayan d) Khushwant Singh
- 5) What happens to the child at the fair?
 a) He falls sick b) He gets lost in the crowd
 c) He meets a friend d) He finds money
- 6) Who becomes the narrator's first friend in the story 'The Old Banyan Tree'?
 a) A parrot b) A red squirrel
 c) A small grey squirrel d) A monkey

Q.2 Write short answers. (Any Two) 06

- a) What is the occasion in the poem 'A Goodbye Party for Miss Pushpa T.S'?
- b) What ironic or satirical element does Daruwalla include?
- c) Where is the banyan tree located in the story?
- d) Who is Dr. Raman?

- Q.3 Write short answers. (Any One)** **06**
- a) What is the main theme of the poem “On Killing a Tree”?
 - b) What philosophical conclusion does the poet Shiv Kumar reach about the need for pilgrimage?
- Q.4 Write the detail answer. (Any One)** **12**
- a) Describe the character of Dr. Raman in the R.K. Narayan’s story 'The Doctor's World'.
 - b) Describe the main theme of the short story 'The Lost Child' by Mulk Raj Anand in detail.

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B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: October/November – 2025
Immunology – I (G05-DSC1-0301)

Day & Date: Thursday, 30-10-2025
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

- Instructions:** 1) All questions are compulsory.
 2) Draw neat diagrams and give equations wherever necessary.
 3) Figures to the right indicate full marks.

Q.1 Choose correct alternative. (MCQ)

06

- 1) Which one of the following is the characteristic feature of Innate Immunity?

a) specificity	b) diversity
c) memory	d) non-specific
- 2) T helper (TH) cells are _____.

a) CD4+	b) CD8+
c) mlg+	d) NK+
- 3) Blood borne antigens are trapped in _____ (secondary lymphoid organ).

a) Bone marrow	b) Thymus
c) Spleen	d) Lymph node
- 4) _____ is any substance (usually foreign) that binds specifically to an antibody or a T-cell receptor.

a) Antibody	b) Antigen
c) Immunoglobulin	d) Adjuvant
- 5) _____ are low-molecular-weight secretory proteins that regulate the intensity and duration of the immune response by exerting a variety of effects on lymphocytes and other immune cells that express the appropriate receptor.

a) Cytokines	b) Antigens
c) Immunoglobulins	d) Immunogens
- 6) _____ is the deposition of opsonins on an antigen, thereby promoting stable adhesive contact with an appropriate phagocytic cell.

a) Programmed Cell Death	b) Apoptosis
c) Amebiosis	d) Opsonization

- Q.2 Answer the following. (Any Three) 06**
- a) Explain skin as a barrier of First line of Defense of innate immunity.
 - b) Enlist the types of organs of immune system.
 - c) Explain immunogenicity and antigenicity.
 - d) What is an immunoglobulin? Enlist its types.
 - e) Which type of T cells are class I and class II MHC restricted?
- Q.3 Answer the following. (Any Two) 06**
- a) Explain role of biological system in immunogenicity.
 - b) Write a note on hematopoiesis.
 - c) Write a general account on classical pathway of complement activation.
- Q.4 Answer the following. (Any Two) 06**
- a) Explain the structure and functions of B lymphocyte.
 - b) Describe the structure of class II MHC molecule.
 - c) Explain properties of cytokines.
- Q.5 Answer the following. (Any One) 06**
- a) Discuss in detail the structure and functions of thymus.
 - b) Explain in detail basic structure and biological function of antibody.

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B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: October/November – 2025
Molecular Biology – I (G05-DSC1-0302)

Day & Date: Friday, 31-10-2025
Time: 12:00 PM To 01:30 PM

Max. Marks: 30

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks
3) Draw neat labelled diagrams equations wherever necessary.

Q.1 Multiple choice question.

06

- 1) DNA was discovered by a Swiss researcher _____.
 - a) Avery
 - b) Macleod
 - c) Mac Cary
 - d) Fried rich Miescher
- 2) B-DNA has _____ helix type.
 - a) Right Handed
 - b) Left Handed
 - c) Zig Zag
 - d) Twisted
- 3) The enzyme _____ has the proof reading function.
 - a) DNA polymerase
 - b) RNA polymerase
 - c) DNA ligase
 - d) DNA helicase
- 4) The unwinding of DNA produces single stranded regions which is stabilized by _____.
 - a) DNA polymerase
 - b) Topoisomerase
 - c) SSB protein
 - d) DNA helicase
- 5) The tritiated thymidine will selectively label only _____.
 - a) Triton
 - b) Thymine
 - c) DNA
 - d) RNA
- 6) Blenders experiment was performed by _____.
 - a) Griffith
 - b) Lederberg
 - c) Hershey and chase
 - d) Watson and crick

Q.2 Answer the following. (Any Three)

06

- Define nucleic Acid.
- Define central dogma.
- Define cot curve.
- Define DNA topology.
- Define denaturation.
- Define linking number.

