

Seat No.	
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Set P

B.Sc. (Biotechnology) (सत्र - I) (नवीन) (NEP CBCS) परीक्षा:
मार्च/एप्रिल – २०२६
Biotechnology in Human Welfare (G05-GE-OE-101)

वार, दिनांक : गुरुवार, २३-०४-२०२६
वेळ: सकाळी ०९:०० ते १०:३०

कमाल गुण: ३०

- सूचना :** १) सर्व प्रश्न अनिवार्य आहेत.
२) उजवीकडील अंक पूर्ण गुण दर्शवितात.
३) सुबक आकृत्या काढा आणि आवश्यकतेनुसार आवश्यक समीकरणे द्या.

प्र.१ खालील दिलेले योग्य पर्याय निवडून गाळलेल्या जागा भरा. ०६

- १) बीटी वांग्यातील "Bt" म्हणजे ----.
- अ) जैव-तंत्रज्ञान ब) उत्तम टोमॅटो
क) बॅसिलस ड) ब्रिटिश तंत्रज्ञान
- २) मानवांमध्ये, इन विट्रो फर्टिलायझेशन आणि भ्रूण हस्तांतरणाद्वारे निर्माण होणारी बाळे लोकप्रियपणे म्हणतात.
- अ) इन-व्हिट्रो बेबीज ब) टेस्ट ट्यूब बेबीज
क) इन-व्हिट्रो-इन-व्हिट्रो बेबीज ड) इन-व्हिट्रो बेबीज
- ३) सरोगसीसाठी तयार केलेला गर्भ, गर्भाधानानंतर ---- मध्ये विकसित होतो.
- अ) शुक्राणू बँकेत ब) सरोगेट आईच्या गर्भाशयात
क) प्रयोगशाळेतील डिशमध्ये ड) अंडी देणाऱ्याच्या गर्भाशयात
- ४) ---- नावाच्या दुसऱ्या जीवाच्या जीनोममध्ये कृत्रिमरित्या प्रवेश केलेला जीन
- अ) ट्रान्सजीन ब) ट्रान्स प्रमोटर
क) ट्रान्स एन्हान्सर ड) ट्रान्स फॅक्टर
- ५) भारतात "श्वेत क्रांतीचे जनक" म्हणून कोणाला ओळखले जाते?
- अ) एम. एस. स्वामिनाथन ब) नॉर्मन बोरलॉग
क) डॉ. वर्गीस कुरियन ड) बी. एस. वायकोपग
- ६) उत्पादित होणारी पहिली ट्रान्सजेनिक वनस्पती म्हणजे ----.
- अ) वांगी ब) तंबाखू
क) तांदूळ ड) कापूस

- प्र.२ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही तीन) 0६
- अ) गांडूळ तंत्रज्ञानाचे कोणतेही दोन महत्त्व लिहा.
 ब) खाद्य लसीचे कोणतेही दोन उपयोग
 क) नील क्रांतीची व्याख्या करा
 ड) गोल्डन राईसचे उपयोग सांगा
 इ) नॉर्मन बोरलॉग कोण आहे आणि शास्त्रज्ञाने दिलेल्या योगदानाचे थोडक्यात वर्णन करा?
- प्र.३ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) 0६
- अ) जैवतंत्रज्ञानातील गणिताची व्याप्ती लिहा.
 ब) उपचारशास्त्रात औषधी वनस्पतीचे महत्त्व स्पष्ट करा.
 क) कृत्रिम रेतनावर थोडक्यात नोंद द्या.
- प्र.४ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) 0६
- अ) पिवळ्या क्रांतीवर एक टीप लिहा.
 ब) लसीकरणावर थोडक्यात नोंद.
 क) भारतातील कोणत्याही पाच राष्ट्रीय जैवतंत्रज्ञान संस्थांची नोंदणी करा?
- प्र.५ खालील प्रश्नाचे उत्तर लिहा. (कोणताही एक) 0६
- अ) मलेरियाचे परिणाम, प्रतिबंध आणि नियंत्रण यावर एक टिप लिहा.
 ब) इन्सुलिनची व्याख्या करा आणि अनुवांशिकरित्या इंजिनिअर्ड इन्सुलिनबद्दल तपशीलवार स्पष्टीकरण द्या.

- Q.2 Answer the following questions. (Any Three) 06**
- a) Write any two importances of Vermi-Technology.
 - b) Any two applications of Edible Vaccines.
 - c) Define Blue Revolution.
 - d) Give applications of Golden rice.
 - e) Who is Norman Borlaug and briefly describe the contribution made by the scientist?
- Q.3 Answer the following questions. (Any Two) 06**
- a) Write down the scope of Mathematics in biotechnology.
 - b) Explain the importances of Medicinal plants in Therapeutics.
 - c) Give a brief note on Artificial Insemination.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Write a note on Yellow Revolution.
 - b) Brief note on Vaccination.
 - c) Enlist any five National institutes of Biotechnology in India.
- Q.5 Answer the following question. (Any One) 06**
- a) Write a note on effects, prevention and control of Malaria.
 - b) Define Insulin and Explain in detail about Genetically engineered Insulin.

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**B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
English/English for communication (ENG-101)**

Day & Date: Friday, 24-04-2026
Time: 09:00 AM To 10:30 AM

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) What is the primary purpose of communication?
 - a) To avoid interactions
 - b) To share ideas, information, and emotions
 - c) To maintain silence
 - d) To create confusion

- 2) What is a key characteristics of clear communication?
 - a) Using Jargon
 - b) Being vague
 - c) Using simple language
 - d) Being lengthy

- 3) Which barrier is caused by different culture backgrounds?
 - a) Technological
 - b) Organizational
 - c) Cultural
 - d) Physical

- 4) What is a key benefit of arriving early for an interview?
 - a) Impressing the receptionist
 - b) Reviewing last-minute notes
 - c) Giving yourself time to relax
 - d) Finding a better parking point

- 5) What is the main purpose of group discussion?
 - a) To access individual communication skills
 - b) To evaluate one's appearance
 - c) To access team work and leadership skills
 - d) To identify the smart participant

- 6) What should be avoided in a group discussion?
 - a) Making eye contact
 - b) Interrupting others
 - c) Summarizing key point
 - d) Giving structured arguments

- Q.2 Answer the following. (Any Two) 06**
- a) State the significant role to use simple and clear language in communication.
 - b) Write in brief the role of Feedback in the communication process.
 - c) Explain the difference between Verbal and Non-verbal communication?
 - d) Use of technology in communication and teamwork.
- Q.3 Write Short Notes. (Any One) 06**
- a) Describe the 7 CS of communication and explain their importance.
- OR**
- b) Describe the communication process and its components.
- Q.4 Broad Question. (Any One) 12**
- a) Write a sample interview for the post of Sales Manager, including an introduction, question about the candidates experience and specific skills required for the role.
- OR**
- b) What are the key Do's and Don'ts in Group Discussion?

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

मार्च/एप्रिल – २०२६

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

वार, दिनांक: शुक्रवार, २४-०४-२०२६

कमाल गुण: ३०

वेळ: दुपारी १२:०० ते ०१:३०

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.

२) उजवीकडील अंक पूर्ण गुण दर्शवितात.

प्र.१ अ) खालील दिलेले योग्य पर्याय निवडून गाळलेल्या जागा भरा. ०४

१) भारतीय घटना परिषदेचे अध्यक्ष ——— हे होते.

- अ) पंडित जवाहरलाल नेहरू ब) सरदार वल्लभभाई पटेल
क) डॉ. बाबू राजेन्द्रप्रसाद ड) डॉ. जॉन मथाई

२) भारताने ——— शासनपद्धती स्वीकारलेली आहे.

- अ) संसदीय ब) अध्यक्षीय
क) संमिश्र ड) सर्वकष

३) भारत हे ——— राज्य आहे.

- अ) धार्मिक ब) धर्मनिरपेक्ष
क) धर्मबाह्य ड) धर्माधिष्ठीत

४) भारतीय घटना मसुदा समितीचे अध्यक्ष ——— हे होते.

- अ) पंडित जवाहरलाल नेहरू ब) सरदार वल्लभभाई पटेल
क) डॉ. बाबू राजेन्द्रप्रसाद ड) डॉ. बाबासाहेब आंबेडकर

ब) चूक कि बरोबर ते लिहा. ०२

१) भारतीय राज्यघटनेनुसार २५ वर्षे पूर्ण झालेल्या सर्व नागरिकांना मतदानाचा अधिकार दिला आहे.

२) भारताने प्रत्यक्ष लोकशाहीची पद्धत स्वीकारलेली आहे.

प्र.२ खालील प्रश्नाचे उत्तर लिहा. ०६

अ) धर्मनिरपेक्ष राज्य

ब) राज्यघटनेतील समता

- प्र.३ खालील प्रश्नाचे उत्तर लिहा. 0६
भारतीय निवडणूक आयोगाची रचना व अधिकार सांगा.
- प्र.४ खालील प्रश्नाचे उत्तर द्या. (कोणताही एक) 0६
अ) भारतीय राज्यघटनेच्या सरनाम्याचे स्वरूप व महत्त्व सांगा.
किंवा
ब) लोकशाहीची व्याख्या सांगून लोकशाहीचे प्रकार स्पष्ट करा.
- प्र.५ खालील प्रश्नाचे उत्तर द्या. (कोणताही एक) 0६
अ) भारतीय राज्यघटनेची प्रमुख वैशिष्ट्ये स्पष्ट करा.
किंवा
ब) भारतीय निवडणुका व मतदार जागृती कार्यक्रमावर भाष्य करा.

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B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Constitution of India/Indian Constitution and Democracy (ICD-101)

Day & Date: Friday, 24-04-2026
 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) Choose the correct alternative from the options. 04

- 1) The Chairman of the Indian Constituent Assembly was _____.
 a) Pandit Jawaharlal Nehru
 b) Sardar Vallabhbhai Patel
 c) Dr. Babu Rajendra Prasad
 d) Dr. John Mathai

- 2) India has adopted the _____ system of government.
 a) Parliamentary
 b) Presidential
 c) Mixed
 d) Comprehensive

- 3) India is a _____ state.
 a) Religious
 b) Secular
 c) Irreligious
 d) Theocratic

- 4) The Chairman of the Drafting Committee of the Indian Constitution was _____.
 a) Pandit Jawaharlal Nehru
 b) Sardar Vallabhbhai Patel
 c) Dr. Babu Rajendra Prasad
 d) Dr. Babasaheb Ambedkar

B) True or False. 02

- 1) According to the Indian Constitution, all citizens who have completed 25 years of age have been given the right to vote.
- 2) India has adopted the system of direct democracy.

Q.2 Answer the following questions. 06

- a) Secular State
- b) Equality in the Constitution

Q.3 Answer the following questions. 06

Explain the structure and powers of the Election Commission of India.

Q.4 Attempt the following questions. (Any One) 06

a) Explain the nature and importance of the Preamble of the Indian Constitution.

OR

b) Define democracy and explain the types of democracy.

Q.5 Attempt the following questions. (Any One) 06

a) Explain the major features of the Indian Constitution.

OR

b) Write a note on Indian elections and voter awareness programmes.

