GENERAL HINDI

The Question paper shall be of ***TWO HOURS*** duration.

MM: 70

इकाई - I पद्य

(i) मैथिलीशरणगुप्त: भारतकीश्रेष्ठता

(ii) सुमित्रानन्दनपंत: वाप,प्रथमरश्मि

(iii) सूर्य कान्तत्रिपाठीनिराला: जागोफिरएकवार,तोड़तीपत्थर

(iv) रामधारीसिंहदिनकर: हिमालय,वुद्धदेव(वोधिसत्व)

इकाई- II गद्य

(i) वालमुकुन्दगुप्त: एकदुराशा

(ii) हजारीप्रसादद्विवेदी: शिरीषकेफूल

(iii) कुवेरनाथराय: हरीहरीदूवऔरलाचारकोध

(iv) हरीशंकरपरसाई: इंस्पेक्टरमातादीनचांदपर

इकाई- III शब्दसंपदा

(i) विलोम(ii) पर्यायवाची(iii) अनेकार्थक (iv) वाक्यांशकेलियेएकशव्द(v) मुहावरेऔरलोकोक्ति

इकाई- IV शुद्धिकरणएवंप्रयोग

(i) शव्दऔरवाक्यशुद्धि

(ii) शव्दएवंवाक्यप्रयोग

इकाई- V शब्दनिर्माण

(i) उपसर्ग

(ii) प्रत्यय

GENERAL ENGLISH

The Question paper shall be of ***TWO HOURS*** duration.

MM: 70

Objectives:

- Reinforcing selected components of grammer and usages.
- Facilitating comprehension of a prosepassage.
- To introducethe students to proper usage of dictionary and thesaurus.

Unit – I(Vocabulary)

- How to use a dictionary and thesaurus.
- Word formation: Prefix and suffix.

Unit – II(Grammer and Usage – I)

Transformation of sentences.

- Direct and indirect narration.
- Active and passive Voice.
- Interchange of Degrees of Comparison.

Unit – III(Grammer and Usage – II)

- Sequence of Tenses.
- Prepositions.

Unit – IV(Grammer and Usage – III)

- Modal Auxiliaries.
- Articles.

Unit – V(Comprehension)

- Comprehension of an unseen passage.

Suggested Reading:

1. A University Grammer of English by Quirk and Greenbaum.
2. A Foundation English Course for Undergraduates. Ed. Gunashekhar
3. Prose for Pleasure and Comprehension by H G Suryanarayan Rao.
4. A Guide to Patterns andUsage by AS Hornby.

ENVIRONMENTAL STUDIES

Scheme of examination: *MM:* 70

1. The Question paper shall be of ***TWO HOURS*** duration.
2. **Q. No. 1 shall contain 20 (Twenty) objective type questions having four options, out of which one shall be correct. Each question shall carry one mark. (1 X 20 = 20 marks)**
3. **Q. No. 2 shall contain 8 (Eight) Short-Answer-Type-Questions. Word limit for each question is 100 words. Candidate has to attempt any five. Each question shall carry Four marks. (5 X 4 = 20 marks).**
4. **Q. No. 3 shall contain 4 (Four) Essay-Type-Questions. Word limit for each question is 500 words. Candidate has to attempt any two. Each question shall carry Fifteen marks. (2 X 15 = 30 marks).**

UNIT – I

The multidisciplinary nature of environmental studies.

Definition, Scope and importance, Need for public awareness.

Unit – II

Natural Resources

Renewable and Non renewable resources: Natural Resources and associated problems.

- **Forest Resources: Use and over exploitation, deforestation case studies, Timber extraction, mining, dams and their effects on forest and tribal people.**
- **Water Resources: Use and over exploitation of surface and ground water, Floods, draught, conflicts over water, dams- benefits and problems.**
- **Mineral Resources: Use and exploitation, effects of extracting and using mineral resources, case studies.**
- **Food Resources: World food problems, changes, caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.**
- **Energy Resources: Growing energy need, renewable and non-renewable energy sources, use of alternate energy sources, case studies.**

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

UNIT-III

Ecosystems

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in ecosystems.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following ecosystem:
  - Forest ecosystem
  - Grassland ecosystem.
  - Desert ecosystem.
  - Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Format of the Question Paper

Q. 1 (Multiple Choice Question). Attempt all.

(i).....

(a) (b)

(c) (d)

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(ix).....

(x).....

(xi).....

(xii).....

(xiii).....

(xiv).....

(xv).....

(xvi).....

(xvii).....

(xviii).....

(xix).....

(xx).....

(1 X 20 = 20)

Q. 2 (Short Answer Type Question).Attempt any FIVE. Word limit 100 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(5 X 4 = 20)

Q. 3 (Essay Type Question).Attempt any TWO. Word limit 500 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(2 X 15 = 30)

B.Sc/B.Sc (Hons.) Semester I ECA P C S - 104

ELEMENTARY COMPUTER APPLICATIONS

Scheme of examination: *MM: 70*

1. The Question paper shall be of ***TWO HOURS*** duration.
2. **Q. No. 1 shall contain 20 (Twenty) objective type questions having four options, out of which one shall be correct. Each question shall carry one mark. (1 X 20 = 20 marks)**
3. **Q. No. 2 shall contain 8 (Eight)Short-Answer-Type-Questions. Word limit for each question is 100 words. Candidate has to attempt any five. Each question shall carry Four marks. (5 X 4 = 20 marks).**
4. **Q. No. 3 shall contain 4 (Four) Essay-Type-Questions. Word limit for each question is 500 words. Candidate has to attempt any two. Each question shall carry Fifteen marks. (2 X 15 = 30 marks).**

UNIT – I

Introduction to computers and related terminology:

(Basic information only)

(A) Hardware: CPU (Mother board, Microprocessors, (The Intel Pentium III, AMD and Cyrix), MMX technology, System clock, Address Bus, Date Bus, (PCI and ESIC) Cache Memory, Processing speed, Expansion slots (Video controller, sound Card, SCSI, Network Card), Memory – (Unit, RAM, ROM, EDO, RAM, SI, RAM), Input and Output devices-Keyboard (The standard Keyboard layout), Mouse, Printers (Dot matrix, Inkjet, Laser Jet), Microphone, Speakers, Digital Cameras), Storagedevices – (Diskette Drive (Types, Density, Formatting Boot Record, FAT, Folder, Directory), Hard Disk Drive, CD ROM DRIVE, (CD ROM Speeds), CD-R Drive, DVD ROM Drive, Tape Drive.

