

पूर्वाञ्चल विश्वविद्यालय  
गोठगाऊँ, मोरङ्ग, नेपाल



विज्ञान तथा प्रविधि संकाय

प्रवेश परीक्षा तथा विद्यार्थी भर्ना सम्बन्धी विनियमावली २०७८  
पूर्वाञ्चल विश्वविद्यालय  
विराटनगर, मोरङ्ग ।

## प्रवेश परीक्षा तथा विद्यार्थी भर्ना सम्बन्धी विनियमावली २०७८

पूर्वाञ्चल विश्वविद्यालय विज्ञान तथा प्रविधि संकाय अन्तर्गत संचालित विभिन्न शैक्षिक कार्यक्रमहरूको प्रवेश परीक्षा तथा विद्यार्थी भर्ना प्रक्रियालाई थप सुदृढ, पारदर्शी, समयानुकूल बनाउन पूर्वाञ्चल विश्वविद्यालय विज्ञान तथा प्रविधि संकायको प्रवेश परीक्षा तथा विद्यार्थी भर्ना सम्बन्धी विनियमावली २०७८ बनाई लागु गर्न वाञ्छनीय देखिएको छ ।

### १. संक्षिप्त नाम र प्रारम्भ

(क) यो विनियामावलीको नाम पूर्वाञ्चल विश्वविद्यालय विज्ञान तथा प्रविधि संकायको “प्रवेश परीक्षा तथा विद्यार्थी भर्ना सम्बन्धी विनियामावली २०७८” रहनेछ ।

(ख) यो विनियामावली शैक्षिक वर्ष २०७८/०७९ साल देखि लागु हुनेछ ।

### २. परिभाषा: विषय वा प्रसंगले अर्को अर्थ नलागेमा यस विनियामावलीमा:

१. “विनियामावली” भन्नाले पूर्वाञ्चल विश्वविद्यालय विज्ञान तथा प्रविधि संकायको प्रवेश परीक्षा तथा विद्यार्थी भर्ना सम्बन्धी विनियामावली २०७८ भन्ने सम्झनुपर्दछ ।

२. “प्रवेश परीक्षा” भन्नाले पूर्वाञ्चल विश्वविद्यालय विज्ञान तथा प्रविधि संकायले संचालन गर्ने प्रवेश परीक्षा भन्ने बुझ्नु पर्दछ ।

३. “स्नातक” तह भन्नाले पूर्वाञ्चल विश्वविद्यालय विज्ञान तथा प्रविधि संकाय अन्तर्गत हाल संचालित स्नातक तहका कार्यक्रमहरू भन्ने बुझ्नुपर्दछ ।

४. “स्नातकोत्तर” तह भन्नाले पूर्वाञ्चल विश्वविद्यालय विज्ञान तथा प्रविधि संकाय अन्तर्गत हाल संचालित स्नातकोत्तर तहका कार्यक्रमहरू भन्ने बुझ्नुपर्दछ ।

५. “अंकभार” भन्नाले प्रवेश परीक्षामा सम्बन्धित विषयहरूबाट सोधिने प्रश्नहरूको प्रतिशत भन्ने बुझ्नुपर्दछ ।

६. “पूनः प्रवेश परीक्षा” भन्नाले पहिलो पटक प्रवेश परीक्षा भइसकेपछि हुने दोश्रो परीक्षा भन्ने बुझ्नुपर्दछ ।

७. “डीन” भन्नाले संकायको डीन भन्ने बुझ्नुपर्दछ ।

८. “संकाय” भन्नाले पूर्वाञ्चल विश्वविद्यालय अन्तर्गतका संकाय भन्ने सम्झनुपर्दछ ।

९. “प्रवेश परीक्षा समिति” भन्नाले पूर्वाञ्चल विश्वविद्यालय विज्ञान तथा प्रविधि संकायको प्रवेश परीक्षा संचालनको लागि गठन गरिएको समिति भन्ने बुझ्नुपर्दछ ।

१०. “योग्यता क्रम” (Merit List) भन्नाले प्रवेश परीक्षामा प्राप्त प्राप्तांक अनुसार सबैभन्दा बढी अंक ल्याउने लाई पहिलो क्रममा राखी तयार गरिएको विद्यार्थीहरूको List भन्ने बुझ्नुपर्दछ ।

११. “विश्वविद्यालय” भन्नाले पूर्वाञ्चल विश्वविद्यालय भन्ने बुझ्नुपर्दछ ।

### ३. प्रवेश परीक्षाको फारम तथा आवश्यक कागजात सम्बन्धमा

(क) संकायबाट लिइने प्रवेश परीक्षाको सूचना राष्ट्रिय दैनिक पत्रिका/विश्वविद्यालयाको वेबसाइटमा प्रकाशित गरिने छ ।

(ख) संकायबाट भएको प्रवेश परीक्षाको सूचना अनुसार विद्यार्थीहरूले आफूले अध्ययन गर्न चाहेको शैक्षिक संस्था तथा कार्यक्रम छनोट गरि अनलाइन माफर्त फारम भर्नु पर्ने छ ।

(ग) प्रवेश परीक्षामा फारम भर्ने विद्यार्थीहरूको योग्यता पुगे नपुगेको, आवश्यक कागजातहरू दुरुस्त भए नभएको पूर्ण जाच गरि सम्बन्धित प्रवेश परीक्षा समितिले रूजु गरेको हुनुपर्नेछ । सम्बन्धित प्रवेश परीक्षा समितिले रूजु नगरेको प्रवेश परीक्षा फारम स्वीकृति गरिने छैन । विश्वविद्यालयले तोकेको मापदण्ड तथा न्यूनतम योग्यता अनुसार फारम भरेको नभएमा उक्त फारम स्वतः खारेज (अस्वीकृत) हुनेछ । र सोको जिम्मेवारी स्वयम् सम्बन्धित परीक्षार्थी हुनेछ ।