- ६) खालीलपैकी — हे प्राचीन भारतीय रसायनशास्त्राचे योगदान नाही.
 अ) नैसर्गिक रंग व रंगरेषा ब) आधुनिक प्लास्टिक
 क) मातीची भांडी व कांचनिर्मिती ड) धातुकर्म

- प्र.२ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही तीन) 0६
- अ) नालंदा विद्यापीठाच्या कोणत्याही दोन वैशिष्ट्यांची नोंद करा.
 ब) मातीची भांडी यासंबंधित भारतीय संकल्पनांबाबत लिहा.
 क) ज्ञान प्रसारात योगदान देणाऱ्या उल्लेखनीय माजी विद्यार्थ्यांची नावे लिहा.
 ड) पर्यावरणशास्त्र (Ecology) याची व्याख्या लिहा.
 इ) अवैदिक तत्त्वज्ञान प्रणाली म्हणजे काय?
- प्र.३ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) 0६
- अ) भारतीय वैज्ञानिक परंपरांचे मूलभूत संकल्पना थोडक्यात समजावून सांगा.
 ब) शरीररचना व कार्यशास्त्र (Anatomy and Physiology) यावरील पारंपरिक दृष्टिकोन समजावून सांगा.
 क) प्रकाशाच्या रहस्यांशी संबंधित भारतीय संकल्पना स्पष्ट करा.
- प्र.४ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) 0६
- अ) पर्यावरणीय शाश्वततेवर भारतातील पारंपरिक भर स्पष्ट करा.
 ब) वैदिक गणितावर थोडक्यात माहिती द्या.
 क) गणितीय व सांख्यिकी संकल्पनांमधील भारतीय मूळ स्पष्ट करा.
- प्र.५ खालील प्रश्नाचे उत्तर लिहा. (कोणताही एक) 0६
- अ) दैनंदिन जीवनातील रसायनशास्त्रातील भारतीय नवोपक्रम समजावून सांगा.
 ब) पर्यावरण संवर्धनासाठी प्राचीन भारतीय पद्धतींबाबत नोंद लिहा.

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Set **P**

B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Indian Knowledge System/ General IKS (G05-IKS-101)

Day & Date: Saturday, 25-04-2026
 Time: 09:00 AM To 10:30 AM

Max. Marks: 30

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

Q.1 Choose the correct alternative from the options.

06

- 1) _____ was considered sacred and protected in ancient Indian environmental practices.
 - a) Rivers and forests
 - b) Only animals
 - c) Only mountains
 - d) Only birds

- 2) IKS is described as _____.
 - a) a single, unified system of knowledge
 - b) a collection of diverse, traditional, knowledge systems
 - c) a-modern, scientific approach to knowledge
 - d) a spiritual practice unrelated to knowledge

- 3) The Indian Knowledge System is primarily derived from two types of traditions they are _____.
 - a) Western and Eastern
 - b) Vedic and Non-Vedic
 - c) Modern and Post-modern
 - d) Scientific and Literary

- 4) _____ ancient Indian university was famous for attracting international scholars, including those from China.
 - a) Vikramashila
 - b) Nālandā
 - c) Jagaddala
 - d) Ujjain

- 5) _____ among the following ancient Indian thinkers is associated with atomic theory.
 - a) Aryabhata
 - b) Kanada
 - c) Bhaskaracharya
 - d) Patanjali

- 6) _____ is not a contribution of ancient Indian chemistry.
 - a) Natural dyes and paints
 - b) Modern plastics
 - c) Pottery and glass-making
 - d) Metallurgy

- Q.2 Answer the Following. (Any Three) 06**
- a) Write any two characteristics of Nalanda.
 - b) Write about Indian concepts related to pottery.
 - c) Write names of notable alumni who contributed to the spread of knowledge.
 - d) Define Ecology.
 - e) What is non-Vedic philosophical systems?
- Q.3 Answer the following. (Any Two) 06**
- a) Describe in brief the Foundational concepts of Indian Scientific traditions.
 - b) Explain the traditional perspectives on Anatomy and physiology.
 - c) Explain the Indian concepts related to mystery of light.
- Q.4 Answer the following. (Any Two) 06**
- a) Explain India's traditional emphasis on environmental sustainability.
 - b) Brief note on Vedic Mathematics.
 - c) Explain the Indian origin in foundational mathematical and statistical concepts.
- Q.5 Answer the following. (Any One) 06**
- a) Explain Indian innovations in daily-life chemistry.
 - b) Write a note on Ancient practices that promote environmental stewardship.

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Set **P**

**B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS) Examination:
March/April – 2026
Biophysics and Chemical Science (G05-0101)**

Day & Date: Monday, 27-04-2026
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 sentences. 06

- 1) Hydrogen bonding in water contributes to _____.
 - a) Water's low viscosity
 - b) Water's high surface tension
 - c) Water being a poor solvent
 - d) Water's inability to form hydration shells

- 2) Molecular weight is typically measured _____ in.
 - a) Daltons (Da)
 - b) Moles per liter
 - c) Grams per mole
 - d) Liters per mole

- 3) The electromagnetic spectrum includes _____.
 - a) Only visible light
 - b) Only radio waves and gamma rays
 - c) All types of electromagnetic radiation from radio waves to gamma rays
 - d) Only ultraviolet and infrared light

- 4) Hybridization in chemistry refers to _____.
 - a) Mixing of different elements
 - b) Mixing of atomic orbitals to form new hybrid orbital's
 - c) Breaking of chemical bonds
 - d) Formation of ions

- 5) For acids, normality is calculated based on the number of _____.
 - a) Moles of acid per liter
 - b) Replaceable H⁺ ions per molecule of acid
 - c) Molecules of acid in solution
 - d) Grams of acid per liter

- 6) The boiling point of a liquid is the temperature at which ____.
- a) The liquid freezes
 - b) The liquid sublimates
 - c) The liquid condenses
 - d) The liquid vaporizes at atmospheric pressure

- Q.2 Answer the following questions. (Any Three) 06**
- a) Write note on dilution factor.
 - b) Define molecular weight.
 - c) Write note on Osmosis.
 - d) Define molarity.
 - e) Define Centrifugal force.
- Q.3 Write Short Notes. (Any Two) 06**
- a) Explain in brief Physicochemical properties of water.
 - b) Write note on Dipole movement and its significance.
 - c) Beer's Lamberts law.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Henderson and Hasselbalch equation
 - b) Add note on Freezing point and boiling point
 - c) Explain in brief properties of light absorption.
- Q.5 Answer the following questions. (Any One) 06**
- a) Describe in detail Laws of Thermodynamics.
 - b) Explain in detail solubility and factors affecting solubility.

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Set **P**

**B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS) Examination:
March/April – 2026
Biochemistry (G05-0102)**

Day & Date: Monday, 27-04-2026
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 the correct alternative and rewrite the following sentences. 06

- 1) Sulphur containing amino acids are _____.
a) Cysteine and Methionine b) Methionine and Threonine
c) Cysteine and Threonine d) Cysteine and Serin

- 2) _____ is the function of phosphorylase.
a) Uses H₂O₂ as the electron acceptor
b) Transfer amino group
c) Transfer inorganic phosphate
d) Transfer a carboxylate group

- 3) _____ of the following is non reducing sugar.
a) Maltose b) Lactose
c) Trehalose d) Cellobiose

- 4) Tertiary structure of proteins is stabilized by _____.
a) Only peptide bonds
b) Hydrogen bonds, Ionic bonds, Hydrophobic interactions, Disulphide bonds
c) Glycosidic linkages
d) Phosphodiester bonds

- 5) _____ sphingolipid is present in the myelin sheath of nerve cells.
a) Sphingomyelin b) Cerebroside
c) Ganglioside d) Sulphatide

- 6) _____ of the following is thyroid hormone.
a) TSH b) Thyroxine (T4)
c) ACTH d) ADH

- Q.2 Answer the following questions. (Any Three) 06**
- a) What is Triglycerol?
 - b) Enlist the examples of polysaccharide.
 - c) What are apoenzymes?
 - d) What are the components of nucleotide?
 - e) Name two deficiency diseases caused by lack of vitamin D.
- Q.3 Write short notes on the following. (Any Two) 06**
- a) Explain Biological role of pituitary hormone.
 - b) Draw Structure of B-form of DNA.
 - c) Discuss about Classification of enzymes.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Explain Lock and Key model.
 - b) Explain structure and function of cellulose.
 - c) Write a detailed note on RNA and its types.
- Q.5 Answer the following questions. (Any One) 06**
- a) Explain the structure and function of monosaccharide with suitable example.
 - b) Define Vitamins and add a detailed note on its importance.

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Set **P**

**B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS) Examination:
March/April – 2026
Fundamentals of Microbiology (G05-0103)**

Day & Date: Tuesday, 28-04-2026
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 sentences. 06

- 1) Who is known as the Father of Microbiology?
 - a) Antonie van Leeuwenhoek
 - b) Alexander Fleming
 - c) Robert Koch
 - d) Hargovind Khorana

- 2) According to Pasteur Statement which one of the following is true _____.
 - a) Living organism discriminate between stereoisomers
 - b) Living organism doesn't discriminate between stereoisomers
 - c) Fermentation is a aerobic process
 - d) Both a and c

- 3) _____ is a common component of cell wall in the Gram Positive and Negative bacteria.
 - a) Phospholipid
 - b) Peptidoglycan
 - c) Teichoic acid
 - d) Lipopolysaccharides

- 4) Antiseptic Surgery was discovered by _____.
 - a) John tyndall
 - b) Lazzaro Spallanzani
 - c) Robert Koch
 - d) Joseph Lister

- 5) Capsule Antigen is called as _____.
 - a) O
 - b) K
 - c) VI
 - d) H

- 6) The cocci which form a chain like structure are called as _____.
 - a) Staphylococci
 - b) Diplococci
 - c) Tetracocci
 - d) Streptococci

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

- a) Define Species.
- b) Define Pili and give its Functions.
- c) What are Actinomycetes? Give its example.
- d) Define Germ Theory.
- e) Write Characteristics of Archea.

- Q.3 Write Short Note. (Any Two) 06**
- a) Write the Comparative Account on Capsule and Slime Layer.
 - b) Write note on Contribution of Louis Pasteur.
 - c) Explain in Detail About Bacterial Classification.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Write a note on Contributions of Antonie van Leeuwenhoek.
 - b) Spontaneous Generation.
 - c) Write General Characteristics Fungi and its economic Importance.
- Q.5 Answer the following questions. (Any One) 06**
- a) Write the Difference Between Prokaryotic and Eukaryotic microorganisms.
 - b) Describe in Detail Scope of Microbiology in different fields.

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

- a) Differentiate between monocots and dicots.
- b) Discuss the salient features of Amphibians.
- c) Write a note on the classification of Angiosperms by Bentham and Hooker.

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

- a) Explain the characteristics and significance of Archaeobacteria.
- b) Classify non-chordates up to phyla with suitable examples?

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**B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS) Examination:
March/April – 2026
Animal Physiology (G05-0105)**

Day & Date: Wednesday, 29-04-2026
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.

06

- 1) Salivary amylase is also known as _____.

a) Gastrin	b) Glyoxylase
c) Pepsin	d) Ptyalin
- 2) _____ is needed for clotting of blood.

a) Fibrinogen	b) Albumin
c) Globulin	d) Magnesium ions
- 3) _____ the basic structural and functional unit of the nervous system.

a) Neuroglia	b) Glial cells
c) Neurons	d) Perikaryon
- 4) Human sperm moves with the help of _____.

a) Cilia	b) Flagellum
c) Basal body	d) Nucleosome
- 5) In which respiratory part does the diffusion of gas take place?

a) Alveoli	b) Bronchi
c) Bronchioles	d) Trachea
- 6) Process of excreting urine is known as _____.

a) Diuresis	b) Polyuria
c) Defaecation	d) Micturition

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

06

- a) Define hormone.
- b) Define cardiac output.
- c) Define chloride shift.
- d) Define excretion.
- e) Draw neat labelled diagram of nerve cell.

- Q.3 Write short notes. (Any Two) 06**
- a) Explain function of bowman's capsule.
 - b) Explain absorption of carbohydrates.
 - c) Explain composition of blood.
- Q.4 Write short notes. (Any Two) 06**
- a) Explain Mechanism of working of heart.
 - b) Explain female reproductive system with hormonal regulation.
 - c) Explain pituitary gland with their hormones.
- Q.5 Answer the following question. (Any One) 06**
- a) What is digestion? Explain in details its mechanism.
 - b) What is respiratory system? Explain in details its mechanism.