(B) Software: Introduction to programming languages, System software (Operating Systems and Utilities), Application software (Word Processors, Spreadsheets, DBMS, Presentation Graphics, Browsers, Personal Information Managers) Introduction to Multilingual Word-Processors.

(C) Communications and Connectivity: Data Communication System, Data Transmission (Serial, Parallel, Bandwidth, Protocols), Emails, FAX, Voice and video massaging, Video

Conferencing, Online service user connection (Types), Networking of Computers, (Node, Client, Server, LAN, WAN), Using the Network, the internet and the Web.

UNIT – II

The Internet and Online Resources:

(Working Knowledge at Common Users Level only)

How the internet works, Introduction to (TCP/IP, and DNS Addresses. Features of the internet – (Email, News, Telnet, Chat, Channels, WWW, OnlineServices, Bulletin Board Services), Connection wizard, Overview of the internet explorer 5 and features therein, use of search engines, Surfing, creating and use of email, Awareness about e-commerce and its advantages.

Format of the Question Paper

Q. 1 (Multiple Choice Question). Attempt all.

(i).....

(a) (b)

(c) (d)

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(ix).....

(x).....

(xi).....

(xii).....

(xiii).....

(xiv).....

(xv).....

(xvi).....

(xvii).....

(xviii).....

(xix).....

(xx).....

(1 X 20 = 20)

Q. 2 (Short Answer Type Question).Attempt any FIVE. Word limit 100 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(5 X 4 = 20)

Q. 3 (Essay Type Question).Attempt any TWO. Word limit 500 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(2 X 15 = 30)

GENERAL HINDI

The Question paper shall be of ***TWO HOURS*** duration.

MM: 70

इकाई - I पद्य

(i) मैथिलीशरणगुप्त: भारतकीश्रेष्ठता

(ii) सुमित्रानन्दनपंत: वापू,प्रथमरश्मि

(iii) सूर्य कान्तत्रिपाठीनिराला: जागोफिरएकवार,तोड़तीपत्थर

(iv) रामधारीसिंहदिनकर: हिमालय,वुद्धदेव(वोधिसत्व)

इकाई- II गद्य

(i) वालमुकुन्दगुप्त: एकदुराशा

(ii) हजारीप्रसादद्विवेदी: शिरीषकेफूल

(iii) कुवेरनाथराय: हरीहरीदूवऔरलाचारकोध

(iv) हरीशंकरपरसाई: इंस्पेक्टरमातादीनचांदपर

इकाई- III शब्दसंपदा

(i) विलोम(ii) पर्यायवाची(iii) अनेकार्थक (iv) वाक्यांशकेलियेएकशव्द(v) मुहावरेऔरलोकोक्ति

इकाई- IV शुद्धिकरणएवंप्रयोग

(i) शव्दऔरवाक्यशुद्धि

(ii) शव्दएवंवाक्यप्रयोग

इकाई- V शब्दनिर्माण

(i) उपसर्ग

(ii) प्रत्यय

B.Com Semester I GE P C C - 102

GENERAL ENGLISH

The Question paper shall be of ***TWO HOURS*** duration.

MM: 70

Objectives:

- Reinforcing selected components of grammer and usages.
- Facilitating comprehension of a prosepassage.
- To introducethe students to proper usage of dictionary and thesaurus.

Unit – I(Vocabulary)

- How to use a dictionary and thesaurus.
- Word formation: Prefix and suffix.

Unit – II(Grammer and Usage – I)

Transformation of sentences.

- Direct and indirect narration.
- Active and passive Voice.
- Interchange of Degrees of Comparison.

Unit – III(Grammer and Usage – II)

- Sequence of Tenses.
- Prepositions.

Unit – IV(Grammer and Usage – III)

- Modal Auxiliaries.
- Articles.

Unit – V(Comprehension)

- Comprehension of an unseen passage.

Suggested Reading:

1. A University Grammer of English by Quirk and Greenbaum.
2. A Foundation English Course for Undergraduates. Ed. Gunashekhar
3. Prose for Pleasure and Comprehension by H G Suryanarayan Rao.
4. A Guide to Patterns and Usage by AS Hornby.

B Com Semester I ENVS P C C - 103

ENVIRONMENTAL STUDIES

Scheme of examination: *MM: 70*

1. The Question paper shall be of ***TWO HOURS*** duration.
2. Q. No. 1 shall contain 20 (Twenty) objective type questions having four options, out of which one shall be correct. Each question shall carry one mark. (1 X 20 = 20 marks)
3. Q. No. 2 shall contain 8 (Eight) Short-Answer-Type-Questions. Word limit for each question is 100 words. **Candidate has to attempt any five**. Each question shall carry **Four** marks. (5 X 4 = 20 marks).
4. Q. No. 3 shall contain 4 (Four) Essay-Type-Questions. Word limit for each question is 500 words. **Candidate has to attempt any two**. Each question shall carry **Fifteen** marks. (2 X 15 = 30 marks).

UNIT – I

The multidisciplinary nature of environmental studies.

Definition, Scope and importance, Need for public awareness.

Unit – II

Natural Resources

Renewable and Non renewable resources: Natural Resources and associated problems.

- Forest Resources: Use and over exploitation, deforestation case studies, Timber extraction, mining, dams and their effects on forest and tribal people.
- Water Resources: Use and over exploitation of surface and ground water, Floods, draught, conflicts over water, dams- benefits and problems.
- Mineral Resources: Use and exploitation, effects of extracting and using mineral resources, case studies.
- Food Resources: World food problems, changes, caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- Energy Resources: Growing energy need, renewable and non-renewable energy sources, use of alternate energy sources, case studies.

- Land Resources: Land as a resource, land degradation, man included landslides, soil erosion and desertification.
- **Role of an individual in conservation of natural resources.**
- Equitable use of resources for sustainable lifestyles.