(घ) संकायबाट संचालन हुने प्रवेश परीक्षाको सूचना Online विधिबाट फाराम भर्ने गरी प्रकाशित गरिने छ । सम्बन्धित परीक्षार्थीले अध्ययन गर्न चाहेको शैक्षिक कार्यक्रमका लागि आवश्यक न्यूनतम योग्यता पुरा गरेको हुनु पर्ने छ । परीक्षार्थीहरूले Online विधि माफत तोकिएको समयसिमा भित्र प्रवेश परीक्षाको फाराम भर्नु पर्ने छ ।

(ङ) आरक्षणकोटामा फारम भर्न चाहने विद्यार्थीले उक्त फारममा आरक्षणको कोटामा उल्लेख गर्नु पर्नेछ ।

#### ४. विद्यार्थी भर्ना सम्बन्धी व्यवस्था

(क) सम्बन्धनप्राप्त क्याम्पसहरूले कुनै शैक्षिक कार्यक्रम लगातार ३ (तीन) वर्षसम्म संचालन नगरेको खण्डमा प्रवेश परीक्षा अगावै विश्वविद्यालयले तोकेको पूनः संचालनको प्रकृया पूरा गरी उक्त शैक्षिक कार्यक्रममा विद्यार्थी भर्ना गर्न पाउनेछ ।

#### ५. प्रवेश परीक्षा समिति

पू. वि. कार्यकारी परिषदले प्रवेश परीक्षा संचालनका लागि सम्बन्धित संकायको डीन वा डीनले तोकेको व्यक्तिको संयोजकत्वमा प्रवेश परीक्षा समिति गठन गर्नेछ । प्रवेश परीक्षा डीन कार्यालयबाट संचालन हुनेछ । प्रवेश परीक्षा समितिले प्रवेश परीक्षालाई ब्यवस्थित गरी संचालन गर्न आवश्यक कार्यविधीहरू बनाउन सक्नेछ । गठित समितिले प्रवेश परीक्षाको सम्पूर्ण प्रक्रिया पूरा गरी नतिजा प्रकाशन गर्नेछ । प्रवेश परीक्षा समितिले आवश्यकता अनुसार विज्ञहरू र सम्बन्धित डीन कार्यालयका कर्मचारीहरू समेत रहने गरी विभिन्न उपसमिति गठन गरी कार्य गर्न सक्नेछ । विज्ञहरू र कर्मचारीहरूलाई यस विनियमावलीको अनुसूचीमा उल्लेख भए अनुसारको पारिश्रमिक उपलब्ध गराइनेछ ।

#### ६. पूनः प्रवेश परीक्षा सम्बन्धी व्यवस्था

प्रथम प्रवेश परीक्षा पश्चात् विद्यार्थी भर्ना भइसकेपछि विश्वविद्यालयले निर्धारण गरेको कोटा (शैक्षिक कार्यक्रम अनुसार) ५० प्रतिशत वा सो भन्दा बढी भर्ना नभएमा सम्बन्धित कलेजहरूले लिखित रूपमा डीन कार्यालयमा निवेदन दिनु पर्नेछ । सो पश्चात् सम्पूर्ण कलेजहरूको जम्मा कोटा र विद्यार्थीहरूको कूल भर्ना संख्यालाई विश्लेषण गरी डीन कार्यालयबाट पूनः प्रवेश परीक्षा संचालन गर्ने वा नगर्ने सम्बन्धमा आवश्यक जानकारी गराइनेछ । साथै प्रथम प्रवेश परीक्षाको नतिजा प्रकाशित भई भर्नाका लागि दिइएको समयवधि समाप्त भएको ४५ दिन भित्रमा दोश्रो प्रवेश परीक्षा सम्पन्न गरिसक्नु पर्ने छ ।

#### ७. प्रवेश परीक्षाको समय मिति तथा केन्द्र सम्बन्धमा

(क) प्रवेश परीक्षाको केन्द्र, मिति, समय र स्थान प्रवेश परीक्षा समितिको निर्णय बमोजिम हुनेछ । सो सम्बन्धी विस्तृत जानकारी अग्रिम रूपमा समयमानै राष्ट्रिय दैनिक पत्रिका/विश्वविद्यालयको वेबसाइटमा प्रकाशित गरिने छ ।

(ख) परीक्षार्थीहरूले Online बाट नै प्रवेश पत्र (Admit Card) Print गरी नेपाल सरकारबाट जारी गरिएको परीक्षार्थीको फोटो सहितको विवरण खुलेको (नागरिकता / सवारीचालक अनुमतिपत्र / राष्ट्रिय परिचय पत्र / मतदाता परिचय पत्र) को सक्कल सहित परीक्षा संचालन हुने दिन परीक्षामा उपस्थित हुनु पर्ने छ । अन्यथा प्रवेश परीक्षामा सहभागी गराइने छैन ।

#### ८. प्रवेश परीक्षा नतिजा प्रकाशन सम्बन्धी व्यवस्था

(क) प्रवेश परीक्षामा प्राप्त गरेको अंकको आधारमा नतिजा (Merit List) प्रकाशन गरिने छ ।