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Set **P**

**B.Sc. (Biotechnology) (Semester - I) (New) (NEP CBCS) Examination:
March/April – 2026
Plant Physiology (G05-0106)**

Day & Date: Wednesday, 29-04-2026
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.
 - 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.**06**

- 1) The primary function of the guard cells in the stomata is _____.
 - a) Photosynthesis
 - b) Regulating the opening and closing of stomata
 - c) Water transport
 - d) Storage of nutrients

- 2) The reaction center in the light-harvesting complex is formed by _____.
 - a) A single chlorophyll a
 - b) Chlorophyll e molecule
 - c) Chlorophyll b
 - d) Grana

- 3) A cell organelle that is present in animal cells but not present in plant cells is _____.
 - a) Centrosome
 - b) Golgi complex
 - c) Cytoplasm
 - d) Mitochondrial

- 4) Conversion of nitrogen to ammonia or nitrogenous compounds is termed as _____.
 - a) Denitrification
 - b) Nitrogen assimilation
 - c) Nitrification
 - d) Nitrogen fixation

- 5) Vascular bundle is composed of _____.
 - a) cambium
 - b) xylem
 - c) phloem
 - d) both xylem and phloem

- 6) The vascular tissue responsible for transporting water and minerals from the roots to the leaves is the _____.
 - a) Stomata
 - b) Epidermis
 - c) Xylem
 - d) Phloem

- Q.2 Answer the following questions. (Any Three) 06**
- a) What is compensation point?
 - b) Define Photosynthesis.
 - c) Draw structure of Plant cell.
 - d) Define Guttation.
 - e) Define Growth curve.
- Q.3 Write short notes. (Any Two) 06**
- a) Add a note on mechanism of opening & closing of stomata.
 - b) Explain CAM pathway in detail.
 - c) Discuss in detail about Importance of water for plant life.
- Q.4 Answer the following question. (Any Two) 06**
- a) Discuss about concept of two photo systems.
 - b) Add a note on ammonium assimilation in plants.
 - c) Write a note on leaf anatomy (dorsi-ventral and isobilateral leaf).
- Q.5 Answer the following question. (Any One) 06**
- a) Define growth hormones and add a detail note on physiological role and mode of action of auxins, gibberellins.
 - b) Define and explain in detail about Calvencycle.

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Set **P**

**B.Sc. (Biotechnology) (Semester – II) (NEP CBCS) Examination:
March/April – 2026
Basic Computer Science (G05-GE-OE-201)**

Day & Date: Saturday, 04-04-2026
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.
 - 3) Draw neat diagrams and give equations wherever necessary.

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

- 1) _____ is not a computer programming language.

a) JAVA	b) C
c) C++	d) ALU

- 2) _____ is a series of operating systems that are designed by Microsoft.

a) Linux	b) Windows
c) Unix	d) Mac OS

- 3) Which one of the following is an output device?

a) Key board	b) Mouse
c) Monitor	d) Scanner

- 4) In computing, _____ is information that has been translated into a form that is efficient for movement or processing.

a) Data	b) Program
c) Hardware	d) Software

- 5) An act to injure, corrupt, or threaten a system or network is characterised as which of the below?

a) Digital crime	b) Threats
c) System hijacking	d) Cyber Attack

- 6) Slide can be presented full by using _____ menu in MS PowerPoint.

a) Design Menu	b) View Menu
c) Transitions Menu	d) Slide Show Menu

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

- a) What is the difference between LAN and WAN?
- b) What is a slide in MS-PowerPoint Presentation?
- c) Explain "Page Formatting" in MS-Word.
- d) Define Cyber-Crime.
- e) Enlist computer programming languages.

- Q.3 Answer the following questions. (Any Two) 06**
- a) Explain components of Computer System.
 - b) What is a computer virus? Explain its types.
 - c) Explain Working with Excel.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Explain concept of Internet and enlist its uses.
 - b) Explain Operating System with an example.
 - c) Write brief account on DigiLocker and ABC ID.
- Q.5 Answer the following questions. (Any One) 06**
- a) Describe in detail cybercrime and computer ethics.
 - b) Explain MS-Office and add a note on features of MS-Word.

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**B.Sc. (Biotechnology) (Sem - II) (NEP CBCS) Examination:
March/April - 2026
English / English for Communication - II (ENG-201)**

Day & Date: Monday, 06-04-2026
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 from the options.

06

- 1) What is the main difference between listening and hearing?
 - a) Listening is active hearing is passive.
 - b) Hearing is better than listening.
 - c) Listening does not need attention.
 - d) Hearing requires interpretation.

- 2) Which tone is used in yes/no questions?

a) Rising	b) Falling
c) Neutral	d) Flat

- 3) Why is tone important in speech?

a) It conveys emotions.	b) It changes grammar.
c) It makes speech longer.	d) It removes meaning.

- 4) Which of the following is NOT essential for effective writing?

a) Clarity	b) Proper structure
c) Unnecessary repetition	d) Concise language

- 5) What should be avoided in a formal letter?
 - a) Professional tone
 - b) Clear purpose
 - c) Slang and informal language
 - d) Proper salutations

- 6) What is the first element of a newspaper report?

a) Conclusion	b) Headline
c) Supporting detailed	d) Salutations

Q.2 Answer the following. (Any Two)

06

- a) Why is listening important in communication?
- b) What are the effective ways to improve listening skills?
- c) What is mean by blog?
- d) What is formal letter?

Q.3 Write Short Notes. (Any One) **06**

a) Define listening and explain the five stages of the listening process.

OR

b) What are the effective ways to improve listening skills?

Q.4 Broad Question. (Any One) **12**

a) Explain in brief the types of emails.

OR

b) What is a type of formal letter?

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Set P

B.Sc. (Biotechnology) (सत्र - II) (NEP CBCS) परीक्षा:
मार्च/एप्रिल - २०२६
Environmental Studies (ENS-24)

वार, दिनांक : मंगळवार, ०७-०४-२०२६
वेळ: दुपारी ०३:०० ते ०४:३०

कमाल गुण: ३०

- सूचना :** १) सर्व प्रश्न अनिवार्य आहेत.
२) उजवीकडील अंक पूर्ण गुण दर्शवितात.
३) जिथे आवश्यक असेल तिथे सुबक आकृत्या आणि समीकरणे काढा.

प्र.१ खालील दिलेले योग्य पर्याय निवडून गाळलेल्या जागा भरा. ०६

- १) ध्वनी कोणत्या एककात मोजतात?
 - अ) किलोमीटर
 - ब) पास्कल
 - क) किलोग्राम
 - ड) डेसिबल
- २) 'सायलेंट व्हॅली' हे राष्ट्रीय उद्यान भारतातील ——— येथे आहे.
 - अ) केरळ
 - ब) महाराष्ट्र
 - क) ओडिशा
 - ड) गुजरात
- ३) पृथ्वीवरील सर्वात मोठी परिसंस्था कोणती आहे?
 - अ) वाळवंट
 - ब) जंगल
 - क) गवताळ प्रदेश
 - ड) महासागर
- ४) ——— म्हणजे पाण्याचा तात्पुरता अतिप्रवाह जो जमिनीला पाण्याखाली बुडवतो, ज्यामुळे सजीव आणि निर्जीव वस्तूंचा लहान किंवा मोठा विनाशकारी परिणाम होऊ शकतो.
 - अ) भूकंप
 - ब) ज्वालामुखी
 - क) पूर
 - ड) मृदा धूप
- ५) CNG चा पूर्ण अर्थ काय आहे?
 - अ) कॉम्प्रेस्ड नॅचरल गॅस (दाबलेला नैसर्गिक वायू)
 - ब) कोरोसिव्ह नॅचरल गॅस (संक्षारक नैसर्गिक वायू)
 - क) केमिकल न्यूट्रल गॅस (रासायनिक उदासीन वायू)
 - ड) चीप नॅचरल गॅस (स्वस्त नैसर्गिक वायू)

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Set	P
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**B.Sc. (Biotechnology) (Semester-II) (NEP CBCS) Examination:
March/April – 2026
Environmental Studies (ENS-24)**

Day & Date: Tuesday, 07-04-2026
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.
3) Draw neat diagrams and equations wherever necessary.

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

- 1) In which unit sound is measured?
 - a) Kilometer
 - b) Pascal
 - c) Kilogram
 - d) Decibel

- 2) Silent Valley is a national park located _____ in India.
 - a) Kerala
 - b) Maharashtra
 - c) Odisha
 - d) Gujarat

- 3) Which is the largest ecosystem on Earth?
 - a) Desert
 - b) Forest
 - c) Grassland
 - d) Oceans

- 4) _____ temporary overflow of water that submerges land, which may have small or large destructive impact on living and non living things.
 - a) Earthquake
 - b) Volcano
 - c) Flood
 - d) Soil erosion

- 5) CNG stands for?
 - a) Compressed Natural Gas
 - b) Corrosive Natural Gas
 - c) Chemical Neutral Gas
 - d) Cheap Natural Gas

- 6) The Bishnois, living in western _____ for centuries, have been conserving the flora and fauna to the extent of sacrificing their lives to protect the environment.
 - a) Rajasthan
 - b) Karnataka
 - c) Himalaya
 - d) Maharashtra

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

- a) Write about ecosystem.
- b) Write any two causes of soil erosion.
- c) Define the term biodiversity.
- d) What are renewable energy sources?

- Q.3 Write short note.** **06**
What is mean of global warming? Write its effects.
- Q.4 Answer the following questions. (Any One)** **12**
- a) Describe in detail about In-situ and Ex-situ conservation of biodiversity.
 - b) Explain causes and control of water pollution.

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B.Sc. (Biotechnology) (सत्र - II) (NEP CBCS) परीक्षा: मार्च/एप्रिल - २०२६
Co-Curricular Course
National Service Scheme (CC-201)

वार, दिनांक: बुधवार, ०८-०४-२०२६
वेळ: दुपारी ०३:०० ते ०४:३०

कमाल गुण: ३०

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

- प्र.१ खालील दिलेले योग्य पर्याय निवडून गाळलेल्या जागा भरा. ०६
- १) "मी माझ्यासाठी नसून इतरांसाठी" हे घोषवाक्य ——— चे आहे.
अ) राष्ट्रीय सेवा योजना ब) रोजगार हमी योजना
क) एनजीओ ड) स्वयं बचत गट
- २) राष्ट्रीय सेवा योजनेच्या एका वर्षात ——— तास काम करणे अपेक्षित असते.
अ) १०० ब) २४०
क) ८० ड) १५०
- ३) विशेष शिबिराचे गाव महाविद्यालयापासून ——— असावे.
अ) जवळ ब) अतिदूर
क) दूर ड) वरील सर्व
- ४) ——— हा दिवस जागतिक लोकसंख्या दिन म्हणून साजरा केला जातो.
अ) २४ सप्टेंबर ब) ११ जुलै
क) १५ ऑगस्ट ड) ०५ जून
- ५) रा.से.यो. चिन्ह चक्र हे ——— रंगाचे आहे.
अ) हिरवा ब) लाल
क) पिवळा ड) निळा
- ६) राष्ट्रीय सेवा योजनेची सुरुवात ——— या वर्षी झाली.
अ) १९७५ ब) १९५०
क) १९६९ ड) १९४७

- प्र.२ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही तीन) **0६**
- अ) राष्ट्रीय सेवा योजनेच्या डायरी (नोंदवही) ची देखभाल लिहा.
ब) जनजागृती रॅलीची गरज का आहे?
क) प्रथमोपचार कौशल्याची माहिती सांगा.
ड) रा.से.या.कार्यक्रमाचे वर्गीकरण सांगा.
इ) रक्तदानाची आवश्यकता का आहे?
- प्र.३ खालील प्रश्नांची थोडक्यात उत्तरे लिहा. (कोणतेही दोन) **0६**
- अ) रा.से.यो.चा इतिहास लिहा.
ब) दत्तक खेड्यामध्ये नियमित उपक्रमावर चर्चा करा.
क) मतदान जनजागृती आणि नावनोंदणी शिबीर यावर चर्चा करा.
- प्र.४ दीर्घोत्तरी प्रश्नांची उत्तरे लिहा. (कोणताही एक) **0६**
- अ) वृक्षारोपण आणि स्वच्छता मोहीम स्पष्ट करा.
ब) रा.से.यो. चे महत्व स्पष्ट करा.
- प्र.५ दीर्घोत्तरी प्रश्नाचे उत्तर लिहा. **0६**
- विशेष शिबिर कार्यक्रमातील नियोजन, पूर्वतयारी, संघटना आणि प्रशासन स्पष्ट करा.