- Q.3 Write short notes on of the following. (Any Two) 06**
- a) Types of DNA.
 - b) Genetic code.
 - c) Rolling circle model.
- Q.4 Answer of the following. (Any Two) 06**
- a) Write in detail Griffith's experiment.
 - b) Write in detail organization of DNA in prokaryotes.
 - c) Write in detail about mismatch repair mechanism.
- Q.5 Answer of the following. (Any One) 06**
- a) Explain in Detail Genetic code and its properties.
 - b) Explain the process of replication in eukaryotes.

Set

P

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: October/November - 2025
Genetics - I (G05-DSC2-0303)

Day & Date: Saturday, 01-11-2025
Time: 12:00 PM To 01:30 PM

Max. Marks: 30

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.

Q.1 Choose the correct alternatives from the options. 06

- 1) Individual having dissimilar traits (alleles) on homologous chromosomes are called as _____.
 - a) Heterozygous
 - b) Homozygous
 - c) Dominant
 - d) Recessive
- 2) The cell in which the F factor carries along with it some chromosomal genes are known as _____.
 - a) F+ cell
 - b) F- cell
 - c) F' cell
 - d) F'' cell
- 3) Linkage in Drosophila was first discovered by _____.
 - a) Jeffrey Leon Bridges
 - b) Thomas Hunt Morgan
 - c) Gregor Johann Mendel
 - d) Bateson and Punnet
- 4) ABO blood group system is due to _____.
 - a) Multifactorial inheritance
 - b) Multiple allelism
 - c) Incomplete dominance
 - d) Epistasis
- 5) Back cross with recessive parent is called _____.
 - a) Monohybrid Cross
 - b) Multiple cross
 - c) Single Cross
 - d) Test cross
- 6) _____ the Father of Genetics.
 - a) Mendel
 - b) Lamark
 - c) Darwin
 - d) Robert Hook

Q.2 Answer the following. (Any Three) **06**

- What is the law of Segregation?
- Define Back Cross.
- Define Supplementary Gene.
- What is Heredity?
- Define Dihybrid Cross.
- Define Y linked genes.

- Q.3 Write short notes of the following. (Any Two) 06**
- a) Write a note on Incomplete dominance with suitable example
 - b) Explain multiple alleles with Suitable example.
 - c) Explain in detail about Mendel's Laws.
- Q.4 Answer the following. (Any Two) 06**
- a) Write a brief note on Complete and incomplete sex-linked genes.
 - b) Explain in detail about Different types of Crossing over and its Significance.
 - c) Write a note on monohybrid and Dihybrid cross with its example.
- Q.5 Answer the following (Any One) 06**
- a) Discuss in detail about Law of Co-Dominance with Suitable example.
 - b) Write a detailed note on transformation.

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Set **P**

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: October/November – 2025
Bioinstrumentation – I (G05-DSC2-0304)

Day & Date: Monday, 03-11-2025
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

- Instructions:**
- 1) All questions are compulsory.
 - 2) Draw neat diagram and give equations wherever necessary.
 - 3) Figures to the right indicate full marks.

Q.1 Choose correct alternative.**06**

- 1) Which of the following are Physical methods of cell disruption?
 - a) mortar and pestle
 - b) mechanical blender
 - c) Homogenizer
 - d) All of the above
- 2) _____ are ions or small molecules that are used for increase the water solubility of nonpolar substances.
 - a) chelating agents
 - b) Hypochlorites
 - c) SDS
 - d) chaotropic agents
- 3) Applied centrifugal field (G) that is determined by the radial distance (r) of the particle from the axis of rotation and the square of the _____ (□) of the rotor.
 - a) angular velocity
 - b) Mass
 - c) Density
 - d) Gravity
- 4) _____ is based on the extraction of the analytes from aqueous mixtures using a low-boiling-point water-immiscible solvent.
 - a) Dialysis
 - b) Salting out
 - c) Solvent extraction
 - d) Filtration
- 5) _____ is the basis of all forms of chromatography.
 - a) Distribution
 - b) partition coefficient
 - c) both a and b
 - d) sedimentation coefficient
- 6) _____ is the migration of a charged particle under the influence of an electric field.
 - a) Chromatography
 - b) Electrophoresis
 - c) Centrifugation
 - d) Sterilization

