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YA—01—2024

FACULTY OF HUMANITIES, SCIENCE & TECHNOLOGY AND COMMERCE & MANAGEMENT

B.A./B.Sc./B.Com. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(NEP 2020)

ENGLISH

HENGAEC-1101 (Compulsory)

(Developing Spoken Communication-I)

(Wednesday, 11-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

N.B. *:—* (*i*) Question No. **1** is compulsory.

(*ii*) Attempt any *three* questions from Q. Nos. **2** to **5**.

(*iii*) Figures to the right indicate full marks.

1. Write short notes on : 10

(*i*) Verbal communication

(*ii*) Indirect questions

(*iii*) Welcome speech

(*iv*) Effective conversation.

2. Explain different types of communicatin. 10

3. Suppose you are going to face a job interview for the post of English teacher. Prepare a draft of your self-introduction with the help of points i.e. greetings, name, educational details, work experience, hobbies and interests. 10

4. Explain in detail the essential components of a formal function. 10

5. Draft a conversation between a passenger and the station clerk about timings of a train. 10

This question paper contains **2** printed pages]

YA—02—2024

FACULTY OF HUMANITIES

B.A./B.Sc./B.Com. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(NEP 2020)

HINDI (S.L.)

HHINMIL-1101

(साहित्य कलश और व्यावहारिक हिंदी, भाग-1)

(Thursday, 12-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) पहला प्रश्न अनिवार्य है।

(*ii*) प्रश्न क्रमांक **2** से **6** में से किन्हीं **तीन** प्रश्नों के उत्तर लिखिए।

(*iii*) **सभी** प्रश्नों को समान अंक हैं।

1. निम्नलिखित में से किन्हीं **दो** पर टिप्पणियाँ लिखिए। 10

(अ) ब्लॉग का अर्थ।

(ब) आकाशवाणी के विज्ञापन की विशेषताएँ।

(क) 'पंच परमेश्वर' कहानी का अलगू चौधरी।

(ड) 'हम ले चलेंगे' कविता का आशय।

2. 'पंच परमेश्वर' कहानी की कथावस्तु लिखिए। 10

P.T.O.

3. 'जो बीत गई सो बात गई' कविता में व्यक्त संदेश पर प्रकाश डालिए। 10

4. 'ब्लॉग' की उपयोगिता को लिखिए। 10

5. 'समाचार-पत्र के विज्ञापन की विशेषताओं पर प्रकाश डालिए। 10

6. 'सरहद के इस पार' कहानी की कथावस्तु लिखिए। 10

This question paper contains **2** printed pages]

YA—03—2024

FACULTY OF HUMANITIES

B.A./B.Sc./B.Com. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

MARATHI (S.L.)

(AECMAR-1101)

(गद्य, पद्य व उपयोजित मराठी)

(Thursday, 12-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

N.B. *:—* (*i*) **पहिला** प्रश्न सोडविणे अनिवार्य आहे.

(*ii*) **सर्व** प्रश्नांना समान गुण आहेत.

1. टिपा लिहा (कोणत्याही **दोन**) : 10

(अ) चंपीचे भावविश्व

(ब) महाराजा सयाजीराव गायकवाड यांचे साहित्य आणि कलेविषयी विचार

(क) दिनकर साळवे यांच्या कवितेतील विद्रोह

(ड) इतिवृत्त लेखन पद्धती

P.T.O.

(पुढील प्रश्न क्रमांक **2** ते **6** यामधील कोणतेही **तीन** प्रश्न सोडवा) : 30

2. ताराबाई शिंदे यांनी पुरुषांच्या जुलमी प्रवृत्तीवर कसा प्रहार केला आहे ?

3. 'प्रयत्नवादी जीवनप्रवास' या उताऱ्यातील लेखकाच्या संघर्षाचे चित्रण स्पष्ट करा.

4. प्रियकराच्या भावतरंगाची जाणीव 'अंदाज आरशाचा' या गझलेधारे स्पष्ट करा.

5. 'धीटपणे स्वत:ला बदलून व्यवस्थेविरुद्ध उभी राहू पाहणाऱ्या' स्त्रीचे चित्रण अजय कांडर यांनी कसे केले आहे ?

6. कार्यालयीन पत्रलेखनात कोणत्या बाबीचा समावेश करावा लागतो ते लिहा.

This question paper contains **3** printed pages]

YA—101—2024

FACULTY OF ALL FACULTIES

B.A./B.Com./B.Sc. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(NEP-2020 Pattern)

INDIAN KNOWLEDGE SYSTEM

Paper – (IKS1101)

(Tuesday, 10-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) *All* questions carry equal marks.