## अनुसूची: १

### १. विज्ञान तथा प्रविधि संकाय प्रवेश परीक्षा समितिको कार्यविधि

#### १.१. प्रवेश परीक्षा नतिजा प्रकाशन बिधी

(क) प्रवेश परीक्षा उत्तीर्ण गर्न स्नातक तहको हकमा न्यूनतम **३३%** अंक प्राप्त गरेको हुनुपर्नेछ तर **Bachelor of Veterinary Science and Animal Husbandry** कार्यक्रमको हकमा कम्तिमा **५०%** अंक प्राप्त गरेको हुनुपर्नेछ । **PGDCA** को हकमा न्यूनतम **३३%** अंक प्राप्त गरेको हुनुपर्नेछ । स्नातकोत्तरको हकमा न्यूनतम **४०%** अंक प्राप्त गरेको हुनुपर्नेछ ।

(ख) परीक्षार्थीहरूले प्रवेश परीक्षामा प्राप्त गरेका कुल प्राप्तांक बराबर भएमा निजहरूको १ तह मुनिको प्राप्तांक प्रतिशतको आधारमा सूची प्रकाशित गरिनेछ ।

#### १.२. प्रवेश परीक्षाको अंकभार सम्बन्धी व्यवस्था

(क) प्रवेश परीक्षामा सबै तहमा बस्तुगत (Objective) प्रश्नहरू १०० अंकको सोधिने छ ।

(ख) स्नातक तहको हकमा निम्न अनुसार अंक विभाजन हुनेछ । Syllabus अनुसूची ३ मा दिइएको छ ।

समूह (क)		समूह (ख)		समूह (ग)	
विषय	अङ्कभार	विषय	अङ्कभार	विषय	अङ्कभार
English	१५	English	२५	English	२५
Math	१५	Math	१५	Math	१५
Physics	१५	Basic Computer	३५	Basic Computer	३५
Chemistry	२०	Aptitude	२५	Aptitude	२५
Biology	३५				

नोट:

#### समूह (क) अन्तर्गतका शैक्षिक कार्यक्रमहरू:

- B.Sc. (Hons.) Agriculture
- B.V.Sc. & AH.
- B.Sc. Biotechnology
- B.Tech. Biotechnology
- Bachelor in Food / Dairy Technology
- B.Sc. Forestry
- B.Sc. Biochemistry

#### समूह (ख) अन्तर्गतका शैक्षिक कार्यक्रमहरू:

- BCA
- BIT

#### समूह (ग) अन्तर्गतका शैक्षिक कार्यक्रम:

- PGDCA

(ग) स्नातकोत्तर तह अन्तर्गतका विभिन्न शैक्षिक कार्यक्रमहरूको हकमा निम्न अनुसार अंक विभाजन हुनेछ ।

विषय	अङ्कभार
Aptitude test	३०
Related subject	७०



(घ) स्नातकोत्तर तहको प्रवेश परीक्षामा सोधिने प्रश्नहरूको अंक विभाजन तपसिल बमोजिम हुने छ ।

Master of Computer Application (MCA)		Master in Information Technology (MIT)	
Aptitude	30	Aptitude	30
Computer Concept & IT	30	IT Fundamentals	30
C Programming & OOP	10	C Programming & OOP	10
Operating System	5	Operating System	5
SAD & Software Engineering	5	SAD & Software Engineering	5
Networking & Web Technology	5	Networking & Telecommunication	5
Data Structure	5	Data Structure & DBMS	5
DBMS	5	Basic Electronics	5
Digital Logic	5	Digital Logic	5
<b>M.Sc. Agri-Business Mgmt.</b>			
Aptitude	30		
Agriculture	50		
Food & Dairy Technology	10		
Biochemistry	5		
Veterinary Science	5		
<b>M.Sc. in Nutrition &amp; Dietetics</b>		<b>M.Sc. in Meat Technology</b>	
Aptitude	30	Aptitude	30
Nutrition	30	Meat Technology	30
Food Technology	10	Food & Dairy Technology	15
Dairy Technology	10	Biochemistry	5
Biochemistry	5	Biotechnology	5
Biotechnology	5	Agriculture	5
Agriculture	5	Veterinary Science	5
Veterinary Science	5	Microbiology	5

(ङ) प्रवेश परीक्षाको समयावधि २ घण्टाको हुनेछ ।

### १.३. विद्यार्थी भर्ना सम्बन्धी व्यवस्था:

(क) पूर्वाञ्चल विश्वविद्यालयको कुनै पनि शैक्षिक कार्यक्रममा भर्ना हुन चाहने विद्यार्थीले अनिवार्य रूपमा सम्बन्धित संकायद्वारा संचालित प्रवेश परीक्षा उत्तिर्ण गरेको हुनु पर्नेछ । स्नातक तहमा विद्यार्थीले जुन समूहमा प्रवेश परीक्षा उत्तिर्ण गरेको हो सोहि समूहमा भर्ना लिन सक्नेछन् । तर समूह 'क' मा उत्तिर्ण गरेका विद्यार्थीहरूले समूह 'ख' को शैक्षिक कार्यक्रमको मापदण्ड अनुसार भर्ना लिन पाउने छन् । साथै पू.वि. इञ्जिनियरिङ्ग संकाय अन्तर्गतका कुनै पनि समूहमा प्रवेश परीक्षा उत्तिर्ण गरेका विद्यार्थीहरूले विज्ञान तथा प्रविधि संकायको समूह 'ख' अन्तर्गतका शैक्षिक कार्यक्रमहरूमा निर्धारित सिट संख्या रिक्त भएमा सोही शैक्षिक कार्यक्रमको भर्ना सम्बन्धि न्यूनतम मापदण्ड अनुसार भर्ना लिन पाउने छन् ।

१.४. प्रवेश परीक्षामा सम्मिलित हुन चाहिने न्यूनतम योग्यता:

स्नातक तहको शैक्षिक कार्यक्रमका लागि

➤ समूह (क) को लागि:

B.Sc. (Hons.) Agriculture / B.Sc. Biotechnology / B.Tech. Biotechnology / Bachelor in Food & Dairy Technology / B.Sc. Biochemistry Programs:

- The Candidate must have passed +2 Science/A level or Equivalent (with Physics, Chemistry, Biology & English) from any recognized University with minimum 45% marks or GPA 2.0 in aggregate.