- Q.2 Answer the following questions. (Any Three) 06**
- a) Explain ultrasonicator.
 - b) Differentiate between preparative and analytical centrifuges.
 - c) What is Dialysis?
 - d) Enlist components of Electrophoresis unit.
 - e) Define Isoelectric point.
- Q.3 Answer the following questions. (Any Two) 06**
- a) Explain Biological methods of cell disruption by using enzymes.
 - b) Write a note on Isoelectric focussing.
 - c) Write a brief account on Concentration of Biomolecules by Salting out with ammonium sulphate.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Write a note on Cry pulverization.
 - b) Write principle of ion exchange chromatography.
 - c) Explain principle of agarose gel electrophoresis.
- Q.5 Answer the following questions. (Any One) 06**
- a) Discuss in detail centrifugation.
 - b) Explain in detail Southern blotting.

- ६) ——— चे मुख्य काम म्हणजे भारतातील सामाजिक-आर्थिक सर्वेक्षणे करणे आणि विविध क्षेत्रांतील आकडेवारी गोळा करणे.
- अ) राष्ट्रीय नमुना सर्वेक्षण संघटना
 - ब) राष्ट्रीय कुटुंब आरोग्य सर्वेक्षण
 - क) सामाजिक-आर्थिक सर्वेक्षण
 - ड) जनगणना

प्र.२ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन)

०६

- अ) स्वयंसेवकाची संकल्पना लिहा.
- ब) धोरणात्मक नियोजनाची वैशिष्ट्ये सांगा.
- क) सामाजिक-आर्थिक सर्वेक्षणाची गरज लिहा.
- ड) राष्ट्रीय कुटुंब आरोग्यसर्वेक्षणाचे उद्देश सांगा.

प्र.३ खालील प्रश्नाचे उत्तर लिहा. (कोणताही एक)

०६

- अ) भारतातील स्वयंसेवकाची आदर्श भूमिका लिहा.
- ब) सामाजिक – आर्थिक सर्वेक्षणाची प्रक्रिया लिहा.

प्र.४ खालील प्रश्नाचे सविस्तर उत्तर लिहा. (कोणताही एक)

१२

- अ) संवाद कौशल्येचे प्रकार स्पष्ट करा.
- ब) राष्ट्रीय नमुना सर्वेक्षण संघटना यावर चर्चा करा.

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Set **P**

B.Sc. (Biotechnology) (Semester-III) (New) (NEP CBCS)
Examination: October/November - 2025
Co-Curricular Course
National Service Scheme (G05-CC-301)

Day & Date: Tuesday, 04-11-2025
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 Choose the correct alternatives from the options.**06**

- 1) _____ is the focus of N.S.S..
 - a) Principal
 - b) Volunteers
 - c) Programme Officer
 - d) Headmaster
- 2) _____ means the ability to guide, inspire, and motivate individuals or groups to achieve common goals.
 - a) Leadership
 - b) Training
 - c) Planning
 - d) Interview
- 3) _____ it involves a systematic process that effectively collects the desired information.
 - a) Questionnaire
 - b) Training
 - c) Planning
 - d) Interview
- 4) Census is conducted in India every _____ year.
 - a) 12
 - b) 10
 - c) 05
 - d) 08
- 5) The main types of communication skills are divided into four categories: verbal, nonverbal, written, and _____.
 - a) Invisible
 - b) Non-written
 - c) Visual
 - d) Non-verbal
- 6) _____ is main work to conduct socio-economic surveys in India and collect statistics in various sectors.
 - a) National Sample Survey Organization
 - b) National Family Health Survey
 - c) Socio-Economic Survey
 - d) Census

Q.2 Answer the following questions. (Any Two)**06**

- a) Write the Concept of Volunteerism.
- b) State the characteristics of Strategic planning.
- c) Write the Need of Social- Economics survey.
- d) State the Objective of National Family Health Survey.

- Q.3 Write Short answer to questions. (Any One)** **06**
- a) Write the Role Models of Volunteerism in India.
 - b) Write the Process of Social- Economics survey.
- Q.4 Broad Question. (Any One)** **12**
- a) Explain the type of Communication Skills.
 - b) Discuss the National Sample Survey Organization.

Seat No.	
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B.Sc. (Biotechnology) (सत्र - III) (नवीन) (NEP CBCS) परीक्षा:

ऑक्टोबर / नोव्हेंबर - २०२५

Co-Curricular Course

National Cadet Corps (G05-CC-302)

वार, दिनांक: मंगळवार, ०४-११-२०२५

कमाल गुणः १५

वेळ: दुपारी १२:०० ते ०१:००

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.