(*ii*) Question No. **1** is compulsory.

(*iii*) Solve any *three* of the remaining five questions (Q. No. 2 to Q. No. 6).

(*iv*) Figures to the right indicate full marks.

(*i*) **सर्व** प्रश्नांना समान गुण आहेत.

(*ii*) प्र. क्र. **1** आवश्यक आहे.

(*iii*) प्र. क्र. **2** ते **6** पैकी कोणतेही **तीन** प्रश्न सोडवा.

(*iv*) उजवीकडील अंक प्रश्नास पूर्ण गुण दर्शविते.

1. Solve the following questions (2.5 marks each) : 10

(*a*) What are the objectives of the Indian Knowledge System (IKS) ?

(*b*) What is the principle of 'Prakriti' and 'Purusha' in the Sankhya philosophy ?

P.T.O.

(*c*) Who were the ancient Indian dramatists ? Describe their plays and contributions.

(*d*) What are the characteristics of Indian mathematics during the Vedic period ?

खालीलपैकी प्रश्नांचे उत्तरे लिहा (प्रत्येकी 2.5 गुण) :

(*a*) भारतीय ज्ञान प्रणालीचे उद्दिष्टे कोणती आहेत ?

(*b*) सांख्य दर्शनातील 'प्रकृती' आणि 'पुरुष' यांचे तत्त्व काय आहे ?

(*c*) प्राचीन भारतीय नाटककार कोण होते ? त्यांच्या नाटकांचे आणि योगदानाचे वर्णन करा.

(*d*) वैदिक काळातील भारतीय गणिताची वैशिष्ट्ये काय आहेत ?

2. What is the history of educational institutions in ancient India, and what was their significance ? 10

प्राचीन भारतातील शैक्षणिक संस्थांचा इतिहास काय आहे आणि त्यांचे महत्त्व काय होते ?

3. What are some key concepts of the Purv Mimamsa philosophy ? Explain them. 10

पूर्व मीमांसा दर्शनातील काही प्रमुख संकल्पना कोणत्या आहेत ? त्यांचे स्पष्टीकरण द्या.

4. According to Indian philosophy, what does "Purushartha" mean and what are its *four* main components ? Explain the importance of these *four* Purusharthas and how do they impact life. 10

भारतीय तत्वज्ञानानुसार पुरुषार्थ म्हणजे काय आणि त्याचे **चार** प्रमुख अंग कोणती आहेत ? या **चार** पुरुषार्थाचे महत्त्व आणि त्यांचा जीवनावर कसा प्रभाव पडतो, हे स्पष्ट करा.

5. Discuss the ancient agricultural practices of India. 10

प्राचीन भारतीय शेती पद्धतीं यांवर चर्चा करा.

6. Solve the following questions (2.5 marks each) : 10

(*a*) Why is it necessary to preserve and promote the Indian Knowledge System ?

(*b*) What are the major texts of the Uttara Mimamsa Philosophy ?

(*c*) What is the concept of Indian ethics ?

(*d*) What is the purpose of the Charaka Samhita, and what branches are included in it ?

खालील प्रश्नांचे उत्तर लिहा (प्रत्येकी 2.5 गुण) :

(*a*) भारतीय ज्ञान प्रणालीचे संरक्षण आणि प्रसार करण्याची आवश्यकता का आहे ?

(*b*) उत्तर मीमांसा दर्शनाचे प्रमुख साहित्य कोणते आहेत ?

(*c*) भारतीय नीतिशास्त्राची संकल्पना काय आहे ?

(*d*) चरक संहिता ग्रंथाचा उद्देश काय आहे आणि त्यात कोणत्या शाखांचा समावेश आहे ?

NEPVA-5071-2024

FACULTY OF SCIENCE
B.Sc. (First Year) (First Semester)
OCTOBER/NOVEMBER, 2024
(NEP)
Subject: BIOTECHNOLOGY
Fundamental Cell Biology (NEP)

(Wednesday, 18-12-2024) **Time: 10.00 a.m. to 12.00 pm**

Time – Two Hours **Maximum Marks-40**

N.B.
i. Question no. 1 is compulsory
ii. Of the remaining, Attempt any three questions
iii. Draw neat and labeled diagram wherever required.