•

B.V. Sc. & AH. Program:

- The Candidate must have passed +2 Science/A Level or Equivalent (with Physics, Chemistry, Biology & English) from any recognized University with minimum 50% marks or GPA 2.40 in aggregate.
- The Candidate must have scored minimum C+ or GPA 2.00 in SEE or equivalent.

B.Sc. Forestry

- The Candidate must have passed +2 Science/A Level or Equivalent with Biology or Mathematics or 3 years Diploma in Forestry from any recognized University with minimum 50%marks or C+ (GPA 2.40) in aggregate.

➤ समूह (ख) को लागि:

BCA Program:

- The Candidate must have passed +2 or Equivalent from any recognized University with minimum 45% marks or minimum D+ grade in each subjects with GPA 2.00 in aggregate.

BIT Program:

- The Candidate must have passed +2 or Equivalent with a Mathematics subject of 100 marks with D+ grade from any recognized University and minimum 45% marks or D+ grade in each subjects with GPA 2.00 in aggregate.

➤ समूह (ग) को लागि:

PGDCA Program:

- The Candidate must have passed graduation with a minimum of 10+2+3 years of education in any stream with minimum 45% marks or GPA 2.00 in Bachelor degree.

## स्नातकोत्तर तहको शैक्षिक कार्यक्रमका लागि:

### Master of Computer Application (MCA) Program:

- The Candidate must have passed B.Sc. Computer Science, B.Sc. CSIT, B.Sc. IT, BEIT, BICT, BCA, BIT, PGDCA, BIM, BCIS, BBIS, or Bachelor degree related to Computer Application, Information System, Information Technology, Information Science, Computer Science, Computer Engineering, Electronics and Communication Engineering or equivalent with minimum 45% marks or GPA 2.00 in aggregate.

### Master of Information Technology (MIT) Program:

- The Candidate must have passed B.Sc. Computer Science, B.Sc. CSIT, B.Sc. IT, BEIT, BCA, BIT, PGDCA, BIM, BCIS, BBIS, or Bachelor degree related to Information System, Information Technology, Information Science, Computer Application, Computer Science, Computer Engineering, Electronics and Communication Engineering or equivalent with minimum 50% marks or GPA 2.00 in aggregate.

### Master of Science in Agriculture (Agri-Business Management) Program:

- The Candidate must have passed B.Tech. or B.Sc. (Food/Dairy/Bio-Technology, Biochemistry), B.Sc.(Ag), or B.E.(Ag), B.V.Sc. & A.H., B.Sc. (Biological Science) or equivalent degree from any recognized University with minimum 50% marks or CGPA 2.40 (C+ grade) in aggregate.

### Master in Food Technology

- The Candidate must have passed B.Tech. Food/Dairy Technology or equivalent degree from any recognized University with minimum 50% marks or CGPA 2.40 (C+ grade) in aggregate.

### Master's of Science in Dairy Technology (M.Sc. Dairy Tech.)

and

### Master's of Science in Meat Technology (M.Sc. Meat Tech.)

- The Candidate must have passed B.Tech. or B.Sc. (Food/Dairy/Bio-Technology), B.Sc. or B.E. Agriculture, B.V.Sc. & A.H., B.Sc. Biochemistry, B.Sc. Microbiology or equivalent degree from any recognized University with minimum 50% marks or CGPA 2.40 (C+ grade) in aggregate.

### M.Sc. in Nutrition and Dietetics

- The Candidate must have passed four years Bachelor degree in Science or Technology based curriculum B.Tech. or B.Sc. (Food/Dairy), B.Sc. Nutrition, B.Sc. Nursing, PBN, Bachelor of Public Health, B.Sc (Ag.), B.V.Sc. & A.H., B.Sc. Biochemistry, B.Sc. Biotechnology, Bachelor of Pharmacy, MBBS or equivalent degree from any recognized University with minimum 50% marks or CGPA 2.40 (C+ grade) in aggregate.

In case of foreign certificate, student should submit equivalent certificate and grading of each subject with CGPA or total percentage document from concerned authority.



**अनुसची २**  
**PURBANCHAL UNIVERSITY**  
**Faculty of Science & Technology**

(online link)

Name of College:

Address:

Contact Number:

Email:

Program:

Academic Year:

S.No.	Name of the Student	Gender	Date of Birth	Permanent Address (VDC/Municipality/District)	+ 2 or Equivenent Percentage/Grade	Contact Number	E-mail Id	Remarks
1								
2								
3								

**Approved By:**

Name:

Designation:

Campus Chief Signature:

Date:

College Seal

**अनुसची ३**  
**PURBANCHAL UNIVERSITY**  
**FACULTY OF SCIENCE AND TECHNOLOGY**

**Syllabus for Entrance Exam (Bachelor's Level)**

**Subject: English**

**Unit A:**

Phonological questions, dealing with phonemes, Phonemic symbols and word stress

**Unit B:**

Lexical Questions, Dealing with word formations and antonyms, a synonyms and one words for many words.

**Unit C:**

Grammatical Question, dealing with the rest of the items given in the syllabus.

Each Question is of objective type with multiple choice answer which carries one marks.