૨) ઉજવીકડીલ અંક પૂર્ણ ગુણ દર્શવિતાત.

प्र.१ योग्य पर्याय निवडा.

0%

१) — हे नविन निर्माण झालेले एन्. सी. सी. डायरेक्टरेट आहे.

अ) उत्तरांचल

ब) महाराष्ट्र

क) राजस्थान

ड) यापैकी एकही नाही

२) 'जय जवान, जय किसान' घोषणा — यांनी दिली.

अ) जवाहरलाल नेहरू

ब) लाल बहादूर शास्त्री

क) महात्मा गांधी

ड) यापैकी एकही नाही

३) वृक्षारोपण हा ---- चा एक भाग आहे.

अ) ड्रिल

ब) वेपन ट्रेनिंग

क) समाजसेवा

ड) यापैकी एकही नाही

४) भारतात एकूण — एन्. सी. सी. डायरेक्टरेट्स आहेत.

અ) ૧૪

ब) १५

क) १६

੬) ੧੭

प्र.२ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन)

08

अ) रक्तदानासाठी आवश्यक असणारी पात्रता लिहा.

બ) સમાજસેવેચી ઉદ્દેશ લિહા.

क) एन्. सी. सी. मधील कॅम्पची नावे लिहा.

प्र.३ टिप लिहा.

03

एन. सी. सी. मध्ये केली जाणारी समाजसेवेची कामे.

प्र.४ नेतृत्वाचे मूलभूत गुणसविस्तर लिहा.

08

किंवा

आदर्श नागरिकाची कर्तव्ये आणि अधिकार सविस्तर लिहा.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: October/November – 2025
Co-Curricular Course
National Cadet Corps (G05-CC-302)

Day & Date: Tuesday, 04-11-2025
 Time: 12:00 PM To 01:00 PM

Max. Marks: 15

Instructions: 1) All questions are compulsory.
 2) Right side number indicates marks.

Q.1 Multiple choice questions. 04

- 1) _____ is a newly raised N.C.C. directorate.

a) Uttaranchal	b) Maharashtra
c) Rajasthan	d) None of these
- 2) _____ gave the slogan, 'Jai Jawan, Jai Kisan'.

a) Jawaharlal Nehru	b) Lal Bahadur Shastri
c) Mahatma Gandhi	d) None of these
- 3) Tree plantation is a part of _____.

a) drill	b) weapon training
c) social service	d) None of these
- 4) There are _____ NCC directorates in India.

a) 14	b) 15
c) 16	d) 17

Q.2 Short Answer Type Question. (Any Two) 04

- a) Write down the eligibility conditions for blood donation.
- b) Write down the aims of social service.
- c) Write down the names of camps in NCC.

Q.3 Write a short note. 03

Social service activities done in N.C.C

Q.4 Describe the basic leadership traits. 04

OR

Describe the duties & rights of an ideal citizen.

Set	P
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वार, दिनांक: मंगळवार, ०४-११-२०२५
वेळ: दुपारी १२:०० ते ०१:००

कमाल गुणः १५

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.
२) उजवीकडील अंक पूर्ण गुण दर्शवितात.

0%

- १) पहिली आधुनिक ऑलिंपिक स्पर्धा ——— झाली.
अ) पॅरीस
ब) ग्रीस
क) रोम
ड) लंडन
- २) पुरुषांसाठी गोळाफेकसाठी ——— कि. ग्रॅ. वजनाचा गोळा असतो.
अ) ७.२६
ब) ५
क) ८.२६
ड) ४
- ३) ऑलिंपिक ध्वजावर ——— वर्तुळे आहेत.
अ) तीन
ब) चार
क) पाच
ड) सहा
- ४) पुरुषांसाठी हर्डल्स ही स्पर्धा ——— मीटर असते.
अ) १००
ब) ११०
क) १२०
ड) १३०

03

- अ) ऑलिंपिक ध्वज
ब) आंतरराष्ट्रीय ऑलिंपिक समिती.
क) लांब उडी
ड) ऑलिंपिक ज्योत

04

- अ) ट्रंक इव्हेंट्स म्हणजे काय? त्याचे मुख्य प्रकार लिहा.
ब) गोळा फेक बदल माहिती लिहा.