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

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B.Sc. (Biotechnology) (सत्र - II) (NEP CBCS) परीक्षा:
मार्च / एप्रिल – २०२६
Co-Curricular Course
National Cadet Corps (CC-202)

वार, दिनांक: बुधवार, ०८-०४-२०२६
वेळ: दुपारी ०३:०० ते ०४:००

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) एखाद्याला ——— मार्फत व्यक्त करता येते.
अ) तोंडी ब) हावभाव
क) लेखी ड) यापैकी सर्व
- २) काही गुण बदलता येत नाहीत.
अ) नविन ब) दत्तक
क) जन्मजात ड) नैसर्गिक
- ३) स्वतःला खूप वेगळे समजणे म्हणजे ———.
अ) अतिअहंकारी व्यक्तिमत्त्व ब) स्वयःप्रेरित
क) आनंदी ड) वास्तव
- ४) व्यक्तिमत्त्व ——— नुसार बदलते.
अ) प्रत्येक व्यक्ती ब) वेळ
क) काम ड) यापैकी नाही
- प्र.२ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) ०४
- अ) व्यक्तिमत्त्व विकासाचे कोणतेही दोन घटक सांगा.
ब) प्रामाणिकपणाची दोन उदाहरणे सांगा.
क) व्यक्तिमत्त्व विकासाचे दोन प्रकार सांगा.
ड) 'समर्थन आणि आदर' ची उदाहरणे सांगा.
- प्र.३ चारित्र्य कसे सुधारावे? यावर टिप लिहा. ०३
- प्र.४ उत्तम नेतृत्वासाठी महत्वाची मूल्ये स्पष्ट करा. ०४
- किंवा**
- व्यक्तिमत्त्व विकासामध्ये एन.सी.सी. छात्रांची भूमिका स्पष्ट करा.

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Set

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**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
March/April – 2026
Co-Curricular Course
National Cadet Corps (CC-202)**

Day & Date: Wednesday, 08-04-2026
Time: 03:00 PM To 04:00 PM

Max. Marks: 15

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

Q.1 Choose the correct alternative from the options. 04

- 1) One can express thought _____.

a) oral	b) gestures
c) written	d) all of the above

- 2) Few _____ traits can not changed.

a) New	b) adopted
c) inborn	d) natural

- 3) Thinking oneself very different is _____.

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

- 4) The personality vary as per _____.

a) individuals	b) time
c) work	d) none of these

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

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

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

Q.4 Explain importance values for a good leader. 04

OR

Explain role of NCC cadet in personality development.

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

मार्च / एप्रिल – २०२६

**Co-Curricular Course
Sports (CC-203)**

वार, दिनांक : बुधवार, ०८-०४-२०२६

कमाल गुण: १५

वेळ: दुपारी ०३:०० ते ०४:००

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.

२) उजवीकडील अंक पूर्ण गुण दर्शवितात.

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

०४

१) खो खो खेळात एकूण ---- खेळाडू असतात.

अ) १०

ब) ९

क) १२

ड) ११

२) खेळ हा ---- प्रकाराचा उपक्रम आहे.

अ) मानसिक

ब) शारीरिक

क) सामाजिक

ड) वरील सर्व

३) नीरज चोप्रा ---- हा खेळातील प्रसिद्ध खेळाडू आहे.

अ) गोळाफेक

ब) भालाफेक

क) क्रिकेट

ड) लांब उडी

४) क्रिकेट, बेसबॉल आणि हॅन्डबॉल हे ---- प्रकारचे खेळ आहे.

अ) वैयक्तिक

ब) सांघिक

क) मनोरंजक

ड) अन्य

प्र.२ टिपा लिहा.

०६

अ) खेळाचे शारीरिक फायदे

ब) खेळाची संकल्पना

क) खेळाची मानसिक फायदे

प्र.३ दीर्घोत्तरी प्रश्न. (कोणताही एक)

०५

अ) खेळाचा इतिहास सांगा.

ब) खेळाचे विविध प्रकार स्पष्ट करा.

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Set P

B.Sc. (Biotechnology) (सत्र - II) (NEP CBCS) परीक्षा: मार्च / एप्रिल – २०२६
Co-Curricular Course
Culture (CC-204)

वार, दिनांक: बुधवार, ०८-०४-२०२६

कमाल गुण: ३०

वेळ: दुपारी ०३:०० ते ०४:३०

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

- प्र.१ खालील दिलेले योग्य पर्याय निवडून गाळलेल्या जागा भरा. ०६
- १) कायिक अभिनय, ज्याला ——— अभिनय असेही म्हणतात.
 अ) आहार्य ब) सात्विक
 क) वाचिक ड) आंगिक
- २) ——— अभिनय म्हणजे आवाज आणि शब्दांच्या माध्यमातून पात्राची भूमिका साकारणे.
 अ) आहार्य ब) सात्विक
 क) वाचिक ड) आंगिक
- ३) मुकनाट्य म्हणजे असा नाट्यप्रयोग ज्यामध्ये कोणताही ——— नसतो.
 अ) ध्वनि ब) संवाद
 क) अभिनय ड) विषय
- ४) रस्त्यावर सादर केल्या जाणाऱ्या कला प्रकाराला ——— म्हणतात.
 अ) पथनाट्य ब) वगनाट्य
 क) एकांकिका ड) लघुनाटिका
- ५) एकांकिका नाट्यप्रकारात ——— अंक असतात.
 अ) एक ब) अनेक
 क) दोन ड) तीन
- ६) ——— म्हणजे लिखित मजकूर अर्थपूर्ण आणि प्रभावीपणे वाचणे.
 अ) एकांकिका ब) अभिवाचन
 क) लघुनाटिका ड) पथनाट्य

- प्र.२ खालील प्रश्नांची थोडक्यात उत्तरे लिहा. (कोणतेही दोन) 0६
- अ) मुकनाट्याचा थोडक्यात परिचय द्या.
ब) साहित्यकलेच्या सादरीकरणाचे प्रकार लिहा.
क) कथाकथन कसे करावे? स्पष्ट करा.
ड) वकृत्व करतांना कोणती तयारी करावी?
- प्र.३ टिप्पणी लिहा. 0६
काव्यवाचन
- प्र.४ खालील प्रश्नाचे तपशीलवार उत्तर लिहा. (कोणताही एक) १२
- अ) अभिनयाची संकल्पना स्पष्ट करा.
किंवा
ब) साहित्यकलेचे स्वरूप स्पष्ट करा.

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Set	P
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**B.Sc. (Biotechnology) (Semester-II) (NEP CBCS) Examination:
March/April – 2026
Co-Curricular Course
Culture (CC-204)**

Day & Date: Wednesday, 08-04-2026
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) Physical acting, also known as _____ acting.
 - a) Aaharya
 - b) Sattvic
 - c) Vachik
 - d) Angik
- 2) _____ Acting is the portrayal of a character through voice and words.
 - a) Aaharya
 - b) Sattvic
 - c) Vachik
 - d) Angik
- 3) Mime is a theatrical performance in which there is no _____.
 - a) Sound
 - b) Dialogue
 - c) Acting
 - d) Subject
- 4) The art form performed on the street is called _____.
 - a) Street play
 - b) Vagnatya
 - c) One-act play
 - d) Short play
- 5) One-act drama has _____ numbers.
 - a) One
 - b) Many
 - c) Two
 - d) Three
- 6) _____ means reading a written text meaningfully and effectively.
 - a) One-act play
 - b) Recitation
 - c) Short play
 - d) Street play

Q.2 Write a short answer. (Any Two) 06

- a) Give a brief introduction to Mime.
- b) Write the types of presentation of literary art.
- c) How to do storytelling? Explain.
- d) What preparation should be done while giving a speech?

Q.3 Write short note. 06

Poetry Reading

Q.4 Write a detail answer. (Any One)

12

a) Explain the concept of acting.

OR

b) Explain the nature of literary art.

Seat No.	
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Set **P**

**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
March/April – 2026
Co-Curricular Course
Health, Wellness and Fitness (CC-205)**

Day & Date: Wednesday, 08-04-2026
Time: 03:00 PM To 04:00 PM

Max. Marks: 15

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

Q.1 Choose the correct alternative from the options. 04

- 1) NIH is an organization that works in the field of _____.
 - a) Health
 - b) Sports
 - c) Business
 - d) None of these

- 2) _____ is not type of vitamin.
 - a) A
 - b) B
 - c) C
 - d) T

- 3) The headquarter of the World Health Organization is located in _____.
 - a) Delhi
 - b) Rome
 - c) Geneva
 - d) Qatar

- 4) _____ can be called as personal hygiene.
 - a) Washing hands
 - b) Cutting nails
 - c) Wearing clean clothes
 - d) All of the above

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

- a) What is mean by fitness?
- b) Write the effect of exercises on Muscles.
- c) Write the definition of Health.
- d) What is mean by Balance diet?

Q.3 Answer the following question in detail. (Any One) 05

- a) Write the components of personal hygiene and explain them in detail.
- b) Write the detailed work of the World Health Organization.

Seat No.	
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Set P

B.Sc. (Biotechnology) (सत्र - II) (NEP CBCS) परीक्षा: मार्च / एप्रिल – २०२६
Co-Curricular Course
Yoga Edu. / Performing Arts (CC-206)

वार, दिनांक: बुधवार, ०८-०४-२०२६
वेळ: दुपारी ०३:०० ते ०४:००

कमाल गुण: १५

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

प्र.१ योग्य पर्याय निवडा.

०४

- १) — योग करण्याची योग्य वेळ कोणती?
 - अ) दुपारचे सत्र
 - ब) सकाळी लवकर
 - क) संध्याकाळचे सत्र
 - ड) रात्रीचे सत्र
- २) — योग शब्दाचा अर्थ काय आहे?
 - अ) अभ्यास
 - ब) जोडणे व एकत्र आणणे
 - क) ध्यान
 - ड) विश्रांती
- ३) अनुलोम विलोम प्राणायाम करताना श्वास कसा घ्यावा?
 - अ) एका नाकपुडीने श्वास घेणे आणि दुसऱ्या नाकपुडीतून श्वास सोडणे
 - ब) दोन्ही नाकपुड्यांमधून श्वास आत घेणे आणि बाहेर सोडणे
 - क) तोंडाने श्वास घेणे
 - ड) श्वास रोखून धरणे
- ४) योग दिवस — साजरा केला जातो?
 - अ) २१ जून
 - ब) २२ जून
 - क) २५ जून
 - ड) २८ जून

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

०६

- अ) योगाची कोणतीही तीन उद्दिष्टे लिहा.
- ब) आसने कोणत्या प्रकारे केली जाऊ शकतात?
- क) मानवी जीवनात योगाची काय गरज आहे?
- ड) प्राणायामात श्वास स्वीकारणे, श्वास रोखून ठेवणे आणि श्वास सोडणे या प्रक्रियांची नावे काय आहेत?