UNIT-III

Ecosystems

- **Concept of an ecosystem.**
- **Structure and function of an ecosystem.**
- **Producers, consumers and decomposers.**
- **Energy flow in ecosystems.**
- **Food chains, food webs and ecological pyramids.**
- **Introduction, types, characteristic features, structure and function of the following ecosystem:**
  - **Forest ecosystem**
  - **Grassland ecosystem.**
  - **Desert ecosystem.**
  - **Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).**

Format of the Question Paper

Q. 1 (Multiple Choice Question). Attempt all.

(i).....

(a) (b)

(c) (d)

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(ix).....

(x).....

(xi).....

(xii).....

(xiii).....

(xiv).....

(xv).....

(xvi).....

(xvii).....

(xviii).....

(xix).....

(xx).....

(1 X 20 = 20)

Q. 2 (Short Answer Type Question).Attempt any FIVE. Word limit 100 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(5 X 4 = 20)

Q. 3 (Essay Type Question).Attempt any TWO. Word limit 500 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(2 X 15 = 30)

ELEMENTARY COMPUTER APPLICATIONS

Scheme of examination: *MM: 70*

1. The Question paper shall be of ***TWO HOURS*** duration.
2. Q. No. 1 shall contain 20 (Twenty) objective type questions having four options, out of which one shall be correct. Each question shall carry one mark. (1 X 20 = 20 marks)
3. Q. No. 2 shall contain 8 (Eight) Short-Answer-Type-Questions. Word limit for each question is 100 words. **Candidate has to attempt any five.** Each question shall carry **Four** marks. (5 X 4 = 20 marks).
4. Q. No. 3 shall contain 4 (Four) Essay-Type-Questions. Word limit for each question is 500 words. **Candidate has to attempt any two.** Each question shall carry **Fifteen** marks. (2 X 15 = 30 marks).

UNIT – I

Introduction to computers and related terminology:

(Basic information only)

(A) Hardware: CPU (Mother board, Microprocessors, (The Intel Pentium III, AMD and Cyrix), MMX technology, System clock, Address Bus, Date Bus, (PCI and ESIC) Cache Memory, Processing speed, Expansion slots (Video controller, sound Card, SCSI, Network Card), Memory – (Unit, RAM, ROM, EDO, RAM, SI, RAM), Input and Output devices- Keyboard (The standard Keyboard layout), Mouse, Printers (Dot matrix, Inkjet, Laser Jet), Microphone, Speakers, Digital Cameras), Storage devices – (Diskette Drive (Types, Density, Formatting Boot Record, FAT, Folder, Directory), Hard Disk Drive, CD ROM DRIVE, (CD ROM Speeds), CD-R Drive, DVD ROM Drive, Tape Drive.

(B) Software: Introduction to programming languages, System software (Operating Systems and Utilities), Application software (Word Processors, Spreadsheets, DBMS, Presentation

Graphics, Browsers, Personal Information Managers) Introduction to Multilingual Word-Processors.

(C) Communications and Connectivity: Data Communication System, Data Transmission (Serial, Parallel, Bandwidth, Protocols), Emails, FAX, Voice and video massaging, Video Conferencing, Online service user connection (Types), Networking of Computers, (Node, Client, Server, LAN, WAN), Using the Network, the internet and the Web.

UNIT – II

The Internet and Online Resources:

(Working Knowledge at Common Users Level only)

How the internet works, Introduction to (TCP/IP, and DNS Addresses. Features of the internet – (Email, News, Telnet, Chat, Channels, WWW, Online Services, Bulletin Board Services), Connection wizard, Overview of the internet explorer 5 and features therein, use of search engines, Surfing, creating and use of email, Awareness about e-commerce and its advantages.

Format of the Question Paper

Q. 1 (Multiple Choice Question). Attempt all.

(i).....

(a) (b)

(c) (d)

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(ix).....

(x).....

(xi).....

(xii).....

(xiii).....

(xiv).....

(xv).....

(xvi).....

(xvii).....

(xviii).....

(xix).....

(xx).....

(1 X 20 = 20)

Q. 2 (Short Answer Type Question).Attempt any FIVE. Word limit 100 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(5 X 4 = 20)

Q. 3 (Essay Type Question).Attempt any TWO. Word limit 500 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(2 X 15 = 30)

GENERAL HINDI

The Question paper shall be of ***TWO HOURS*** duration.

MM: 70

इकाई - I पद्य

(i) हरिवंशरायवच्चन: पथकीपहचानलहरोंकानिमंत्रण

(ii) केदारनाथअग्रवाल: मैंने उसकोदेखा यह धरतीहै उसकिसानकी

(iii) सुभद्राकुमारीचौहान: झांसीकीरानीप्रभुतुमभेरेमनकीजानो

(iv) नागार्जुन: कालिदासकेप्रतिप्रेतकेवयान

इकाई - II गद्य

(i) अमृतलालवेगड़: महाराजपुरसेग्वारीघाट

(ii) विजयदानदेथा: उजालेकेमुसाहिव

(iii) महादेवीवर्मा: सिस्तरकावास्ते

(iv) कन्हैयालालमिश्रप्रभाकर: मैंऔरमैं

इकाई - III

(i) संक्षेपण (ii) पल्लवन (iii) प्रारुप

इकाई - IV

प्रयोजनमूलकहिन्दीकेमुख्यतत्व

(i) पारिभाषिकशब्दावली:वर्गीकरणएवंप्रयोग

इकाई - V

निवन्धकिसीसामान्यविषयपरलगभग 500 शब्दोंकानिवन्ध

B.Sc/B.Sc (Hons.) Semester II GE P C S - 202

GENERAL ENGLISH

The Question paper shall be of ***TWO HOURS*** duration.

MM: 70

Objectives:

- **Introducing students to Phonetics, correct their pronunciation and word stress.**
- **Strengthening compositional skills.**
- **Introducing students to writing of notices, advertisements and poster making skills.**

Unit – I(Phonetics) **10 Marks**

- Transcription of Phonetic symbols.
- Wordstress.

Unit – II(Writing Skills) **20 Marks**

- CV"s and Job Applications.
- Precis Writing.

Unit – III(Compositional Skills) **20 Marks**

- Letter Writing (Formal and informal)
- Paragraph Writing.

Unit – IV(Writing Skills) **10 Marks**

- Notice Writing.

Unit – V(Use of Imagining Faculty) **10 Marks**

- Writing Advertisements.
- Poster Making.