Set

P

B.Sc. (Biotechnology) (Semester-III) (New) (NEP CBCS)
Examination: October/November - 2025
Co-Curricular Course
Sports (G05-CC-303)

Day & Date: Tuesday, 04-11-2025
Time: 12:00 PM To 01:00 PM

Max. Marks: 15

Instructions: 1) All questions are compulsory.
2) Right side number indicates marks.

Q.1 Multiple choice questions.

04

- 1) The first modern Olympic Games were held in _____.
a) Paris
b) Greece
c) Rome
d) London
- 2) The shot-put is _____ k.g. for men.
a) 7.26
b) 5
c) 8.26
d) 4
- 3) The Olympic flag has _____ circles.
a) Three
b) Four
c) Five
d) Six
- 4) Hurdles for men is a competition of _____ meters.
a) 100
b) 110
c) 120
d) 130

Q.2 Short Notes. (Any Three)

06

- a)** Olympic flag
b) International Olympic Committee
c) Long jump
d) Olympic flame/Torch

Q.3 Write the detail answer (any one)

05

- What is Track event? Write main types of Track event.
- Explain shot-put.

Seat No.	
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Set	P
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B.Sc. (Biotechnology) (सत्र - III) (नवीन) (NEP CBCS) परीक्षा:

ऑक्टोबर/नोव्हेंबर – २०२५

Co-Curricular Course

Yoga Education (G05-CC-305)

वार, दिनांक: मंगळवार, ०४-११-२०२५

कमाल गुण: १५

वेळ: दुपारी १२:०० ते ०१:००

- सूचना :** १) सर्व प्रश्न अनिवार्य आहेत.
२) उजवीकडील अंक पूर्ण गुण दर्शवितात.

प्र.१ योग्य पर्याय निवडा.

०४

- १) योगाचा मुख्य उद्देश काय आहे.
 - अ) शरीर सोष्टव
 - ब) लवचिकता
 - क) शरीर मन आणि आत्म्याचा मिलन
 - ड) स्पर्धात्मक यश
- २) ध्यान या शब्दाचा अर्थ काय.

अ) शिस्त	ब) शारीरिक स्थिती
क) एकाग्रता	ड) ध्यान धारणा
- ३) आंतरराष्ट्रीय योग दिन कधी साजरा केला जातो.

अ) १ जून	ब) १० जून
क) २१ जून	ड) २१ जुलै
- ४) योग सूत्रांचे संकलक कोण आहे.

अ) व्यास	ब) पतंजली
क) कपिला	ड) चरक

प्र.२ टीपा लिहा. (कोणत्याही तीन)

०६

- अ) तणाव व्यवस्थापनात योगाची भूमिका.
- ब) योगा विषयीचे गैरसमज स्पष्ट करा.
- क) योगा संपूर्ण आरोग्यास कसा हातभार लावतो याबद्दल माहिती द्या.
- ड) योगासनाचे महत्त्व
- इ) योगा मानसिक आरोग्य सुधारण्यात कसा मदत करतो हे स्पष्ट करा.

प्र.३ खालील प्रश्नांची सविस्तर उत्तरे लिहा. (कोणतेही एक)

०५

अ) योगाची भूमिका—आंतरराष्ट्रीय योग दिन सविस्तरणे स्पष्ट करा.

ब) योगाचा शारीरिक आरोग्यावर होणारा परिणाम स्पष्ट करा.

Seat No.	
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Set	P
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B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: October/November - 2025
Co-Curricular Course
Yoga Education (G05-CC-305)

Day & Date: Tuesday, 04-11-2025
 Time: 12:00 PM To 01:00 PM

Max. Marks: 15

Instructions: 1) All questions are compulsory.
 2) Right side number indicates marks.

Q.1 Multiple choice questions. 04

- 1) What is the main aim of yoga
 - a) Bodybuilding
 - b) Flexibility
 - c) Union of body mind and soul
 - d) Competitive success
- 2) What is the meaning of dhyana in Yoga.

a) Discipline	b) Posture
c) Concentration	d) Meditation
- 3) International Day of yoga is celebrated on

a) 1 June	b) 10 June
c) 21 June	d) 21 July
- 4) Who is the compiler of yoga sutras

a) Vyasa	b) Patanjali
c) Kapila	d) Charaka

Q.2 Short Notes. (Any Three) 06

- a) Role of yoga in stress management
- b) Misconceptions about yoga
- c) How does yoga contribute to overall well being
- d) Importance of yogasana
- e) How does yoga help in improving mental health

Q.3 Write the detail answer (Any One) 05

- a) Role of yoga - International Yoga Day explain in detail.
- b) Explain the impact of yoga on physical health