प्र.३ सविस्तर उत्तर लिहा. (कोणताही एक)

०५

अ) योगाचे महत्त्व स्पष्ट करा.

किंवा

ब) प्राणायामाचे महत्त्व स्पष्ट करा.

Seat No.	
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Set **P**

**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
March/April - 2026
Co-Curricular Course
Yoga Edu. / Performing Arts (CC-206)**

Day & Date: Wednesday, 08-04-2026
Time: 03:00 PM To 04:00 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 right time to do Yoga?
 - a) Afternoon session
 - b) Early morning
 - c) Evening session
 - d) Night session
- 2) _____ is the meaning of Yoga word?
 - a) Exercise
 - b) Join & bring together
 - c) Meditation
 - d) Rest
- 3) How should one breathe while performing Anulom Vilom Pranayama?
 - a) Inhale through one nostril and exhale through the other
 - b) Inhale and exhale through both nostrils
 - c) Breathe through the mouth
 - d) Hold your breath
- 4) _____ is Yoga day celebrated?
 - a) 21 June
 - b) 22 June
 - c) 25 June
 - d) 28 June

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

- a) Write any three objectives of yoga.
- b) In what ways can asanas be performed?
- c) What is the need of yoga in human life?
- d) What are the names of the processes of inhalation, holding the breath and exhalation in pranayama?

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

- a) Explain the importance of yoga.
- OR**
- b) Explain the importance of pranayama.

Seat No.	
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Set	P
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**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
March/April - 2026
Developmental Biology (G05-0201)**

Day & Date: Thursday, 09-04-2026
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) Gametogenesis leading to the production of sperm is known as _____.
 - a) oogenesis
 - b) insemination
 - c) copulation
 - d) spermatogenesis
- 2) _____ is also known as syngamy.
 - a) fertilization
 - b) copulation
 - c) insemination
 - d) gametogenesis
- 3) The first few cell divisions of an animal zygote are called _____.
 - a) fertilization
 - b) cleavage
 - c) nucleation
 - d) gastrulation
- 4) The specialized series of cellular divisions that leads to the production of gametes known collectively as _____.
 - a) Fertilization
 - b) Gametogenesis
 - c) Embryogenesis
 - d) Menstruation
- 5) Sprouting of a seed or spore is well known as _____.
 - a) germination
 - b) seed formation
 - c) flowering
 - d) blastulation
- 6) The development of form; the overall consequence of determination, differentiation, and growth is known as _____.
 - a) Morphogenesis
 - b) Cryogenesis
 - c) Mutation
 - d) Carcinogens

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

- a) Draw a neat, labelled diagram of a sperm.
- b) Define fertilization
- c) What is double fertilization?
- d) Define seed germination.
- e) Define organogenesis in plants.

- Q.3 Answer the following. (Any Two) 06**
- a) Explain External vs internal fertilization with examples.
 - b) Write about three germ layers.
 - c) Describe embryo sac development in plants.
- Q.4 Answer the following. (Any Two) 06**
- a) Explain pollen development.
 - b) Explain floral development in *Arabidopsis*.
 - c) Discuss Spawning and copulation.
- Q.5 Answer the following. (Any One) 06**
- a) What is Cleavage? Explain plane, pattern and types of cleavage.
 - b) Write a detailed account on double fertilization in angiosperms.

Seat No.	
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Set **P**

**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
March/April – 2026
Ecology (G05-0202)**

Day & Date: Thursday, 09-04-2026
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.
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) _____ is the environment or location to which an organism must adapt in order to survive and grow.

a) Nich	b) habitat
c) Habit	d) None of the above

- 2) Who introduced the term ecology?

a) Hilaire	b) Lankester
c) E. Haeckel	d) W. M. Wheeler

- 3) _____ is referred to as when some species are more common or have greater effects on the community than others.

a) Dominance	b) Diversity indices
c) Abundance	d) Species richness

- 4) The gradual and predictable change in the species composition of a given area is called _____.

a) Ecological pyramid	b) Energy flow
c) Population growth curve	d) Ecological succession

- 5) The interaction in which one species benefits and the other is neither harmed nor benefited _____.

a) parasitism	b) predation
c) commensalism	d) mutualism

- 6) A graph that shows the proportion of members of a species that are still alive at various ages is called _____.

a) Energy flow	b) Community
c) Ecological succession	d) Survivorship curve

- Q.2 Answer the following questions. (Any Three) 06**
- a) Define freshwater ecosystem.
 - b) Define Autecology.
 - c) Define abiotic.
 - d) Enlist characteristics of community.
 - e) Define Biodiversity.
- Q.3 Write short notes on any two of the following. 06**
- a) Explain the types of diversity indices.
 - b) Discuss in detail about Scared groves.
 - c) Explain in brief about Density, Natality and Mortality.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Add a note on intraspecific association in animal.
 - b) Write about ecological pyramid.
 - c) Explain characteristics of hot spot biodiversity.
- Q.5 Answer the following questions. (Any One) 06**
- a) Discuss about Effects of Temperature, light, water, soil, oxygen and carbon dioxide on animal.
 - b) Explain in brief about Terrestrial Ecosystem.

Seat No.	
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Set **P**

**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
March/April – 2026
Cell Biology (G05-0203)**

Day & Date: Friday, 10-04-2026
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.
 - 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.**06**

- 1) DNA is stored in _____ cell organelle.

a) Cell wall	b) Cell Membrane
c) Nucleus	d) Cytoplasm

- 2) During the first metaphase of meiosis, the centromeres _____.

a) Undergo division	b) Do not divide
c) Divide but do not separate	d) Are not identical

- 3) The cell was first discovered by _____.

a) Robert Koch	b) Robert Hooke
c) Antony Van Leeuwenhoek	d) Rudolf Virchow

- 4) _____ of the following is found in the nucleus of animal cells.

a) Microtubules	b) Actin filaments
c) Microfilaments	d) Intermediate filaments

- 5) Microfilaments are composed of globular subunits of _____.

a) Myosin	b) Kinesin
c) Actin	d) Colchicine

- 6) Arsenic metal leads to which _____ type of cancer.

a) Prostate and Kidney	b) Kidney and Lungs
c) Stomach and Liver	d) Lung and Skin

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

- a) Enlist the functions of ER.
- b) What is protoplasm theory.
- c) Add a note on Organization of a yeast cell.
- d) Write a note on functions of Ribosomes.
- e) Enlist the agents promoting carcinogenesis.

- Q.3 Answer the following questions. (Any Two) 06**
- a) Discuss about Cell Theory.
 - b) Write a note on Organization of prokaryotic cell.
 - c) Add a note on Cell Cycle.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Explain structure and functions of Microfilaments.
 - b) Define chromosome and explain types of chromosomes based on centromere structure.
 - c) Diagrammatic representation of an animal cell.
- Q.5 Answer the following questions. (Any One) 06**
- a) What are the different stages of Mitosis?
 - b) Structure and function of Mitochondria with a neat labelled diagram.

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Set **P**

**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
March/April – 2026
Cell Physiology (G05-0204)**

Day & Date: Friday, 10-04-2026
Time: 03:00 PM To 04:30 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.
 - 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 alternatives and rewrite the following sentences. 06

- 1) The polar head of a phospholipid are made of _____.
 - a) Fatty Acids
 - b) Vesicles
 - c) Glycerols
 - d) Proteins

- 2) _____ type of cell signaling involves direct contact between the signaling and responding cell.
 - a) Autocrine
 - b) Paracrine
 - c) Endocrine
 - d) Direct intercellular Signaling

- 3) The Condensation of chromosomes is observed in _____.
 - a) Prophase I
 - b) Anaphase I
 - c) Metaphase I
 - d) None of the above

- 4) Endocytosis is used by cells to _____.
 - a) Ingest bacteria and cell debris
 - b) Retrieve elements of the cell membrane after cell exocytosis
 - c) Secrete largely molecules into extracellular space
 - d) None of the above

- 5) The generation time for E coli is _____.
 - a) 20 Minutes
 - b) 2 Minutes
 - c) 35 Minutes
 - d) 13 Minutes

- 6) The portion of the growth curve where rapid growth of bacteria is observed is known as _____.
 - a) Lag phase
 - b) Logarithmic phase
 - c) Stationary phase
 - d) Decline phase

- Q.2 Answer the following questions. (Any Three) 06**
- a) What are Secondary messengers?
 - b) Define Quorum sensing.
 - c) What is Osmosis?
 - d) Enlist functions of Epithelial cells.
 - e) Write a note on Ion Channels.
- Q.3 Write short notes on the following. (Any Two) 06**
- a) Add a note on role of Golgi in protein synthesis.
 - b) Discuss about Membrane Pumps.
 - c) Write in detail about Connective tissue.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Write a note on cell adhesion and roles of different cell adhesion.
 - b) Write a short note on Bacterial chemotaxis.
 - c) Explain in detail about Neuro transmission and its regulation.
- Q.5 Answer the following questions. (Any One) 06**
- a) Write a note on Endocytosis and Exocytosis.
 - b) Discuss in detail about Epinephrine signaling in Glycogen metabolism.

Seat No.	
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Set **P**

**B.Sc. (Biotechnology) (Semester - II) (NEP CBCS) Examination:
March/April - 2026
Plant Tissue Culture (G05-0205)**

Day & Date: Saturday, 11-04-2026
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 Fill in the blanks by choosing correct alternatives: 06

- 1) The tissue obtained from a plant to be cultured is called an _____.
 - a) Callus
 - b) Explant
 - c) Plant
 - d) Cultured plant
- 2) Somaclonal variation can be obtained by _____.
 - a) Application of colchicine
 - b) Hybridization
 - c) Irradiation with gamma rays
 - d) Tissue culture
- 3) An excess of _____ will result in a proliferation of root.
 - a) Auxin
 - b) Cytokinin
 - c) Gibberellins
 - d) Abscissic acid
- 4) Flame sterilization required _____ percentage of ethanol.
 - a) 95%
 - b) 70%
 - c) 55%
 - d) 50%
- 5) _____ is a macronutrient required for plant growth.
 - a) Nitrogen
 - b) Iron
 - c) Copper
 - d) Zinc
- 6) Agar is made up of _____.
 - a) Peptide
 - b) Pectin
 - c) Polysaccharide
 - d) Proteins

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

- a) Define Plant tissue culture.
- b) What is totipotency?
- c) Define Callus.
- d) Define Haploid plants.
- e) What are artificial seeds.

- Q.3 Solve any Two of the following. 06**
- a) Explain the principle of Laminar Air flow.
 - b) What are the applications of micropropagation.
 - c) Give a brief about Somatic embryogenesis.
- Q.4 Attempt any Two of the following. 06**
- a) Write a short note on Cell suspension culture and its application.
 - b) Give a brief about on Culture media composition with its significance.
 - c) Explain about cryopreservation and its advantages.
- Q.5 Attempt any One of the following. 06**
- a) Explain in detail Micro propagation, stages, factors affecting and applications.
 - 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) (NEP CBCS) Examination:
March/April - 2026
Animal Tissue Culture (G05-0206)**

Day & Date: Saturday, 11-04-2026
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 question. 06

- 1) In Primary culture, cell divide to give same type of cells by _____ process.
 - a) Proliferation
 - b) Differentiation
 - c) Cultivation
 - d) Initiation
- 2) Isolation of specific cell from tissue for culture is carried out by _____.
 - a) Disaggregation
 - b) Radiation
 - c) Heat Shock
 - d) Centrifugation
- 3) HEPA filter is nothing but _____.
 - a) High efficiency partial air filter
 - b) Heavy effective pressure air filter
 - c) High efficiency particulate air filter
 - d) None of these
- 4) Multiple forms of the same enzyme is referred to as _____.
 - a) allosteric enzyme
 - b) biosensor
 - c) isoenzyme
 - d) effectors
- 5) _____ is a cell line.
 - a) Multilayer culture
 - b) Transformed cells
 - c) Multiple growth of cells
 - d) Sub culturing of primary culture
- 6) _____ is a sterilization.
 - a) Purification of products
 - b) Recovery of products
 - c) Elimination of contamination
 - d) Formulation of media

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

- a) Draw neat labelled diagram of Autoclave.
- b) Define substrate.
- c) Define Warm trypsinization.
- d) Define aseptic condition.
- e) Define natural media, give one example.