Q.1. Write brief note on the following: 10 marks

i. Robert Hooke

ii. Eukaryotic cell

iii. Mitosis

iv. Tight junction

Q.2. Explain in details parts, working and application of compound microscope. 10 marks

Q.3. Describe structure, organogenesis and function of chloroplast. 10 marks

Q.4. Define cell cycle? Explain in detail the cell cycle and its regulation. 10 marks

Q.5. Describe architectural hierarchy, organization and function of RNA. 10 marks

Q.6. Write brief notes on the following 10 marks

i. Cloning

ii. Flagella

iii. Necrosis

iv. AMP pathway

This question paper contains **2** printed pages]

NEPVA—2011—2024

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (NEP) (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

BOTANY

SBOTCT–1101

(Viruses, Bacteria and Alage-I)

(Saturday, 14-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) Question No. **1** is compulsory.

(*ii*) Of the remaining, attempt any *three* questions.

(*iii*) Draw neat and labelled diagram wherever required.

1. Write brief notes on the following : 10

(*a*) Yellow vein mosaic of Bhendi

(*b*) Structure of Mycoplasma

(*c*) Structure of Heterocyst in Nostoc

(*d*) Applications of algae in agriculture.

2. Describe various modes of transmission of viruses. Add a note on economic importance of viruses. 10

P.T.O.

3. Describe the process of binary fission in Bacteria. 10

4. Describe classification of algae as per F.E. Fritch. 10

5. Give an account of systematic position, occurrence and thallus structure of Oedogonium. 10

6. Write brief notes on the following : 10

(*a*) General characters of viruses

(*b*) Economic importance of Bacteria

(*c*) Graphic life cycle of Nostoc

(*d*) Structure of Pleurilocular Sporangia in Ectocarpus.

This question paper contains **3** printed pages]

NEPVA—1011—2024

FACULTY OF SCIENCE

B.Sc. (NEP) (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

CHEMISTRY

SCHECT–1101

(Organic Chemistry and Inorganic Chemistry-I)

(Friday, 13-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) *All* questions carry equal marks.

(*ii*) Q. No. **1** is compulsory.

(*iii*) Solve any *three* of the remaining five questions (Q. No **2** to Q. No. **6**)

(*iv*) Figures to the right indicate full marks.

1. Solve the following questions (**2.5** marks each) : 10

(*a*) Explain substitution reaction with suitable example.

(*b*) What is aromatic compound ? Explain the structure of benzene with the hlep of Huckel rule.

(*c*) How will you prepare ethylene glycol from ethene ? What is the action of $P_2O_5/ZnCl_2$ on ethylene glycol.

P.T.O.

(*d*) Define the following terms :

(*i*) Atomic radius

(*ii*) Van der Waals radius.

2. Solve the following : 10

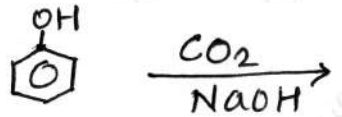
(*a*) Explain inductive effect with suitable example.

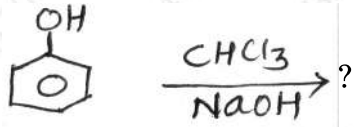
(*b*) What is free radical ? Explain structure and stability of free radical.

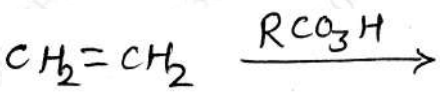
3. Solve the following : 10

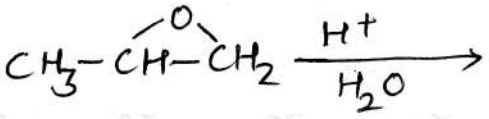
(*a*) What are alcohols ? How are they classfied ?

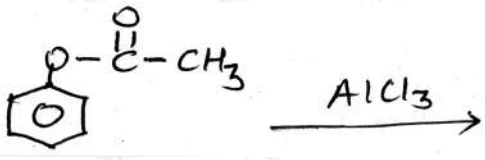
(*b*) Predict the product of the following :

(*i*) 

(*ii*) 

(*iii*) 

(*iv*) 

(*v*) 

4. Solve the following : 10

(*a*) Write the general characteristics of d-block elements.

(*b*) What is ionization energy ? Explain factors affecting on it.

5. Solve the following : 10

(*a*) Explain halogenation of benzene with mechanism.

(*b*) Define electronegativity. Discuss the variation of electronegativity along a period and in a group.

6. Solve the following questions (**2.5** marks each) 10

(*a*) Explain homolytic fission.

(*b*) Write a note on resonance structure of benzene.

(*c*) Explain acidic nature of phenol.