**Contents**

1. Use of Pronouns
2. Relative Pronouns
3. Sound
4. Stress
5. Intonation
6. Subject – Verb Agreements
7. Voice
8. Narration
9. Use of tense
10. Punctuation
11. Parts of Speech
12. Causative verb
13. Linking Verbs
14. Use of Prepositions
15. Sentence Structure
16. Transformation of Sentences
17. Conditional Sentences
18. To infinitive and gerund forms
19. Question Tag
20. Synonyms and Antonyms

21. One Word Substitution
22. Use of Suffix and Prefix
23. Word Power
24. The expression "As IF" and "As Though"
25. The expression "NEED" and "In Need of"
26. Idioms and Phrases
27. Sentences: Simple, Compound and Complex
28. Affirmative and Negative Agreements
29. Use of Articles
30. Analogies

**Subject: Mathematics**

**1. Set and functions**

Set, type of sets, operation on sets, law of sets, real number, Cartesian product, relations, functions and graphs, algebraic, exponential, trigonometric and logarithmic, hyperbolic functions and their inverse, basic properties of logarithmic functions.

**2. Algebra**

Determinants and its properties, matrices, type of matrices, minor, cofactors and inverse of a matrix, uses of complex numbers, polynomial equation, sequences and series, permutation and combination, binomial theorem, exponential and logarithmic series.

**3. Trigonometry**

Trigonometric equations and general values, inverse trigonometric relations, inverse circular functions, principal values, properties of triangles, centroid, incentre, orthocenter and circumcentre and their properties.

**4. Coordinate geometry**

Coordinates in a plane, straight lines, pair of lines, circles, conic sections: parabola, hyperbola and ellipse, standard equations and simple properties, coordinates in space, plane and its equation.

**5. Calculus**

Limit and continuity, derivative and its application, rules of derivative, rate of change, maxima and minima of a function, integration, rules of integration, standard integral, definite integral and its application.

**6. Vectors**

Vectors in space, addition, subtraction and multiplication of vectors, unit vectors, linear combination of vectors, scalar and vector product of two vectors, application of vectors.



## Subject: Physics

### 1. Mechanics:

- Dimensions and Error analysis.
- Equations of motion.
- Motion of a projectile.
- Addition, Subtraction and multiplication of vectors, Resolution of a vector.
- Relative velocity.
- Laws of motion, Principle of conservation of linear momentum, Impulse, solid friction.
- Principle of moment, centre of mass, centre of gravity.
- Work, power and energy, principle of conservation of energy.
- Centripetal force and its application.
- Moment of inertia, Torque on a body, angular momentum and its conservation, work done by couple, kinetic energy of rolling body.
- Law of gravitation, Gravitational potential, Gravitational field intensity, Escape velocity, Total energy of a satellite, Kepler's law of planetary motion.
- Characteristics of S.H.M., Energy of a particle executing S.H.M., Simple pendulum.
- Elasticity, Stress & Strain, Moduli of elasticity, Energy Stored in a stretched wire.
- Surface tension of liquid, Surface energy, Capillarity.
- Viscosity of fluid, coefficient of viscosity, Stoke's law.
- Terminal velocity, Energy of fluid.

### 2. Heat:

- Heat and Temperature, Scales of temperature, Thermal equilibrium.
- Measurement of heat, Specific heat capacity, thermal capacity, Latent heat.
- Expansion of Solid, liquid and gas.
- Gas laws, Ideal gas equation.
- Kinetic theory of gas. Root mean square speed of gas molecules.
- Transfer of heat, Conduction, Convection and Radiation, Stefan's law, Kirchhoff's law.
- Relative humidity and dew point.
- First law of thermodynamics, Isothermal and adiabatic processes.
- Second law of thermodynamics, Carnot's engine, Entropy.

### 3. Optics:

- Formation of images by plane and curved mirrors.
- Refraction of light through plane surface, Refractive index, Critical angle, Total internal reflection.
- Refraction through lenses, Achromatic combination of two lenses.
- Visual angle, Angular magnification, Microscope and Telescope.
- Interference, Diffraction and Polarization of light.

#### 4. **Sound:**

- Damped and forced oscillation, Resonance, progressive waves, principle of superposition.
- Velocity of Sound in solid, liquid and gas, Laplaces correction.
- Beat phenomena.
- Doppler effect.
- Stationary waves, waves in pipe, waves in string.

#### 5. **Electricity:**

- Electric charge, Electrostatic induction, Surface charge density.
- Electric field, Electric potential, Electric field intensity, Gauss's law and its applications. ➤ Capacitors, Dielectric Strength.
- Metallic Conduction, Ohm's law, Resistance, Conductance, Resistivity, Conductivity, Combination of resistance.
- Emf, Potential difference, internal resistance of a cell, Combination of cells.
- Heating effect of Current, Joule's law, Electric power.
- Kirchhoff's law and its application.
- Galvanometer, Conversion of galvanometer into voltmeter and ammeter.
- Earth's magnetism.
- Magnetic field, Magnetic flux, Force on Current Carrying Conductor, Biot-Savart's law and their applications. Ampere's law.
- Electromagnetic induction, Faraday's law and Lenz's law, Emf in rotating coil.
- AC circuits.

#### 6. **Atomic Physics:**

- Discharge of electricity through gases, Cathode rays, Electronic mass and charge.
- Bohr's theory of atomic model, Energy level diagram.
- X-rays, Photoelectric effect.
- Radioactivity, Decay law, Half-life period.
- Nuclear fission and fusion.
- Semiconductors, junction diode.