Suggested Reading:

1. CVs and Job Applications by Judith Leigh.
2. English at workplace. Eds: Panja, Sawhney&Verma.
3. Professional Communication by R P Singh.
4. English made simple by Arthur Waldhorn and Arthur Zeiger.
5. The Written Word by Vandana R Singh.
6. Technical Writing by Sunder Rajan.

ENVIRONMENTAL STUDIES

Scheme of examination: *MM: 70*

1. The Question paper shall be of ***TWO HOURS*** duration.
2. **Q. No. 1 shall contain 20 (Twenty) objective type questions having four options, out of which one shall be correct. Each question shall carry one mark. (1 X 20 = 20 marks)**
3. **Q. No. 2 shall contain 8 (Eight) Short-Answer-Type-Questions. Word limit for each question is 100 words. Candidate has to attempt any five. Each question shall carry Four marks. (5 X 4 = 20 marks).**
4. **Q. No. 3 shall contain 4 (Four) Essay-Type-Questions. Word limit for each question is 500 words. Candidate has to attempt any two. Each question shall carry Fifteen marks. (2 X 15 = 30 marks).**

UNIT – I

Biodiversity and its conservation.

- Introduction – Definition: genetic, species and ecosystem diversity.
- Bio geographical classification of India.
- Value of biodiversity: consumptive use, productive use, social, ethical, asthetic and option values.
- Biodiversity at global, national and local levels.
- India as a mega diversity region.
- Hot spots of biodiversity.
- Threats to biodiversity – habitat loss, poaching of wild life, man – wildlife conflicts.
- Endangered and endemic species of India.
- Conservation of biodiversity: *in situ* and *ex situ* conservation of biodiversity.

Unit – II

Environmental Pollutions:

1. Definition, causes, effects and control measures of

- Air Pollution,
- Water Pollution,

- Soil Pollution,
- Marine Pollution,
- Noise Pollution,
- Thermal Pollution,
- Nuclear Pollution,

2. Solid waste management: Causes, effects and control measures of urban and industrial waste.
3. Disaster management: Floods, earthquakes, cyclone and landslides.

UNIT-III

Social issues and the Environment:

- From unsustainable to sustainable development.
- Urban problems related to energy.
- Water conservation, rain water harvesting, watershed management.
- Resettlement and rehabilitation of people, its problems and concerns, case studies.
- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environmental protection laws in India.
- Population growth, variation among nations.
- Population explosion – family welfare programmes.
- Environment and Human Health.

Format of the Question Paper

Q. 1 (Multiple Choice Question). Attempt all.

(i).....

(a) (b)

(c) (d)

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(ix).....

(x).....

(xi).....

(xii).....

(xiii).....

(xiv).....

(xv).....

(xvi).....

(xvii).....

(xviii).....

(xix).....

(xx).....

(1 X 20 = 20)

Q. 2 (Short Answer Type Question).Attempt any FIVE. Word limit 100 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(5 X 4 = 20)

Q. 3 (Essay Type Question).Attempt any TWO. Word limit 500 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(2 X 15 = 30)

ELEMENTARY COMPUTER APPLICATIONS

Scheme of examination: *MM: 70*

1. The Question paper shall be of ***TWO HOURS*** duration.
2. Q. No. 1 shall contain 20 (Twenty) objective type questions having four options, out of which one shall be correct. Each question shall carry one mark. (1 X 20 = 20 marks)
3. Q. No. 2 shall contain 8 (Eight) Short-Answer-Type-Questions. Word limit for each question is 100 words. **Candidate has to attempt any five.** Each question shall carry Four marks. (5 X 4 = 20 marks).
4. Q. No. 3 shall contain 4 (Four) Essay-Type-Questions. Word limit for each question is 500 words. **Candidate has to attempt any two.** Each question shall carry Fifteen marks. (2 X 15 = 30 marks).

UNIT I

OPERATING SYSTEMS(Working knowledgeat common users level only):
OVERVIEW OF IMPORTANT dos COMMANDS, Windows 98: Installation, Scandisk, Control Panel, Taskbar, Toolbars, Display settings (Background, wallpapers, screensavers, Desktop themes),Files and Folder management, WindowsExplorer, Finding Files and Folders Formatting Disks and copying files, Printer settings, Modem installation, mouse installation, Adding and removing programmes, Active desktop Concepts,Winzip and its\application, Norton antivirus and its use, Use of calculator, Paintbrush, win amp, MPEG player and windows help.

UNIT II

Application Software (Working knowledge at common users level only):

(a) Word processing software – MS Word

Entering, editing and formatting text, Document formats (Page size and Orientation, Headers and Footers, Columns and Sections, Page layout), Spelling and grammer checks, Thesaurus, Find and replace, cut and Paste, Table and Formatting tables, Mail Merge, Styles and Templates.

(b) Spreadsheet Programme – MS Excel

Entering data, Lables, Values, Dates, formulas, Cell references, formats, Functions, Templates, charts and Maps, analysing datain a spreadsheet.

(c) DBMS – Microsoft Access

Database, Entering data into thedatabase, Creating databasetables, editingdata,viewing records, sorting records, queryinga database, generating reports.

Format of the Question Paper

Q. 1 (Multiple Choice Question). Attempt all.

(i).....

(a) (b)

(c) (d)

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

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(xix).....

(xx).....

(1 X 20 = 20)

Q. 2 (Short Answer Type Question).Attempt any FIVE. Word limit 100 words for each.

(i).....

(ii).....

(iii).....

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(vii).....

(viii).....

(5 X 4 = 20)

Q. 3 (Essay Type Question).Attempt any TWO. Word limit 500 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(2 X 15 = 30)

GENERAL HINDI

The Question paper shall be of *TWO HOURS* duration.