(*d*) Discuss long form of the periodic table.

This question paper contains **2** printed pages]

NEPVA—4011—2024

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (NEP) (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

COMPUTER SCIENCE

Paper SCSCCT-1101

(Fundamentals of Computer Science)

(Tuesday, 17-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—Two Hours *Maximum Marks*—40

Note :— (*i*) Q. No. **1** is compulsory.

(*ii*) Solve any *three* questions from Q. No. **2** to Q. No. **6**.

(*iii*) Assume suitable data, if necessary.

1. Solve the following : 10

(*a*) What is computer ? Explain the concept of algorithm.

(*b*) Explain working of mouse.

(*c*) Explain binary number system.

(*d*) Describe the features of Windows operating system.

P.T.O.

2. Answer the following : 10

(*a*) Explain in detail block diagram of computer.

(*b*) Explain various types of memories.

3. Answer the following : 10

(*a*) Explain any *two* output devices.

(*b*) Explain data scanning devices.

4. Answer the following : 10

(*a*) Explain octal and hexadecimal number system.

(*b*) Explain BCD codes.

5. Answer the following : 10

(*a*) What is software ? Explain types of softwares.

(*b*) What is operating system ? Explain its functions.

6. Write short notes on (any *two*) : 10

(*a*) Flowchart

(*b*) Printer

(*c*) ASCII codes

(*d*) DOS commands.

This question paper contains **3** printed pages]

NEPVA—5141—2024

FACULTY OF SCIENCE

B.Sc. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

ELECTRONICS

Paper SELECT-1101

(Fundamentals of Analog and Digital Electronics)

(Wednesday, 18-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—Two Hours *Maximum Marks*—40

Note :— (*i*) *All* questions carry equal marks.

(*ii*) Q. No. **1** is compulsory.

(*iii*) Solve any *three* of the remaining five questions (Q. No. **2** to Q. No. **6**).

(*iv*) Figures to the right indicate full marks.

1. Solve the following questions : 10

(*a*) Explain Kirchhoff's current law with suitable example.

(*b*) Define ideal constant-current source.

(*c*) Convert $(37)_{10} = (?)_8$

(*d*) Define AND gate. Give its symbol and truth table.

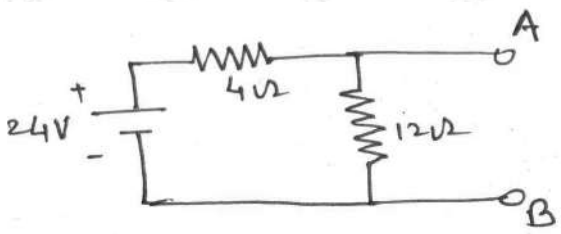
P.T.O.

2. (*a*) Explain proportional current formula for parallel circuit. 5

(*b*) With neat circuit explain 'opens' in series circuit. 5

3. (*a*) State and explain Thevenin's theorem. 5

(*b*) Simplify the given circuit using Norton's theorem : 5



4. (*a*) Solve the following : 5

(*i*) $(1010)_2 - (0100)_2$

(*ii*) $(0111)_2 \times (0011)_2$

(*b*) Convert the following : 5

(*i*) $(0110)_2 = (?)_{Gray}$

(*ii*) $(1010)_{Gray} = (?)_2$

5. (*a*) Define X-OR gate. Give its symbol, truth table and logic equation. 5

(*b*) Explain universal property of NOR gate. 5

6. Write short notes on any *two* : 10

(*a*) Ohm's law

(*b*) Ideal constant voltage source

(*c*) Binary addition

(*d*) Boolean rules for AND logic.

This question paper contains **2** printed pages]

NEPVA—4021—2024

FACULTY OF SCIENCE

B.Sc. (NEP) (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

FISHERY SCIENCE

Paper SFSCCT-1101

(Fish Pond Construction and Management)

(Tuesday, 17-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—Two Hours *Maximum Marks*—40

Note :— (*i*) *All* questions carry equal marks.

(*ii*) Question Number **1** is compulsory.

(*iii*) Solve any *three* questions of the remaining five questions (Q. No. **2** to Q. No. **6**).

(*iv*) Draw well labelled diagrams wherever required.

1. Write short notes on the following : 10

(*a*) Soil type for fish culture.

(*b*) Effect of dissolved oxygen deficiency on fish production.

P.T.O.

2. Write notes on : 10

(*a*) Preparation of rearing pond.

(*b*) Define fertilization and types of fertilizers.

3. Write notes on : 10

(*a*) Control of various aquatic weeds.