### **Subject : Chemistry**

#### **1. STATES OF MATTER:**

- The gas laws (Boyle's law Charle'law, combined gas law)
- Kinetic molecular theory of gases
- Ideal and real gases.
- Vander Waal's Equation.
- Properties of liquid
- Solutions
- Concentration of solutions
- Saturated, unsaturated and super saturated solutions.
- Solubility and its determination
- Efflorescence and Deliquescence
- Water of crystallization

## **2. ATOMIC STRUCTURE**

- Fundamentals particles and their discovery.
- Thomson's Atomic Model, Rutherford's Atomic model
- Atomic number and Mass number.
- Composition of an atom.
- Isotopes and isobars.
- Bohr's atomic model
- de Broglie's Relation.
- Heisenberg's uncertainty principle.
- Quantum mechanical model of atom.
- Atomic orbitals.
- Quantum number.
- Pauli's Exclusion principle.
- Hund's rule of maximum multiplicity.
- Aufbau principle and electronic configuration of elements.

## **3. OXIDATION AND REDUCTION**

- Classical concept of oxidation .
- Electronic concept of oxidation and Reduction.
- Oxidising and Reducing agents.
- Oxidation number
- Redox reactions and Electrolysis.

## **4. PERIODIC TABLE**

- Mendeleev's periodic table
- Advantage and Defect of Mendeleev's periodic table.
- Modern periodic law.
- Long form of periodic table.
- Features of Long form of periodic table
- Defects of Long form of periodic table
- Grouping of Elements into Blocks.
- Bohr's classification of elements .
- Periodic properties and their periodic trends.
- Atomic radius, Ionic radius, Ionization energy,
- Electron affinity and Electronegativity

## **5. HYDROGEN, OXYGEN, OZONE AND WATER**

- Position of Hydrogen in the periodic table.
- Preparation and properties of hydrogen, Isotopes of hydrogen
- Position of oxygen in periodic table
- Preparation and properties of oxygen.
- Oxides.
- Structure of Ozone, Ozone layers and its depletion.
- Composition of water and structure of water.
- Properties of water
- Hard and soft water and its removal.
- Heavy water.
- Properties and uses of heavy water.



## 6. INTRODUCTION TO ORGANIC CHEMISTRY AND HYDROCARBON

- Definition of organic Chemistry and organic compound.
- vital force theory and its limitations
- Tetra valency and catenation property of carbon.
- Functional group and homologous, series
- Meaning of empirical, molecular, structural and contracted formula.
- Qualitative analysis of organic compounds
- IUPAC naming of organic compounds
- Structural isomerism and its type.
- Concept of homolytic fission Heterohytic fission electrophiles nucleophiles and inductive effect
- Preparation of alkynes and its properties with  $H_2, X_2, HX, H_2O, O_3, H_2SO_4$ , Baeyer's reaction.
- Acidic nature, Action with ammonical  $AgNO_3$  with alkaline  $KMnO_4$  and polymerization reaction.

## 7. VOLUMETRIC ANALYSIS AND IONIC EQUILIBRIUM

- Acidimetry and aclkalimectry
- Equivalent mass of compounds
- Expressing concentration interms of Normality, Morality and Molality
- Principles of volumetric analysis
- Theory of chemical indicators and selection of an indicators
- Classification of Electrolytes
- Arrhenius Theory of Ionization
- Ionisation of water, solubility product and Communion effect
- Arrhernius concept of acid and base
- Bronsted concept of acid and base

## 8. ALDEHYDES AND KETONES

- Preparation of aldehydes and ketones from dehydrogenation and oxidation of alcohol, ozonolysis of alkene, calalytic hydration of alkynes
- Physical properties of aldelydes and Ketones.
- Chemical properties-Addition reaction, reaction with  $H_2, HCN, NaHSO_3$ , Grignard reagents  $NH_2-NH_2$ , Phenyl-hydrazine, semicarbazide and 2,4-DNP.
- Reduction properties of aldehyde-oxidation with Tollen's reagent, Fehling solution
- Aldol condensation clemennson's reduction Wolf-Kishner reduction Action with  $PCl_5$
- Preparation of benzaldehyde from Toluene
- Chemical Properties-Perkin condensation, Bcenzoin condensation, Cannizzaro's reaction

## 9. IRON

- Occurrence and extraction
- Varities of iron preparation of iron.
- Manufacture of steel by-Bessemer process and open hearth process
- Heat treatment of Steel.
- Stainless steel.
- Rusting of iron and its prevention
- Biological importance of iron
- Structure and uses of green vitrol, Ferric Chloride, Mohr's salt.

## **Subject: Biology**

### **Unit 1: Bio-molecules and cell Biology**

**Bio-molecules:** Carbohydrate, protein, lipid, nucleic acid and minerals.

**Cell Biology:** Prokaryotic and eukaryotic cells, cell organelles, cell division (amitosis, mitosis and meiosis).

### **Unit 2: Biodiversity**

Concepts on taxonomy (definition, nomenclature and classification)

**Monera:** Bacteria and *Nostoc*.

**Mycota:** General characters of Zygomycetes, Ascomycetes, Basidiomycetes and deuteromycetes; economic importance of fungi; morphology and reproduction of Mucor and Yeast.

**Plantae:** General characters of algae (green, brown and red), bryophyta, pteridophyta, gymnosperm and angiosperm; morphology and reproduction of Spirogyra, Marchantia, Funaria, Pteridium, Cycas and Pinus; distribution of Pinus in Nepal; morphology and taxonomy of Brassicaceae, Asteraceae, Solanaceae, Papilionaceae and Poaceae; structure and economic importance of Lichens and Virus.

**Protista:** General characters and classification of Protozoa; habit, habitat, structure and reproduction of Paramecium and Plasmodium.