MM: 70

इकाई - I पद्य

(i) हरिवंशरायवच्चन: पथकीपहचानलहरोंकानिमंत्रण

(ii) केदारनाथअग्रवाल: मैंने उसकोदेखा यह धरतीहै उसकिसानकी

(iii) सुभद्राकुमारीचौहान: झांसीकीरानीप्रभुतुममेरेमनकीजानो

(iv) नागार्जुन: कालिदासकेप्रतिप्रेतकेवयान

इकाई - II गद्य

(i) अमृतलालवेगड: महाराजपुरसेग्वारीघाट

(ii) विजयदानदेथा: उजालेकेमुसाहिव

(iii) महादेवीवर्मा: सिस्तरकावास्ते

(iv) कन्हैयालालमिश्रप्रभाकर: मैंऔरमैं

इकाई - III

(i) संक्षेपण (ii) पल्लवन (iii) प्रारुप

इकाई - IV

प्रयोजनमूलकहिन्दीकेमुख्यतत्व

(i) पारिभाषिकशब्दावली:वर्गीकरणएवंप्रयोग

इकाई - V

निवन्धकिसीसामान्यविषयपरलगभग 500 शब्दोंकानिवन्ध

B.Com Semester II GE P C C - 202

GENERAL ENGLISH

The Question paper shall be of ***TWO HOURS*** duration.

MM: 70

Objectives:

- Introducing students to Phonetics, correct their pronunciation and word stress.
- Strengthening compositional skills.
- Introducing students to writing of notices, advertisements and poster making skills.

Unit – I(Phonetics) **10 Marks**

- Transcription of Phonetic symbols.
- Wordstress.

Unit – II(Writing Skills) **20 Marks**

- CV"s and Job Applications.
- Precis Writing.

Unit – III(Compositional Skills) **20 Marks**

- Letter Writing (Formal and informal)
- Paragraph Writing.

Unit – IV(Writing Skills) **10 Marks**

- Notice Writing.

Unit – V(Use of Imagining Faculty) **10 Marks**

- Writing Advertisements.
- Poster Making.

Suggested Reading:

1. CVs and Job Applications by Judith Leigh.
2. English at workplace. Eds: Panja, Sawhney&Verma.
3. Professional Communication by R P Singh.
4. English made simple by Arthur Waldhorn and Arthur Zeiger.
5. The Written Word by Vandana R Singh.
6. Technical Writing by Sunder Rajan.

B Com Semester II ENVS P C C - 203

ENVIRONMENTAL STUDIES

Scheme of examination: *MM: 70*

1. The Question paper shall be of ***TWO HOURS*** duration.
2. **Q. No. 1 shall contain 20 (Twenty) objective type questions having four options, out of which one shall be correct. Each question shall carry one mark. (1 X 20 = 20 marks)**
3. **Q. No. 2 shall contain 8 (Eight) Short-Answer-Type-Questions. Word limit for each question is 100 words. Candidate has to attempt any five. Each question shall carry Four marks. (5 X 4 = 20 marks).**
4. **Q. No. 3 shall contain 4 (Four) Essay-Type-Questions. Word limit for each question is 500 words. Candidate has to attempt any two. Each question shall carry Fifteen marks. (2 X 15 = 30 marks).**

UNIT – I

Biodiversity and its conservation.

- Introduction – Definition: genetic, species and ecosystem diversity.
- Bio geographical classification of India.
- Value of biodiversity: consumptive use, productive use, social, ethical, asthetic and option values.
- Biodiversity at global, national and local levels.
- India as a mega diversity region.
- Hot spots of biodiversity.
- Threats to biodiversity – habitat loss, poaching of wild life, man – wildlife conflicts.
- Endangered and endemic species of India.
- Conservation of biodiversity: *in situ* and *ex situ* conservation of biodiversity.

Unit – II

Environmental Pollutions:

1. Definition, causes, effects and control measures of
- Air Pollution,
- Water Pollution,

- Soil Pollution,
- Marine Pollution,
- Noise Pollution,
- Thermal Pollution,
- Nuclear Pollution,

2. Solid waste management: Causes, effects and control measures of urban and industrial waste.
3. Disaster management: Floods, earthquakes, cyclone and landslides.

UNIT-III

Social issues and the Environment:

- From unsustainable to sustainable development.
- Urban problems related to energy.
- Water conservation, rain water harvesting, watershed management.
- Resettlement and rehabilitation of people, its problems and concerns, case studies.
- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environmental protection laws in India.
- Population growth, variation among nations.
- Population explosion – family welfare programmes.
- Environment and Human Health.

Format of the Question Paper

Q. 1 (Multiple Choice Question). Attempt all.

(i).....

(a) (b)

(c) (d)

(ii).....

(iii).....

(iv).....

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(vi).....

(vii).....

(viii).....

(ix).....

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(xii).....

(xiii).....

(xiv).....

(xv).....

(xvi).....

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(xix).....

(xx).....

(1 X 20 = 20)

Q. 2 (Short Answer Type Question).Attempt any FIVE. Word limit 100 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(5 X 4 = 20)

Q. 3 (Essay Type Question).Attempt any TWO. Word limit 500 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(2 X 15 = 30)

ELEMENTARY COMPUTER APPLICATIONS

Scheme of examination: *MM: 70*

1. The Question paper shall be of ***TWO HOURS*** duration.
2. Q. No. 1 shall contain 20 (Twenty) objective type questions having four options, out of which one shall be correct. Each question shall carry one mark. (1 X 20 = 20 marks)
3. Q. No. 2 shall contain 8 (Eight) Short-Answer-Type-Questions. Word limit for each question is 100 words. **Candidate has to attempt any five**. Each question shall carry **Four** marks. (5 X 4 = 20 marks).
4. Q. No. 3 shall contain 4 (Four) Essay-Type-Questions. Word limit for each question is 500 words. **Candidate has to attempt any two**. Each question shall carry **Fifteen** marks. (2 X 15 = 30 marks).

UNIT I

OPERATING SYSTEMS (Working knowledge at common users level only):
OVERVIEW OF IMPORTANT dos COMMANDS, Windows 98: Installation, Scandisk, Control Panel, Taskbar, Toolbars, Display settings (Background, wallpapers, screensavers, Desktop themes),Files and Folder management, Windows Explorer, Finding Files and Folders Formatting Disks and copying files, Printer settings, Modem installation, mouse installation, Adding and removing programmes, Active desktop Concepts, Winzip and its\application, Norton antivirus and its use, Use of calculator, Paintbrush, win amp, MPEG player and windows help.