- Q.3 Write Short note of the following. (Any Two) 06**
- a) Explain in details the strategies to maintain cell line.
 - b) Write a note on substrate for cell growth.
 - c) What is organ culture? Explain plasma clot and Raft methods.
- Q.4 Answer the following questions. (Any Two) 06**
- a) Explain in details characteristics of animal cell culture.
 - b) What is culture media? Explain synthetic media.
 - c) Differentiate between the cold and warm trypsinization.
- Q.5 Answer the following questions. (Any One) 06**
- a) What is cell synchronization? Explain physical and chemical methods.
 - b) Mention and explain instruments required in ATC lab.

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Set **P**

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
Nutrition and Balanced Diet (G05-GE-OE-0301)

Day & Date: Thursday, 02-04-2026
 Time: 09:00 AM To 10:30 AM

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 disaccharide.

a) Glucose	b) Fructose
c) Lactose	d) Galactose

- 2) Chemical compounds involved in the process of metabolism is known as _____.

a) Metabolites	b) Radicals
c) Catabolites	d) Intermediates

- 3) _____ is other name for canning.

a) Pasteurization	b) Appertization
c) Sterilization	d) Cold sterilization

- 4) _____ year was Food Safety and Standards act enacted.

a) 2005	b) 2000
c) 2006	d) 2011

- 5) Which of the following is not a fat-soluble vitamin?

a) Vitamin D	b) Vitamin K
c) Vitamin C	d) Vitamin A

- 6) _____ is the most abundant cation in the extracellular fluid.

a) Potassium	b) Calcium
c) Sodium	d) Magnesium

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

- a) Define nutrition.
- b) Define hypotonic.
- c) Define pasteurization.
- d) Define electrolyte.
- e) What is BRC?

- Q.3 Attempt the following. (Any Two) 06**
- a) Explain distribution of water in body.
 - b) Explain water soluble vitamins.
 - c) Explain thermic effect of food.
- Q.4 Attempt the following. (Any Two) 06**
- a) Explain malnutrition.
 - b) Explain food safety and standard act.
 - c) Explain basal metabolic rate.
- Q.5 Attempt the following. (Any One) 06**
- a) Define food preservatives, Explain in details of its types along with shelf life of food product.
 - b) What is carbohydrate? Describe its classification, Function and Recommendation.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
Health and Hygiene (G05-GE-OE-0302)

Day & Date: Thursday, 02-04-2026
 Time: 09:00 AM To 10:30 AM

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.**06**

- 1) Which of the following diseases is caused by contaminated water?

a) Tuberculosis	b) Cholera
c) Influenza	d) Diabetes

- 2) Which vitamin is mainly responsible for maintaining healthy skin?

a) Vitamin A	b) Vitamin B12
c) Vitamin C	d) Vitamin D

- 3) Which of the following is a common effect of prolonged screen time?

a) Improved posture	b) Eye strain and headaches
c) Stronger eyesight	d) Increased physical fitness

- 4) The main objectives of NIN is: _____.

a) Conducting space research	b) Research in nutrition and related health issues
c) Development of vaccines	d) Study of traditional medicine only

- 5) Bad nutrition in children can cause: _____.

a) Proper brain development	b) Stunted growth and poor learning ability
c) Strong bones	d) Enhanced immunity

- 6) Pellagra is caused due to deficiency of: _____.

a) Niacin (Vitamin B3)	b) Riboflavin (Vitamin B2)
c) Thiamine (Vitamin B1)	d) Folic acid

- Q.2 Answer the following questions. (Any Three) 06**
- a) What is Health?
 - b) Write four Examples of Indian health organization.
 - c) What is Nutrition?
 - d) Why Water is important in Nutrition?
 - e) What is immunity?
- Q.3 Write short notes on the following. (Any Two) 06**
- a) Describe the Lack of physical exercise and its deleterious effects on the body and mind.
 - b) Write short note on water borne diseases.
 - c) Write short note on deficiency effects of carbohydrate and Lipid.
- Q.4 Answer the following. (Any Two) 06**
- a) Describe Good Hygiene Practices.
 - b) Explain about National Health Mission.
 - c) Write short note on food borne diseases.
- Q.5 Answer the following questions. (Any One) 06**
- a) What is Disease Transmission? Describe in Detail various modes of Disease transmission.
 - b) Describe in detail about normal flora of Human body and give its role in Human Health.

Seat No.	
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Set **P**

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
English (G05-ENG-301)

Day & Date: Saturday, 04-04-2026
 Time: 09:00 AM To 10:30 AM

Max. Marks: 30

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

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

- 1) Where is Miss Pushpa departing to?
 - a) Another city in India
 - b) Foreign country
 - c) Her hometown
 - d) Back to her office

- 2) What does the narrator mean by "the sweat of the soul"?
 - a) Physical tiredness
 - b) Emotional and spiritual effort during the journey
 - c) Fear of the sun
 - d) Dirt on the body

- 3) What is the main message of the poem "The Ghaghra in Spate"?
 - a) Nature is gentle and kind
 - b) Humans should respect nature's power and endure its challenges
 - c) Floods can be stopped by prayers
 - d) Villagers live without any fear

- 4) What is the first step mentioned in the poem to kill a tree?
 - a) Uproot it entirely
 - b) Cut the bark and cut the roots
 - c) Burn the leaves
 - d) Water it less

- 5) Mulk Raj Anand was born in _____ year.
 - a) 1905
 - b) 1910
 - c) 1915
 - d) 1920

- 6) The narrator spent his time in the banyan tree by _____.
 - a) Flying kites
 - b) Reading books
 - c) Writing stories
 - d) Watching birds

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

- a) Describe the fight between the mongoose and the cobra.
- b) Describe the friendship between Dr. Raman and Gopal?
- c) Write in brief about the poem "On Killing A Tree"
- d) What difficulties did the pilgrims face during the journey?

Q.3 Write short notes. (Any One) 06

- a) Write a summary of the poem "Goodbye Party for Miss Pushpa T.S"
- b) What is the main message of the poem "The Ghaghra in Spate"?

Q.4 Answer the following. (Any One) 12

- a) What quality of Dr. Raman is highlighted in the story "The Doctor's Word"?
- b) What is the central theme of the story "The Lost Child"?

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B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
Immunology – I (G05-DSC1-0301)

Day & Date: Monday, 06-04-2026
 Time: 09:00 AM To 10:30 AM

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) _____ is an induced and ordered process in which the cell actively participates in bringing about its own death.
 - a) apoptosis
 - b) programmed Cell Death
 - c) phagocytosis
 - d) necrosis
- 2) The processes that contribute to the maintenance and stability of a system (immune system) known as _____.
 - a) hematopoiesis
 - b) apoptosis
 - c) homeostasis
 - d) phagocytosis
- 3) _____ antibodies are responsible for Type I Hypersensitivity.
 - a) IgA
 - b) IgB
 - c) IgC
 - d) IgE
- 4) Factors that are added to a vaccine mixture to enhance the immune response to antigen by activating innate immune cells are known as _____.
 - a) Adjuvant
 - b) Vaccine
 - c) Antigen
 - d) Antiserum
- 5) _____ MHC molecules are expressed by antigen-presenting cells and function to present antigen to CD4+ T cells.
 - a) Class I
 - b) Class II
 - c) Class III
 - d) Cytokine
- 6) Two or more cytokines that mediate similar functions are said to be _____.
 - a) autocrine
 - b) paracrine
 - c) endocrine
 - d) redundant

- Q.2 Answer the following. (Any Three) 06**
- a) Define Hematopoiesis.
 - b) Enlist cells of immune system.
 - c) What are epitopes?
 - d) Differentiate between Innate immunity and Adaptive immunity.
 - e) What are cytokines?
- Q.3 Answer the following. (Any Two) 06**
- a) Explain skin as a barrier of the immune system.
 - b) Write a note on B Lymphocytes.
 - c) Discuss properties of immunogen.
- Q.4 Answer the following. (Any Two) 06**
- a) Explain structure and function of class II MHC molecule.
 - b) Describe structure and function of Lymph node.
 - c) Write in brief about function and components of complement system.
- Q.5 Answer the following. (Any One) 06**
- a) Explain in detail basic structure and biological function of antibody.
 - b) Write a detailed account on cytokines.

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B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: March/April - 2026
Molecular Biology – I (G05-DSC1-0302)

Day & Date: Tuesday, 07-04-2026
 Time: 09:00 AM To 10:30 AM

Max. Marks: 30

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

Q.1 Multiple choice question.

06

- 1) Which form of DNA is most common under physiological conditions?
 - a) A-DNA
 - b) B-DNA
 - c) Z-DNA
 - d) C-DNA
- 2) Griffith's experiment demonstrated _____.
 - a) DNA replication
 - b) Transformation principle
 - c) Protein synthesis
 - d) RNA as genetic material
- 3) Which property of genetic code ensures that most amino acids are encoded by more than one codon?
 - a) Specificity
 - b) Universality
 - c) Degeneracy
 - d) Non-overlapping nature
- 4) In prokaryotes, DNA replication is _____.
 - a) Unidirectional
 - b) Bidirectional
 - c) Rolling-circle only
 - d) Linear
- 5) DNA polymerase III holoenzyme possesses _____.
 - a) polymerase activity only
 - b) 3' → 5' endonuclease activity
 - c) 3' → 5' exonuclease activity and polymerase activities
 - d) 5' → 3' exonuclease activity
- 6) The master regulator of the SOS repair pathway is _____.
 - a) RecA
 - b) UvrABC
 - c) Uracyl glycosylase
 - d) DNA polymerase V

Q.2 Answer the following. (Any Three)

06

- a) Write any one characteristic feature of different types of DNA.
- b) Define gene.
- c) Explain cot curve.
- d) Write the functions of DNA polymerase
- e) Draw a well labeled diagram of θ (theta) modes of replication.

- Q.3 Write notes on the following. (Any Two) 06**
- a) Describe Griffith's transformation experiment. What conclusion did he draw from it?
 - b) Describe Watson and Crick model of DNA.
 - c) Discuss the SOS repair mechanism. Why is it considered error-prone?
- Q.4 Answer of the following. (Any Two) 06**
- a) Write the salient features of the genetic code.
 - b) Describe the rolling circle of DNA replication.
 - c) Explain the significance of organelle DNA with reference to mitochondria and chloroplast DNA.
- Q.5 Answer of the following. (Any One) 06**
- a) What are mutagenic agents? Explain DNA Repair by Photoreactivation.
 - b) Describe the replication of linear double-stranded DNA.

- Q.3 Write short notes of the following. (Any Two) 06**
- a) Complementary Gene
 - b) Types of Linkage
 - c) Structure of Sex chromosome
- Q.4 Answer the following. (Any Two) 06**
- a) Explain Dihybrid Cross with Example.
 - b) Explain Genetic System in chloroplast.
 - c) Explain Conjugation with Diagram.
- Q.5 Answer the following. (Any One) 06**
- a) Write in detail the Laws of Inheritance with example.
 - b) Write in detail about ABO Blood Group.

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Set **P**

**B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
Bioinstrumentation - I (G05-DSC2-0304)**

Day & Date: Thursday, 09-04-2026
Time: 09:00 AM To 10:30 AM

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 non-programmable calculator is allowed.