**Animalia:** General characters and classification (upto class) of Porifera, Coelenterata (Cnidaria), Platyhelminthes, Aschelminthes (Nema-theminthes), Annelida, Arthropoda, Mollusca, Echinodermata and Chordata; Earthworm (structure; digestive, circulatory, excretory, reproductive and nervous systems); Frog (structure; digestive, circulatory, respiratory, urino-genital, reproductive and nervous systems).

### **Unit 3: Biota and their Environment**

Ecology (definition, ecological factors and their interactions); structure and functional aspects (food chain and food web, trophic level, ecological pyramids) of pond and grassland ecosystems; concepts of community and successions; nitrogen cycle, acid rain, green house effects, depletion of ozone layer; forests of Nepal; meaning of rare, threatened, vulnerable and endangered species; national parks, wildlife reserves and hunting reserves of Nepal.

### **Unit 4: Anatomy and Physiology of organisms**

Concepts on plant and animal tissues, internal structure of dicot and monocot stems and roots, secondary growth on dicot stem; osmosis, diffusion, water absorption, transpiration, photosynthesis, respiration, growth hormones (auxins, gibberellins, cytokinins), concept on plant movement.

### **Unit 5: Genetics**

Genetic materials: DNA (composition, structure and replication), RNA (types with functions); genetic code, Mendel's laws of inheritance, concept of incomplete dominance and co-dominance, epistasis, polygenic inheritance (skin colour in men), pleotropic gene, linkage and crossing over, sex linked inheritance (colour blindness in man), mutation and polyploidy.

### **Unit 6: Developmental Biology**

Angiosperms (asexual reproduction, development of male and female gametophytes, pollination and fertilization)



### **Unit 7: Human Biology and Health**

Nutrition, digestion, respiration, circulation (blood groups and Rh-factor, heart structure and action), arterial and venous systems, excretion and osmoregulation; functions of endocrine glands (pituitary, thyroid, parathyroid, pancreatic and adrenal glands); reproduction; structure and functions of eye and ear; human disease (drug abuse, alcoholism, smoking, typhoid, AIDS, cancer)

### **Unit 8: Application of Biology**

Biotechnology (branches, applications in agriculture, medicine, industries, conservation, etc.), tissue culture (types, methods: sterilization, composition of medium and its preparation); plant breeding; green manure; concept on antibiotics and vaccines; amniocentesis and test tube baby; genetic engineering (definition, tools, steps, applications); methods and applications of alcohol and antibiotics fermentation.

## **Subject: Computer Fundamental**

### **Unit 1: Introduction to Computer:**

- Characteristics, applications, and components of computer
- Classification of computer based on purpose, size and technology

### **Unit 2: Basic Computer Organization and Computer Peripherals:**

- Block diagram of computer system
- Input devices: Keyboard, mouse, and other types of input devices
- Output devices: Monitor, printer, and other types of output devices

### **Unit 3: Computer Storage:**

- Concepts of memory and requirements of storage devices
- Classification and types of storage devices
- ROM and RAM with their types
- Magnetic devices and Optical devices

### **Unit 4: Computer Software:**

- Introduction and types of software
- Definition and functions of operating system
- Programming languages and their types

### **Unit 5: Introduction to Database:**

- Meaning of data and information
- Concepts and characteristics of database and DBMS

### **Unit 6: Networks and Internet:**

- Introduction and uses of network
- Types and topologies of network
- Introduction, features and applications of Internet
- Concepts of intranet and extranet
- Network media and network software
- WWW, E-mail, E-commerce, web site
- Web browsing, net surfing, chatting, using e-mails
- Computer crime, viruses and threats
- Cyber law and ethical issues



**Unit 7: Computer Hardware:**

- Motherboard and its parts, slots, daughterboard, and expansion slots
- BIOS, CMOS, and Microprocessor
- utilities and application software, Customizing software

**Unit 8: Basics of Windows and User Interface:**

- Using mouse and moving icons on the screen
- The My Computer icon, the Recycle Bin icon, Status Bar, Start button, Menu Bar
- Opening, closing and running an application
- Using Windows Explorer to view files, folders and directories
- Creating and renaming files and folders
- Windows settings: control panel, wallpapers, screensavers, date and time, sound
- Advanced features: using right mouse button, shortcuts, notepad, accessories

**Unit 9: Basic DOS Commands:**

- Comparison of DOS and Windows, External and Internal Commands.

**Unit 10: Word Processing:**

- Basics: opening and closing documents, saving documents, page setup, printing, scrolling around a document
- Text manipulation and formatting: text selection, cut, copy and paste, font, Bold, Italic and Underline, text alignment, line and paragraph setting, changing font, size and color, bullets and numbering, changing case
- Table manipulation: drawing and inserting table, changing cell width and height, alignment of text in cell, inserting and deleting rows and columns, table borders

**Unit 11: Spreadsheets:**

- Basics: opening and closing of spreadsheet, multiple sheets, Menu Bar, cell inputting, cell addressing
- Manipulation of cells: entering texts, creating tables, setting cell width and height, copying of cells
- Formulas: sum, average, percentage, and other basic functions
- Preparing invoices/budgets, totaling of transactions, maintaining daily and monthly reports

**Unit 12: Presentations:**

- Basics: opening a PowerPoint presentation, using Wizard to create a presentation
- Slide presentation: title, text, picture, table, font color and font size, bullets and indenting, slide design, background, slide numbering, slide show, slide animation, slide sorting, printing slides

**Subject: Aptitude**

1. Sentence Completion
2. Analogies
3. Word Groups
4. Logical Reasoning
5. Deduction
6. Numerical Computation
7. Numerical Estimation
8. Numerical Reasoning
9. Percentage, Ratio and Proportion
10. Data Interpretation
11. History of Nepal
12. Geography of Nepal
13. General Information of PU