UNIT II

Application Software (Working knowledge at common users level only):

(a) Word processing software – MS Word

Entering, editing and formatting text, Document formats (Page size and Orientation, Headers and Footers, Columns and Sections, Page layout), Spelling and grammer checks,

Thesaurus, Find and replace, cut and Paste, Table and Formatting tables, Mail Merge, Styles and Templates.

(b) Spreadsheet Programme – MS Excel

Entering data, Lables, Values, Dates, formulas, Cell references, formats, Functions, Templates, charts and Maps, analysing data in a spreadsheet.

(c) DBMS – Microsoft Access

Database, Entering data into the database, Creating database tables, editing data, viewing records, sorting records, querying a database, generating reports.

Format of the Question Paper

Q. 1 (Multiple Choice Question). Attempt all.

(i).....

(a) (b)

(c) (d)

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(ix).....

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(xiii).....

(xiv).....

(xv).....

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(xix).....

(xx).....

(1 X 20 = 20)

Q. 2 (Short Answer Type Question).Attempt any FIVE. Word limit 100 words for each.

(i).....

(ii).....

(iii).....

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(vii).....

(viii).....

(5 X 4 = 20)

Q. 3 (Essay Type Question).Attempt any TWO. Word limit 500 words for each.

(i).....

(ii).....

(iii).....

(iv).....

(2 X 15 = 30)

Algae, Fungi and Lichens

Scheme of examination: *MM: 35*

1. In Semester End Examination the candidate has to answer five questions in all. Each question will be of 7 marks. Candidate has to answer all questions in the main answer book only.
2. Q. No. 1 (objective/short answer type) will be compulsory having 14 questions (half mark each) covering entire syllabus.
3. Each paper is divided in four units. There will be two questions from each unit. Student has to answer one question from each unit.

UNIT – I

General characters of algae. Classification (F.E.Fritsch and Smith), Diverse habitat, Range of thallus structure, Photosynthetic pigments and food reserves.

Reproduction (vegetative, asexual and sexual), Types of life cycles and evolution of sex in algae. Economic importance (algae as food and fodder, algae in agriculture, pharmaceuticals and industries). Isolation and culture of algae.

UNIT – II

Habitat, structure, reproduction and life cycle of following forms:

Chlorophyceae – ***Volvox, Coleochaete, Chara***

Xanthophyceae – ***Vaucheria***

Phaeophyceae – ***Ectocarpus***

Rhodophyceae – ***Polysiphonia***

UNIT – III

General characters of fungi: Definition, occurrence, thallus organization, asexual and sexual reproduction, biological and economic importance of fungi.

Classification of fungi. (Saccardo and Ainsworth's).

UNIT – IV

Brief account, structure, importance and life history of the following:

Yeast, *Rhizopus, Aspergillus, Peziza, Agaricus.*

Lichens: General characters, habitat, structure, reproduction and economic importance of lichens, importance of lichens as colonizers and indicators of environment.

Microbiology and Plant Pathology

Scheme of examination: *MM: 35*

1. In Semester End Examination the candidate has to answer five questions in all. Each question will be of 7 marks. Candidate has to answer all questions in the main answer book only.
2. Q. No. 1 (objective/short answer type) will be compulsory having 14 questions (half mark each) covering entire syllabus.
3. Each paper is divided in four units. There will be two questions from each unit. Student has to answer one question from each unit.

UNIT – I

Meaning and scope of microbiology: Developments in the field of microbiology, spontaneous generation, discovery of bacteria, germ theory of diseases, Vaccination, Antibiotics.

General account of Eubacteria: occurrence, morphology (structure, shapes), flagella, capsule, nutritional types, endospore, reproduction (binary fission, transformation, conjugation, transduction), economic and biological importance.

UNIT – II

Mycoplasma: occurrence, morphology, reproduction and importance.

Virus: General characteristics and importance. Structure of TMV and Pox virus. Structure and multiplication of bacteriophage.

Cyanobacteria: *Oscillatoria* and *Nostoc*, occurrence, morphology, reproduction and importance.

UNIT – III

What is plant disease? Animate and inanimate plant diseases. Important symptoms of plant diseases caused by fungi, bacteria, viruses, MLO's

(blights, mildew – downy and powdery, rust, smut, mosaic, little leaf, galls etc.)

Brief account, structure, importance and life history and/or disease cycle and control of the following:

Albugo and white rust.

Sclerospora and downy mildew/ green ear of Bajra.

Claviceps and ergot.

UNIT – IV

Brief account, structure, importance and life history and/or disease cycle and control of the following:

Puccinia and rusts of wheat (Black, orange, yellow)

Ustilago and loose smut of wheat and covered smut of barley.

Alternaria and early blight of tomato/potato.

Bryophytes and Pteridophytes

Scheme of examination: *MM: 35*

1. In Semester End Examination the candidate has to answer five questions in all. Each question will be of 7 marks. Candidate has to answer all questions in the main answer book only.
2. Q. No. 1 (objective/short answer type) will be compulsory having 14 questions (half mark each) covering entire syllabus.
3. Each paper is divided in four units. There will be two questions from each unit. Student has to answer one question from each unit.

UNIT – I

General characters, Origin and evolution of Bryophyta. Classification (Eichler and Proskauer); Habitat, Range of thallus structure, Reproduction (Vegetative and Sexual); Alternation of generation; Evolution of sporophytes in Bryophytes; Economic importance of Bryophytes.

UNIT II

Habitat, structure, reproduction and alternation of generation in following forms: Hepaticopsida – *Riccia, Marchantia and Porella.*

Anthocerotopsida - *Anthoceros.*

Bryopsida - *Sphagnum, Funaria*

UNIT III

General characters of pteridophytes, classification by Smith, Bold & Sporne. Important characteristics of Psilopsida, Lycopsida, Sphenopsida and Pteropsida. Habit & Habitat and economic importance of Pteridophytes. Alternation of Generation. Stelar system in Pteridophytes. Heterospory and seed habit.

Unit - IV

Distribution, structure and life history of: *Psilotum, Selaginella, Equisetum, Pteridium* and *Marsilea.*

Gymnosperms and Palaeobotany

Scheme of examination: *MM: 35*

1. In Semester End Examination the candidate has to answer five questions in all. Each question will be of 7 marks. Candidate has to answer all questions in the main answer book only.
2. Q. No. 1 (objective/short answer type) will be compulsory having 14 questions (half mark each) covering entire syllabus.
3. Each paper is divided in four units. There will be two questions from each unit. Student has to answer one question from each unit.