(*b*) Suitable water quality for fish culture.

4. Write notes on : 10

(*a*) Food and feeding habits of major carps.

(*b*) Quality of fish seeds.

5. Write notes on : 10

(*a*) Common methods of fish disease control.

(*b*) Construction of stocking pond.

6. Write short notes on : 10

(*a*) Liming of fish pond

(*b*) Harvesting

(*c*) Hatching pits

(*d*) Types of fish seed.

This question paper contains **2** printed pages]

NEPVA—4031—2024

FACULTY OF SCIENCE

B.Sc. (NEP) (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

INDUSTRIAL CHEMISTRY

Paper SICHCP-1101

(Fluid Mechanics and Lubricant))

(Tuesday, 17-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—Two Hours *Maximum Marks*—40

Note :— (*i*) *All* questions carry equal marks.

(*ii*) Q. No. **1** is compulsory.

(*iii*) Solve any *three* questions from the remaining five questions (Q. No. **2** to Q. No. **6**).

(*iv*) Figures to the right indicate full marks.

(*v*) Scientific calculator and log tables are allowed.

1. Solve the following questions : **2.5** marks each

(*a*) Explain carbocation intermediates with suitable example.

(*b*) Explain pressure head.

(*c*) Explain factors influence the choice of pump for particular operation.

(*d*) Explain fire point of lubricant.

P.T.O.

2. Explain simple distillation unit operation with neat labelled diagram. 10

3. The water density 1000 kg/m^3 and viscosity 0.0008 kg/ms is pumped at 10^3/hr through a 25 mm i.d pipe. Calculate the value of Reynolds number. 10

4. Explain construction and working of reciprocating pump with neat labelled diagram. 10

5. Explain construction and working of Redwood viscometer with neat labelled diagram. 10

6. Solve the following questions : (**2.5** works each)

   (*a*) Explain Exothermic and Endothermic reaction with suitable example.

   (*b*) Write a note on fluid static and fluid dynamics.

   (*c*) Explain Diaphragm pump.

   (*d*) What is lubricant ?

This question paper contains **4** printed pages]

NEPVA—3011—2024

FACULTY OF SCIENCE & TECHNOLOGY

B.A./B.Sc. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(NEP 2020 Pattern)

MATHEMATICS

Paper–SMATCT–1101

(Topics in Algebra)

(Monday, 16-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) *All* questions carry equal marks.

(*ii*) Question No. **1** is compulsory.

(*iii*) Solve any *three* of the remaining five questions (Q. No. **2** to Q. No. **6**)

(*iv*) Figures to the right indicate full marks.

1. Solve the following : 10

(*a*) Define union of two sets with suitable example.

(*b*) Define inverse of function.

(*c*) Explain elementary row operations.

(*d*) State Caley-Hamilton theorem.

P.T.O.

2. Solve the following :

(*a*) For any sets A, B and C, prove that :

$$A \cap (B \cup C) = (A \cap B) \cup (A \cap C).$$ 6

(*b*) Show that the equality relation on a non-empty X is an equivalence relation. 4

3. Solve the following :

(*a*) For functions $f : x \to y$, $g : r \to z$ and $h : z \to w$, prove that $ho(gof) = (hog)\ of$ 6

(*b*) Show that the function $f : (0, \pi) \to \mathbf{R}$ given by $f(x) = \cos x$, is one-one. 4

4. Solve the following :

(*a*) Prove that, the elementary row operations do not alter the rank of a matrix. 6

(*b*) Reduce to row echelon form the matrix : 4

$$A = \begin{bmatrix} 1 & -2 & -1 & 4 \\ 2 & -4 & 3 & 5 \\ -1 & 2 & 6 & -7 \end{bmatrix}$$

Also find row rank of A.

5. Solve the following :

(*a*) Find the characteristic roots of the matrix : 6

$$A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$$

Also find the characteristic vector associated with smallest characteristic row.

(*b*) If AX = 0 is a homogeneous system of equations in n unknowns and x_1, x_2 are two solutions of this system, then show that $x_1 + x_2$ is also a solution. Also, if λ is a scalar, then prove that λx_1 is also a solution.

6. Solve any *two* : 10

(*a*) Let A and B be subsets of a universal sets v, then prove that :

$$(A \cap B)^C = A^C \cup B^C.$$

(*b*) Let $f : R \to R$ defined by $f(x) = 2x + 3$, $\forall\ x \in R$. Find $f^{-1} : R \to R$.