Q.1 Multiple choice questions.**06**

- 1) _____ is the principle of centrifugation.
a) Sedimentation principle b) Filtration principle
c) Evaporation principle d) Size reduction principle
- 2) Electrophoresis was developed by _____.
a) Tswett b) Tsvedberg
c) Tiselius d) Sanger
- 3) The membrane used for dialysis is made of _____.
a) cellulose b) polyvinyl chloride
c) polyethylene d) chitin
- 4) In chromatography, _____ of the following can the mobile phase be made of.
a) Solid or liquid b) Liquid or gas
c) Gas only d) Liquid only
- 5) _____ membrane is used in blotting.
a) Agarose b) Sucrose
c) Polythene d) Nylon
- 6) How is osmotic pressure generated in the solution?
a) Difference in solute concentration
b) Same solute concentration
c) Salting in
d) Salting out

- Q.2 Answer the following questions. (Any Three) 06**
- a) Define sedimentation coefficient.
 - b) Define buffer.
 - c) Define Isoelectric focusing.
 - d) Define Electrophoresis.
 - e) Define Biomolecules.
- Q.3 Write Short Notes. (Any Two) 06**
- a) Analytical centrifugation
 - b) Salting out with ammonium sulphate
 - c) Electrophoresis technique
- Q.4 Write Short Notes. (Any Two) 06**
- a) Types of rotors
 - b) Thin layer chromatography
 - c) Applications of Native and Denaturing PAGE
- Q.5 Answer the following questions. (Any One) 06**
- a) What is Cell disruption? Explain in details types of mechanical method.
 - b) What is Blotting techniques? Describe in details its types along with respective method.

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B.Sc. (Biotechnology) (सत्र - III) (नवीन) (NEP CBCS) परीक्षा:
मार्च / एप्रिल – २०२६
Co-Curricular Course
National Service Scheme (G05-CC-301)

वार, दिनांक: शनिवार, ११-०४-२०२६
वेळ: सकाळी ०९:०० ते १०:३०

कमाल गुण: ३०

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

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

०६

- १) स्वयंसेवा (Volunteerism) म्हणजे ——— .
अ) पगारी सेवा
ब) कोणत्याही मोबदल्याची अपेक्षा न करता सेवा
क) शासकीय काम
ड) व्यावसायिक क्रिया
- २) स्वयंसेवेचे एक महत्त्वाचे वैशिष्ट्य म्हणजे ———.
अ) स्वार्थ
ब) सामाजिक बांधिलकी
क) नफा मिळवणे
ड) स्पर्धा
- ३) प्रभावी संवाद म्हणजे ———.
अ) फक्त बोलणे
ब) फक्त लेखन
क) विचार व माहितीची देवाणघेवाण
ड) वाचन
- ४) धोरणात्मक नियोजन (Strategic Planning) ——— वर लक्ष केंद्रित करते.
अ) अनियमित निर्णय
ब) दीर्घकालीन उद्दिष्टे
क) तात्काळ कृती
ड) उद्दिष्टांकडे दुर्लक्ष
- ५) सामाजिक-आर्थिक सर्वेक्षण ——— संबंधित आहे.
अ) हवामान
ब) सामाजिक व आर्थिक स्थिती
क) क्रीडा
ड) वाहतूक
- ६) जनगणना किती कालावधीनंतर घेतली जाते?
अ) दरवर्षी
ब) ५ वर्षांनी
क) १० वर्षांनी
ड) दरमहा

- प्र.२ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) 0६
- अ) सामाजिक-आर्थिक सर्वेक्षणावर टीप लिहा.
ब) संवादाचे प्रकार लिहा.
क) साक्षरता माहिती संकलनाकरिता प्रश्नावली तयार करा.
ड) नियोजनाचे महत्त्व व मर्यादा लिहा.
- प्र.३ खालील प्रश्नाचे थोडक्यात उत्तर लिहा. (कोणताही एक) 0६
- अ) मुलाखात पद्धतीची प्रक्रिया थोडक्यात स्पष्ट करा.
ब) अहवाल लेखन थोडक्यात स्पष्ट करा.
- प्र.४ खालील प्रश्नाचे सविस्तर उत्तर लिहा. (कोणताही एक) १२
- अ) कार्यक्रमाच्या यशस्वी अंमलबजावणीसाठी आवश्यक बाबी कोणत्या? स्पष्ट करा.
ब) स्वयंसेवेची संकल्पना, भारतातील आदर्श व्यक्तिमत्त्वे आणि प्रभावी स्वयंसेवेसाठी आवश्यक नेतृत्व गुण स्पष्ट करा.

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Set **P**

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
Co-Curricular Course
National Service Scheme (G05-CC-301)

Day & Date: Saturday, 11-04-2026
 Time: 09:00 AM To 10:30 AM

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) Volunteerism refers to _____.
 - a) Paid service
 - b) Service without expectation of reward
 - c) Government work
 - d) Business activity
- 2) Key characteristic of volunteerism is _____.
 - a) Self interest
 - b) Social commitment
 - c) Profit motive
 - d) Competition
- 3) Effective communication means _____.
 - a) speaking only
 - b) writing only
 - c) exchange of ideas and information
 - d) reading
- 4) Strategic planning focuses on _____.
 - a) Random decision
 - b) Long term goals
 - c) Immediate action only
 - d) Ignoring objectives
- 5) Socio economic survey related to _____.
 - a) weather
 - b) social and economic condition
 - c) sports
 - d) transport
- 6) Census conducted every _____.
 - a) year
 - b) 5 years
 - c) 10 years
 - d) month

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

- a) Write a note on socio economic survey.
- b) Give the types of communication
- c) Design of Questionnaire to collect Literacy data.
- d) Write the importance and limitation of planning.

- Q.3 Write Short answer to questions. (Any One)** **06**
- a) Explain in brief process of interview method.
 - b) Explain in brief report writing.
- Q.4 Broad Question. (Any One)** **12**
- a) What are the requirements of successful implementation of Programmes.
 - b) Explain the concept of volunteerism, role models in India, and leadership attributes required for effective volunteering.

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Set **P**

B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
Co-Curricular Course
National Cadet Corps (G05-CC-302)

Day & Date: Saturday, 11-04-2026
 Time: 09:00 AM To 10:00 AM

Max. Marks: 15

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

Q.1 Choose the correct alternative from the options. 04

- 1) _____ is the highest civilian honor of India.

a) Bharat Ratna	b) Padma Vibhushan
c) Padma Shri	d) ParamVir Chakra

- 2) Tree plantation is a part of _____.

a) drill	b) weapon training
c) social service	d) None of these

- 3) _____ gave the slogan, 'Jai Jawan, Jai Kisan'.

a) Jawaharlal Nehru	b) Mahatma Gandhi
c) Lal Bahadur Shastri	d) None of these

- 4) There are _____ NCC directorates in India.

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

Q.2 Attempt any two of the following questions. 04

- a) Write down the aims of social service.
- b) Write down the names of camps in NCC.
- c) In which year Swachh Bharat Abhiyan was established?

Q.3 Write a short note. 03

Qualities of an Ideal citizen

Q.4 Describe the social services activity done in NCC. 04

OR

Describe the basic leadership traits.

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B.Sc. (Biotechnology) (Semester-III) (New) (NEP CBCS)
Examination: March/April - 2026
Co-Curricular Course
Sports (G05-CC-303)

Day & Date: Saturday, 11-04-2026
 Time: 09:00 AM To 10:00 AM

Max. Marks: 15

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

Q.1 Multiple choice questions. 04

- 1) There are _____ types of competitions in athletics.
 - a) Running
 - b) Jumping
 - c) Throwing
 - d) All of above

- 2) The cloth of the Olympic flag is of _____ color.
 - a) Yellow
 - b) White
 - c) Sky Blue
 - d) Pink

- 3) In a 4 × 100 meter relay competition, a team consists of _____ players.
 - a) Three
 - b) Four
 - c) Five
 - d) Six

- 4) The five circles in the Olympic flag symbolize _____.
 - a) Five sports
 - b) Five countries
 - c) Five continents
 - d) Five sports teams

Q.2 Short Notes. (Any Three) 06

- a) Shot put
- b) Sprint (100m/200m run)
- c) Olympic competition
- d) Javelin throw

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

- a) Write information about long jump.
- b) Write information with a diagram of the Olympic flag.

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Set P

B.Sc. (Biotechnology) (सत्र - III) (नवीन) (NEP CBCS) परीक्षा:
मार्च/एप्रिल – २०२६
Co-Curricular Course
Health, Wellness and Fitness (G05-CC-304)

वार, दिनांक: शनिवार, ११-०४-२०२६
वेळ: सकाळी ०९:०० ते १०:००

कमाल गुण: १५

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

- प्र.१ योग्य पर्याय निवडून प्रश्नांची उत्तरे लिहा. ०४**
- १) खालीलपैकी कोणता घटक मानसिक आरोग्याचा भाग नाही?
अ) भावनिक स्वास्थ्य ब) बौद्धिक कार्यक्षमता
क) केसांचा रंग ड) सामाजिक संबंध
- २) कोणता घटक मानसिक आरोग्यावर नकारात्मक परिणाम करू शकतो?
अ) मजबूत सामाजिक आधार ब) दीर्घकालीन तणाव
क) नियमित व्यायाम ड) संतुलित आहार
- ३) खालीलपैकी कोणता मानसिक आरोग्य विकार आहे?
अ) मधुमेह ब) उच्च रक्तदाब
क) नैराश्य ड) दमा
- ४) फिटनेस ॲप्सचा मुख्य उद्देश काय असतो?
अ) आरोग्याचे निरीक्षण करणे ब) मोबाईलची बॅटरी वाढवणे
क) इंटरनेट स्पीड वाढवणे ड) गेम खेळणे
- प्र.२ खालील प्रश्नांची थोडक्यात उत्तरे लिहा. (कोणतेही तीन) ०६**
- अ) फिटनेस ॲप्स म्हणजे काय?
ब) ध्यान म्हणजे काय?
क) प्राथमिक उपचार म्हणजे काय?
ड) खोल श्वसन करण्याची एक पद्धत सांगा.
इ) मानसिक आरोग्य म्हणजे काय?
- प्र.३ खालील प्रश्नाचे सविस्तर उत्तर लिहा. (कोणताही एक) ०५**
- अ) तणाव म्हणजे काय? त्याची कारणे लिहा.
ब) व्यायाम करताना दुखापती होण्याची कारणे कोणती?

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Set	P
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B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
Co-Curricular Course
Health, Wellness and Fitness (G05-CC-304)

Day & Date: Saturday, 11-04-2026
 Time: 09:00 AM To 10:00 AM

Max. Marks: 15

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

Q.1 Choose the correct alternative from the options. 04

- 1) Which of the following is not a part of mental health?

a) Emotional well-being	b) Intellectual efficiency
c) Hair color	d) Social relationships

- 2) Which factor can negatively affect mental health?

a) Strong social support	b) Chronic stress
c) Regular exercise	d) Balanced diet

- 3) Which of the following is a mental health disorder?

a) Diabetes	b) High blood pressure
c) Depression	d) Asthma

- 4) What is the main purpose of fitness apps?

a) To monitor health	b) To increase mobile battery life
c) To boost internet speed	d) To play games

Q.2 Write Short Answers. (Any Three) 06

- a) What are fitness apps?
- b) What is meditation?
- c) What is first aid?
- d) Name one method of deep breathing.
- e) What is mental health?

Q.3 Answer the following question in detail. (Any One) 05

- a) What is stress? Write its causes.
- b) What are the causes of injuries during exercise?