UNIT – I

Resemblances and characteristics of seed plants. Differences between Gymnosperms and Angiosperms. General characters and classification of Gymnosperms (Andrews, Sporne & Bierhorst), Economic importance of Gymnosperms.

UNIT-II

Systematic position, distribution, Morphology of Vegetative and reproductive parts, anatomy, reproduction and life cycle of following genera: *Cycas, Pinus* and *Ephedra*

UNIT III

Formation of fossils, types of fossils, techniques of study of fossils. Geological time scale. Applied aspects of paleobotany - use in coal and petroleum exploration.

UNIT IV

Fossil Pteridophytes: *Rhynia, Lepidodendron, Calamites, Lepidocarpon.*

Fossil Gymnosperms - *Cycadeodea, Cordaites, Williamsonia*

B.Sc Semester I Chemistry Paper I P C 1004

Inorganic Chemistry

Scheme of examination: *MM: 23*

1. *In Semester End Examination there will be 10 questions in all, 2 from each unit. Candidate has to answer any 5 questions, taking one from each unit.*

UNIT – I

Covalent Bond : Valence bond theory and its limitations, directional and shapes of simple inorganic molecules and ions. Valence shell electron pair repulsion (VSEPR) theory to NH_3, H_3O^+, SF_4, ClF_3, ICl_2, H_2O.

UNIT – II

Covalent Bond : MO theory, homonuclear and heteronuclear (CO and NO) diatomic molecules, multicener bonding in electron deficient molecules bond strength and bond energy, percentage ionic character from dipole moment and electro negativity difference.

UNIT – III

Ionic Solids : Ionic structures, radius ratio effect and coordination number, limitation of radius ration rule, lattice defects, semiconductors, lattice energy and Born haber cycle, solvation energy and solubility of ionic solids, polarizing power and polarisability of ions, Fajan's rule.

UNIT – IV

Ionic Solids: Metallic bond free electron, valence bond and band theories.

Weak Interactions: Hydrogen bonding, Wander Walls forces.

UNIT – V

S-Block Element - Comparative study, diagonal relationships, salient features of hydrides, solvation and complexation tendencies including their function in bisystems, an introduction to alkyls and aryls.

Organic Chemistry

Scheme of examination: *MM: 23*

1 *In Semester End Examination there will be 10 questions in all, 2 from each unit. Candidate has to answer any 5 questions, taking one from each unit.*

UNIT – I

Mechanism of Organic Reactions : Curved arrow notation, drawing electron movement with arrows, half-headed and double headed arrows, homolytic and heterolytic bond breaking. Types of reagents, electrophiles and nucleophiles. Types of organic reactions. Energy considerations. Reactive intermediates - carbocations, carbanions, free radicals, carbenes, arynes and nitrenes (with examples). Assigning formal charges on intermediates and other ionic species.

Methods of determination of reaction mechanism (product analysis, intermediates, isotope effects, kinetic and stereochemistry studies).

UNIT - II

Alkanes: IUPAC nomenclature of branched and unbranched alkanes, the alkyl group, classification of carbon atoms in alkanes, Isomerism in alkanes, sources, methods of formation (with special reference of Wurtz reaction, Kolbe reaction, Corey house reaction and decarboxylation of carboxylic acids). Physical properties and chemical reaction of alkanes. Mechanism of free radical halogenations of Alkanes: orientation, reactivity and selectivity.

UNIT - III

Alkenes: Nomenclature of alkenes, methods of formation, mechanism of dehydration of alcohols and dehydrohalogenation of alkyl halides, regioselectivity in alcohol dehydration. The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes.

Chemical reactions of alkenes - mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration oxidation oxymercuration - reduction. Epoxidation, ozonolysis, hydration, hydroxylation and oxidation. with $KMnO_4$, Polymerization of alkenes. Substitution at the allylic and vinylic positions of alkenes. Industrial applications of ethylene and propene.

UNIT – IV

Alkynes: Nomenclature, structure and bonding in alkynes. Methods of formation, Chemical reactions of alkynes, acidity of alkynes, mechanism of electrophilic and nucleophilic addition reaction, hydroboration-oxidation, metal-ammonia reduction, oxidation and polymerization.

Dienes: Nomenclature and classification of dienes : isolated, conjugated and cummulated dienes. Structure of allenes and butadiene, methods of formation, polymerization, Chemical reaction-1,2 and 1,4 additions, Diels- Alder reaction.

UNIT – V

Cycloalkanes: Nomenclature, methods of formation. Chemical reactions,Baeyer's strain theory and its limitations. Ring strain in small rings(Cyclo-propane and Cyclo-butane), Theory of strainless rings. The case of Cyclopropane ring: banana bonds.

Cycloalkenes: Methods of formation, conformation and chemical reactions of Cycloalkenes.

Physical Chemistry

Scheme of examination: *MM: 24*

1 *In Semester End Examination there will be 10 questions in all, 2 from each unit. Candidate has to answer any 5 questions, taking one from each unit.*

UNIT – I

Mathematical Concepts : Lorgarithmic relations, curve sketching, linear graphs and calculation of slopes, differentiation of function like kx, ex, xn, sin x and log x; maxima and Minima, partial differential and reciprocity relations, integration of some useful/relevant functions; permutations and combinations, Factorials, Probability.

UNIT - II

Computers : General introduction to computers, different computer of a computer, hardware and software, input-output devices; binary numbers and arithmatic, introduction to computer languages. Programming, operating systems.

UNIT - III

Gaseous States : Postulates of kinetic theory of gases, deviation from ideal behaviour, Vander Waals equation of state.

Critical Phenomena : PV isotherms of real gases; continuity of states, the isotherms of Van der Waals equation, relationship between cirtical constants and Vander Waals constants, the law of corresponding states, reduced equation of state.

UNIT - IV

Molecular velocities : Root means square, average and most probable velocities. Qualitative discussion of the Maxwell's distribution of molecular velocities, collision number, means free path and collision diameter. Liquification of gases (based on Joule-Thomson effect).

UNIT - V

Liquid State - Intermolecular forces, structure of liquids (a qualitative description).

Structural differences between solids, liquids an gases.