### Model questions (Biology)

- Which cell organelle is called suicidal bag of the cell?  
a. Mitochondria      b. Chloroplast      c. Lysosome      d. Ribosome
- Coenocytic mycelium is found in .....  
a. Mucor      b. Yeast      c. Spirogyra      d. Alternaria
- Cruciform corolla is found in .....  
a. Mustard      b. Pea      c. Sunflower      d. Maize
- Which of the following structure helps in reproduction in Paramecium?  
a. Macronucleus      b. Micronucleus      c. Food vacuole      d. Contractile vacuole
- In which of the segment female genital aperture in earthworm is situated?  
a. 14      b. 15      c. 17      d. 18
- Pyramid of biomass in pond ecosystem is .....  
a. Upright      b. Inverted      c. Both a and b      d. None of these
- The largest national park of Nepal is .....  
a. Chitwan      b. Shey Phoksundo      c. Bardia      d. Langtang
- Which one of the following components of xylem is living?  
a. Tracheid      b. Vessel      c. Xylem parenchyma      d. Xylem fibre
- ABO blood group system in human is an example of .....  
a. Incomplete dominance      b. Co-dominance      c. Epistasis      d. Linkage
- How many sex chromosomes are present in a human cell?  
a. 46      b. 44      c. 22      d. 2
- How many meiotic divisions are required to produce 100 seeds (zygotes)?  
a. 125      b. 100      c. 50      d. 25
- Name the disease caused due to deficiency of iodine .....  
a. Hyponatremia      b. Goitre      c. Rickets      d. Osteomalacia
- How many pairs of cranial nerves are present in man?  
a. 12      b. 31      c. 40      d. 10
- Which one of the following plant is extensively used as green manure in Nepal?  
a. Crotalaria juncea      b. Brassica campestris  
c. Solanum nigrum      d. Zea mays
- The vectors used in genetic engineering are .....  
a. Plasmids      b. Cosmids      c. Bacteriophages      d. All of these

**प्रवेश परीक्षाका परीक्षार्थीहरूलाई निर्देशन**

- १) परीक्षार्थीहरूले परीक्षा दिन आउँदा आफ्नो पिन्ट गरेको प्रवेशपत्र साथै आफ्ने परिचय खुल्ने सक्कल परिचय पत्र (नागरिकता / सबारीचालक अनुमतिपत्र / राष्ट्रिय परिचय पत्र / मतदाता परिचय पत्र) अनिवार्य रूपमा लिएर आउनुपर्नेछ । विदेशी नागरिकको हकमा Passport बा अन्य परिचय खुल्ने सक्कल परिचय पत्र अनिवार्य रूपमा लिएर आउनुपर्नेछ ।
- २) परीक्षार्थीहरूले केन्द्राध्यक्षद्वारा निर्देशित सीट-प्लान अनुसार तोकिएको स्थानमा बस्नु पर्नेछ ।
- ३) परीक्षा सञ्चालनका लागि केन्द्राध्यक्ष, निरीक्षकहरूद्वारा गरिएका निर्देशनहरू परीक्षार्थीको कर्तव्य हुनेछ । कर्तव्य पालन नगर्ने परीक्षार्थीलाई निष्काशन तथा निजको परीक्षा रद्द गर्न समेत सकिनेछ ।
- ४) प्रवेश परीक्षा प्रारम्भ भएको ३० मिनेट बढी ढिलो गरी परीक्षा दिन आउने परीक्षार्थीलाई परीक्षामा सम्मिलित गराइने छैन ।
- ५) परीक्षार्थीहरूले परीक्षा हलमा पुस्तक, नोट, चिट, मोबाइल फोन, स्मार्ट घडि, प्रोग्रामेवल क्याल्कुलेटर, पर्स, पकेट कम्प्युटर, आदि निषेधित वस्तुहरू साथमा राख्न पाउने छैन । परीक्षार्थीले सामान्य साइन्टीफिक क्याल्कुलेटर प्रयोग गर्न पाउने छन् ।
- ६) परीक्षार्थीहरूले परीक्षा कोठामा हल्लागर्ने, एक आपसमा कुराकानी गर्ने, एक अर्काको प्रश्नपत्र/उत्तरपुस्तिका देखाउन र सांकेतिक रूपमा सम्पर्क राख्न पाउने छैन । यस्ता क्रियाकलापहरू गरिएको पाइएमा परीक्षाबाट निष्कासन गरिनेछ ।
- ७) परीक्षार्थीहरूले Answer Sheet मा विश्वविद्यालयले तोकेको Gel Pen ले मात्र लेख्नु पर्नेछ ।
- ८) परीक्षा दिँदा परीक्षार्थीहरूले आवश्यक Rough गर्नु परेमा Question Booklet मै गर्न सकिनेछ ।
- ९) Answer Sheet मा केही केरमेट गर्न पाउने छैन । Answer Sheet मा परीक्षार्थीले आफ्नो नाम, रोल नं. र दस्तखत गर्दा ध्यानपूर्वक सहि ठाउँमा सहि विवरण भर्नुपर्नेछ । कुनै कारण गल्ती भएमा नयाँ Answer Sheet दिइने छैन ।
- १०) Question सम्बन्धित निरीक्षकसँग कुनै पनि सोधपूछ गर्न पाइने छैन ।
- ११) परीक्षार्थीहरूले परीक्षा प्रारम्भ भएको १ घण्टाभन्दा अगाडि आफ्नो सिट र परीक्षा भवन छाड्न पाइने छैन ।
- १२) परीक्षार्थीहरूले Question Booklet र Answer Sheet अनिवार्यरूपमा बुझाउनु पर्नेछ ।