(*c*) Reduce to a row reduced echelon form, the matrix :

$$A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 3 & 4 & 1 & 2 \\ 4 & 3 & 1 & 2 \end{bmatrix}$$

Also find rank of A.

P.T.O.

(*d*) Show that the following equations are consistent and solve the same :

$$x + 2y - 5z = -9$$

$$3x - y + 2z = 5$$

$$2x + 3y - 3 = 3$$

$$4x - 5y + z = -3$$

This question paper contains **2** printed pages]

NEPVA—5231—2024

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (NEP) (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

MICROBIOLOGY

Paper I (SMICCT-1101)

(Basic Microbiology)

(Wednesday, 18-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—Two Hours *Maximum Marks*—40

Note :— (*i*) Q. No. **1** is compulsory.

(*ii*) Out of remaining five **(5)** questions (Q. No. **2** to Q. No. **6**) answer any *three* (**3**) questions.

(*iii*) *All* questions carry equal marks.

(*iv*) Illustrate your answers with suitable labelled diagrams wherever necessary.

1. Define the following and explain in brief : 10

(*a*) Pasteurization

(*b*) Angular aperture

(*c*) Basic stain

(*d*) Plasmid.

P.T.O.

2. Describe in detail beneficial and harmful role of microorganisms in human and animal health. 10

3. What is electron microscope ? Explain in detail Scanning Electron Microscope (SEM) . 10

4. Explain in detail principle, mechanism, procedure and observations of Gram's staining. 10

5. Explain in detail structure, chemical composition and functions of Flagella. 10

6. Write short notes on (any *two*) : 10

   (*a*) Edward Jenner

   (*b*) Magnification and resolving power

   (*c*) Capsule staining

   (*d*) Reserve food material.

This question paper contains **2** printed pages]

NEPVA—2021—2024

FACULTY OF SCIENCE

B.Sc. (NEP) (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

PHYSICS

SPHYCT–1101

(Fundamentals of Physics-I)

(Saturday, 14-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) *All* questions carry equal marks.

(*ii*) Q. No. **1** is compulsory.

(*iii*) Solve any *three* of the remaining five questions (Q. **2** to Q. **6**)

(*iv*) Figures to the right indicate full marks.

1. Solve the following questions (compulsory) : 10

(*a*) Define Newton's law of Gravitation and state the mathematical expression.

(*b*) Define density of liquid. Write its SI unit.

(*c*) Define sound intensity. Give its unit.

(*d*) Define intrinsic and extrinsic semiconductors.

P.T.O.

2. State and derive Newton's Law of Gravitation. 10

3. (*a*) State and prove Archimedes principle. 10

(*b*) Explain streamline and turbulent flow.

4. (*a*) State and prove Newton's formula for velocity of sound in air. 10

(*b*) Explain the effect of temperature and pressure on velocity of sound in air.

5. (*a*) Explain forward biasing in PN-junction diode. 10

(*b*) What is LED ? Explain its working.

6. Write short notes on any *two* : 10

(*a*) State *three* Kepler's laws of planetary motion.

(*b*) Explain pressure measurement in fluids

(*c*) Write a note on origin of sound.

(*d*) Write a note on *n*-type semiconductors.

This question paper contains **2** printed pages]

NEPVA—3021—2024

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (NEP) (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

ZOOLOGY

Paper–SZOOCT–1101

(Biodiversity of Non-Chordates)

(Monday, 16-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) Question Number **1** is compulsory.

(*ii*) Out of remaining 5 questions (Q. No. **2** to Q. No. **6**) answer any **3** questions.

(*iii*) *All* questions carry equal marks.

(*iv*) Illustrate your answers with suitable labeled diagrams, wherever necessary.

1. Answer each of the following : 10

(*a*) Describe in brief the characteristic features of Non-Chordates.

(*b*) Explain the general characters of Phylum Coelenterata.

(*c*) Describe the economic importance of insects.

(*d*) Describe the general features of Phylum Mollusca.

P.T.O.

2. Describe the structure and life cycle of *Plasmodium vivax*. 10

3. Describe the structure, life cycle and pathogenicity of *Ascaris lumbricoides*. 10

4. Describe the nervous sytem of Cockroach. 10

5. Give an account of the general characters and affinities of Hemichordata. 10

6. Answer each of the following : 10

(*a*) Give a brief account of the canal system in Sycon.

(*b*) Describe the structure of *Taenia solium*.

(*c*) Give an account of vermiculture and vermicomposting.

(*d*) Describe the external morphology of Star fish.