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B.Sc. (Biotechnology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
Co-Curricular Course
Yoga Education (G05-CC-305)

Day & Date: Saturday, 11-04-2026
 Time: 09:00 AM To 10:00 AM

Max. Marks: 15

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

Q.1 Choose the correct alternative from the options. 04

- 1) International Yoga Day begins It's been _____ years.
 - a) 2015
 - b) 2016
 - c) 2017
 - d) 2018
- 2) _____ This person proposed Yoga Day at the United Nations.
 - a) Swami Vivekanand
 - b) Narendra Modi
 - c) A.P.J. Abdul Kalam
 - d) V.P. Chandrasekhar
- 3) _____ Countries supported the proposal for Yoga Day at the United Nations.
 - a) 177
 - b) 200
 - c) 202
 - d) 250
- 4) Explain the philosophical significance of the day 21st June.
 - a) Uttarayan → Dakshinayana
 - b) The biggest day of the year
 - c) Last day of the year
 - d) All of the above options They are right

Q.2 Write short answers to the following questions. 06

- a) Briefly explain the importance of yoga in today's stressful lifestyle?
- b) What is the meaning of stress?
- c) Write any two yoga possess that are useful for Stress Relief?

Q.3 Write the answers to the following questions. (Any One) 05

- a) Source of stress in modern life.
- b) Write the philosophical significance of June 21.

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Set **P**

B.Sc. (Biotechnology) (Semester - IV) (New) (NEP CBCS)
Examination: March/April – 2026
Metabolism And Bioenergetics (G05-GE-OE-0401)

Day & Date: Wednesday, 15-04-2026
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

- Instructions:** 1) All questions are compulsory.
 2) Draw neat diagrams and give equations whenever necessary.
 3) Figures to the right indicate full marks.
 4) Use of Logarithmic table and non-programmable calculator is allowed.

Q.1 Multiple choice question:**06**

- 1) A tripeptide has _____.
 - a) 3 amino acids and 1 peptide bond
 - b) 3 amino acids and 2 peptide bonds
 - c) 3 amino acids and 3 peptide bonds
 - d) 3 amino acids and 4 peptide bonds

- 2) _____ is not a component of a phospholipid.

a) Phosphate	b) Alcohol
c) Glycerol	d) Protein

- 3) Oxysomes or $F_0 - F_1$ particles occur on _____.
 - a) Inner mitochondrial membrane
 - b) Chloroplast surface
 - c) Mitochondrial surface
 - d) Thylakoids

- 4) β -Oxidation of fatty acids requires all the following coenzymes except _____.

a) CoA	b) FAD
c) NAD	d) NADP

- 5) Urea cycle converts _____.
 - a) Keto acids into amino acids
 - b) Amino acids into keto acids
 - c) Ammonia into a less toxic form
 - d) Ammonia into a more toxic form

- 6) Which of the following is the precursor of glycogen?

a) Glycerol 3-phosphate	b) Malate
c) UDP-glucose	d) Leucine and lysine

- Q.2 Attempt the following. (Any Three) 06**
- a) Define gluconeogenesis.
 - b) Define bioenergetics.
 - c) Define Transamination.
 - d) Define hydrolysis.
 - e) Define metabolism.
- Q.3 Write Short Note. (Any Two) 06**
- a) Describe in details beta oxidation of fatty acids.
 - b) Describe in details ATP synthase enzyme.
 - c) Describe in details Salvage pathways of nucleotide.
- Q.4 Attempt the following. (Any Two) 06**
- a) Describe in details Urea cycle.
 - b) Describe in details components of ETC.
 - c) Describe in details role of Rubisco enzyme.
- Q.5 Answer the following. (Any One) 06**
- a) What is glycolysis? Explain in details its pathway.
 - b) What is Photosynthesis? Describe in details cyclic and noncyclic photophosphorylation.

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B.Sc. (Biotechnology) (Semester - IV) (New) (NEP CBCS)
Examination: March/April – 2026
Bioethics and Biosafety (G05-GE-OE-0402)

Day & Date: Wednesday, 15-04-2026
 Time: 12:00 PM To 01:30 PM

Max. Marks: 30

- Instructions:** 1) All questions are compulsory.
 2) Draw neat diagrams and give equation 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 alternatives and rewrite the following sentences. 06

- 1) Which of the following is the main aim of Biosafety?
 - a) To promote Economic Growth
 - b) To prevent misuse of Laboratory Equipment.
 - c) To protect Humans, Animals, and the Environment from Biological Hazards
 - d) To improve Genetic Engineering Techniques

- 2) What is the full form of BSL In Laboratory Biosafety?

a) Biosecurity Safety Level	b) Biological Safety Level
c) Basic Security Level	d) Biotechnological Standard Limit

- 3) Which organization has laid down international guidelines for biosafety?

a) WHO	b) FAO
c) CAC	d) OECD

- 4) Which of the following is not a primary ethical issue associated with the Human Genome Project?
 - a) Genetic Discrimination
 - b) Privacy of Genetic Data
 - c) Ownership of Human Genetic Information
 - d) Use of Animal Models in Gene Therapy

- 5) What does BSL-4 (Biosafety Level-4) represents _____.
 - a) Lowest risk, Minimal precautions
 - b) Moderate risk, Requires Specialized Clothing
 - c) High risk, Aerosol-transmitted Agents
 - d) Maximum containment for dangerous, exotic agents with high risk of life-threatening diseases

- 6) What is the focus of Bioethics in Biotechnology?
- a) Increasing the profitability of Biotech Companies
 - b) Ensuring the moral and legal implications of Biotechnological advances
 - c) Maximizing the Economic Potential of Genetic Modification
 - d) Reducing the costs of Genetic Modifications

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

- a) What is Bioethics?
- b) What is Biosafety?
- c) What is Transgenic Animals?
- d) What is Genetic Engineering?
- e) Define Biosafety Levels.

Q.3 Write short notes. (Any Two) 06

- a) Explain Human Genome Project.
- b) Explain Animal Rights.
- c) Describe the BSL Facilities.

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

- a) Explain Ethical guidelines for Animal Research.
- b) Explain Biosafety guidelines in India.
- c) Explain Biosafety during Industrial Production.

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

- a) Describe in detail about Biosafety Levels.
- b) Explain in detail ethical issues in Health Sciences.

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Set **P**

B.Sc. (Biotechnology) (Semester - IV) (New) (NEP CBCS)
Examination: March/April – 2026
ENGLISH
Reading Texts in Indian English - II (G05-ENG-401)

Day & Date: Thursday, 16-04-2026
 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) What is India's true strength according to Tagore?
 - a) Military power
 - b) Economic growth
 - c) Spiritual wisdom
 - d) Political influence
- 2) What is the central idea of the essay?
 - a) Scientific progress
 - b) Unity of thought and purpose
 - c) Political power
 - d) Economic growth
- 3) Sudha Murthy was the first woman engineer at _____.
 - a) ISRO
 - b) Infosys
 - c) BHEL
 - d) TELCO
- 4) The tone of the poem Hunger is _____.
 - a) Humorous
 - b) Romantic
 - c) Tragic
 - d) Playful
- 5) Sunrise symbolizes _____.
 - a) Fear
 - b) Death
 - c) Hope
 - d) Anger
- 6) The "house" in the poem The House of My Childhood symbolizes _____.
 - a) Wealth
 - b) Power
 - c) Fear
 - d) Emotional security

Q.2 Write Short Answers. (Any Two)**06**

- a) How is nature connected to human life in the poem Sunrise?
- b) What kind of hunger is shown in the poem?
- c) Why does Tagore criticize nationalism?
- d) What was Sudha Murthy's achievement in the engineering field?

Q.3 Write short answers. **06**

The central idea of the poem The House of My Childhood by Dilip Chitre.

Q.4 Write the detail answer. (Any One) **12**

- a) Who is Sudha Murthy? What is the role of Infosys Foundation?
- b) Elaborate the central theme of the 'Essay Unity of Mind' by A. P. J. Abdul Kalam and his vision of developed nation.

- Q.3 Answer the following. (Any Two) 06**
- a) Explain Primary and secondary immune response.
 - b) Write a note on hemolytic autoimmune disorder.
 - c) Describe recombinant Vector vaccines.
- Q.4 Answer the following. (Any Two) 06**
- a) Explain B cell maturation.
 - b) Write a note on Principles and applications of antigen-antibody interaction.
 - c) Write in brief about CTL mediated cytotoxicity.
- Q.5 Answer the following. (Any One) 06**
- a) Explain in detail about Processing of Endogenous Antigens by the Cytosolic Pathway.
 - b) Explain basic principles and applications of ELISA.

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Set **P**

B.Sc. (Biotechnology) (Semester - IV) (New) (NEP CBCS)
Examination: March/April– 2026
Molecular Biology – II (G05-DSC1-0402)

Day & Date: Saturday, 18-04-2026
 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.

Q.1 Choose correct alternative. 06

- 1) The core Enzyme of Prokaryotic RNA polymerase is composed of _____.
 - a) $\alpha_2 \beta \beta'$
 - b) $\alpha_2 \beta \beta' a$
 - c) $\beta \beta' \alpha$
 - d) $\beta \beta' a$
- 2) Transcription unit consists of _____.
 - a) Promoter, structural gene and terminator
 - b) Operator, repressor and inducer
 - c) Exons and introns
 - d) Enhancer and Silencer
- 3) Rho dependent termination of Transcription requires _____.
 - a) Sigma factor
 - b) Rho Protein
 - c) DNA Ligase
 - d) Helicase
- 4) Termination of Transcription in eukaryotes is associated with _____.
 - a) Rho factor
 - b) operator region
 - c) Sigma Factor
 - d) polyadenylation signal
- 5) The Lac operon is an example of an _____.
 - a) Repressible operon
 - b) Constitutive operon
 - c) Inducible operon
 - d) Attenuated operon
- 6) Organelle involved in protein synthesis _____.
 - a) Lysosome
 - b) Ribosome
 - c) Peroxisome
 - d) Nucleus

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

- a) Define Holoenzyme.
- b) Define Spliceosome.
- c) Define Promoters.
- d) Define Exons.
- e) Define Activators.
- f) Define Degeneracy.

- Q.3 Write short notes. (Any Two)** **06**
- a) Structure of RNA polymerase enzymes
 - b) structure of RNA
 - c) Split Genes
- Q.4 Write short notes. (Any Two)** **06**
- a) Write in detail the process of Transcription in Prokaryotes with neat labelled diagram.
 - b) Write in detail the Lac operon concept with labelled diagram.
 - c) Write in detail Post Translational Modification.
- Q.5 Answer the following question. (Any One)** **06**
- a) Explain the process of Translation in Prokaryotes.
 - b) Explain Genetic Code with its salient properties.

- Q.3 Write short notes. (Any Two) 06**
- a) Lampbrush chromosome
 - b) Chemical mutagenic agents
 - c) Mini satellite
- Q.4 Answer the following. (Any Two) 06**
- a) Write in detail the structure of chromosome with neat labelled diagram.
 - b) Write in detail the Detection of Mutants.
 - c) Write in detail types of Bacterial Transposons.
- Q.5 Answer the following question. (Any One) 06**
- a) Explain in detail mitosis with neat labelled diagram.
 - b) Explain numerical alteration in chromosome with neat labelled diagram.

- Q.2 Answer the following. (Any Three) 06**
- a) Write about pH indicators.
 - b) State Beer Lambert's law.
 - c) Define Absorption maxima.
 - d) Enlist applications of Light microscopy.
 - e) What is radioactivity?
- Q.3 Answer the following. (Any Two) 06**
- a) Write about calibration of and errors in pH measurement.
 - b) Explain principle of colorimeter.
 - c) Explain Principles of Light microscopy.
- Q.4 Write short notes. (Any Two) 06**
- a) Write a note on Mass spectroscopy.
 - b) Write a short note on Autoradiography.
 - c) Explain principle of flow cytometry.
- Q.5 Answer the following question. (Any One) 06**
- a) Explain Principle and applications of Geiger Muller Counter.
 - b) Explain working and applications of UV- visible spectroscopy.