Liquid crystals : Difference between liquid crystal, solid and liquid.

Classification, Structure of nematic and cholestric phases.

B.Sc Semester II Chemistry Paper I P C 2004

Inorganic Chemistry

Scheme of examination: *MM: 23*

1 *In Semester End Examination there will be 10 questions in all, 2 from each unit. Candidate has to answer any 5 questions, taking one from each unit.*

UNIT – I

Periodicity of p-Block Elements: Periodicity in properties of p-Block Elements with special reference to atomic and ionic radii, ionization energy.

UNIT – II

Periodicity of p-Block Elements: Electron affinity, electronegativity, catenation (including diagonal relationship).

UNIT – III

Some important compounds of p-Block Elements: Hydrides of boron diborane and higher boranes, borazine, borohydrides, fullerenes, carbides

UNIT – IV

Some important compounds of p-Block Elements: Fluorocarbons, silicates (structural principle), tetrasulphur tetranitride, basic properties of halogens, interhalogens and polyhalides.

UNIT – V

Chemistry of Noble Gases -Chemical properties of the noble gases, chemistry of xenon, structure and bonding in xenon compounds.

Organic Chemistry

Scheme of examination: *MM: 23*

1 *In Semester End Examination there will be 10 questions in all, 2 from each unit. Candidate has to answer any 5 questions, taking one from each unit.*

UNIT – I

Stereochemistry of Organic Compounds: Concept of isomerism. Type of isomerism.

Optical Isomerism - Elements of symmetry, molecular chrirality, enantiomers, stereogenic centre, optical activity, properties of enantiomers , chiral and achera molecules with two steropgenic centres diastereomers, threo and erythro diastereomers, meso compounds, resolution of enantiomers, inversion, retention and racemization. Relative and absolute configuration, sequence rules, D & L and R & S systems of nomenclature.

UNIT – II

Geometric Isomerism : Determination of configuration of geometric isomers. E & Z system of nomenclature, geometric isomerism in oximes and alicylic compound.

Conformational isomerism: Conformational analysis of ethane and n-butane, conformation of mon subsituded cyclohexane derivatives. Newman projection and Sawhorse formulae, Fischer and flying wedge formulae. Difference between configurational conformation.

UNIT – III

Arenes and Aromaticity : Nomenclature of benzene derivatives. The aryl group, aromatic nucleus and side chain. Structure of benzene: molecular formula ad kekule structure. Stability and carbon-carbon bond

lengths of benzene, resonce structure, MO picture.

Aromaticity: The Huckel huckel rule, aromatic ions.

UNIT – IV

Aromatic electrophilic substituion - general pattern of the mechanism, role of sigma and pi complexes. Mechanism of nitration, halogenation, sulphonation, mercuration and Friedel Crafts reaction. Energy profile diagrams. Activating and deactivating substitutents, orientation and orgho/para ratio. Side chain reactions of benzenes derivatives. Birch reduction.

UNIT – V

Alkyl and Aryl Halides: Nomenclature and classes of alkyl halides, methods of formation, chemical reaction. Mechanism of nucleophilic substitution reactions of alkyl halides, SN2 and SN1 reactions with energy profile diagrams.

Polyhalogen compounds : Chloroform, Carbon tetrachloride. Methods of formation of aryl halides, nuclear and side chain reactions. The addition - elimination and the elimination-addition mechanism of nucleophilic aromatic substitution reactions.

Relatives reactivities of alkyl halides vs allyls, vinyl and aryl halides.

Synthesis and uses of DDT and BHC

Physical Chemistry

Scheme of examination: *MM: 24*

1 *In Semester End Examination there will be 10 questions in all, 2 from each unit. Candidate has to answer any 5 questions, taking one from each unit.*

UNIT – I

Solid State: Definition of space lattice, unit cell. Laws of crystallograph- (i) Law of constancy of interfacial angles (ii) Law of rationality of indices (iii) Law of symmetry, Symmetry elements in crystals. X-ray diffraction by crystals. Derivation of Bragg's equation. Determination of crystal structure of NaCl, and CsCl (Laue's method and powder method).

UNIT – II

Colloidal State - Definition of colloids, classification of colloids. Solids in liquids (sols) : Properties - kinetic, optical and electrical; stability of colloids, protective action. Hardy-Schulze law, Gold number.

Liquids in solids (gels) : Classification, preparation and properties, inhibition, general application of colloids.

UNIT – III

Chemical Kinetics and Catalysis :Chemical kinetics and its scope, rate of a reaction, factors influencing the rate of a reaction Concentration dependence of rates, mathematical characteristics of simple chemical reactions - zero order, first order, second order pseudo order, half life and means life. Determination of the order of reaction - differential method, method of integration , method of half life period and isolation method.

UNIT - IV

Radioactive decay as a first order phenomenon. Experimental methods of chemical kinetics : conductomertric, potentiometric, optical methods,

polarimetry and spectrophotometry. Theories of chemical kinetics: effect of temperature on rate of reaction,

UNIT - V

Arrhenius equation, concept of activation energy. Simple collision theory based on hard sphere model transition state theory (equilibrium hypothesis). Experession for the rate constant based on equilibrium constant and thermodynamic aspects.

प्रभारी
रसायन विभाग
राजर्षि कॉलेज अलवर

B.Sc Semester I Zoology Paper I P C 1013

ANIMAL DIVERSITY - I

Scheme of examination: ***MM: 35***

1. *In Semester End Examination there will be 10 questions in all, 2 from each unit. Candidate has to answer any 5 questions, taking one from each unit.*

UNIT – I

TAXONOMY

Hierarchy, Binomial nomenclature, Trinomial nomenclature, Rules of nomenclature, Concept of Five kingdom

Basis of Classification- Grade of organization, Symmetry, Coelom, Embryogeny, segmentation.

Classification of Invertebrate phyla upto Class level.

UNIT - II

Phylum Protozoa:

Type study *Amoeba, Euglena, Paramecium* (Habit, Habitat & Salient features with particular reference to locomotion, nutrition and reproduction). Economic Importance

UNIT – III

Phylum Porifera

Type study- *Sycon* Canal system of Sponges, Skeletal system, Economic Importance

UNIT - IV

Phylum Coelenterata

Type study – *Obelia*, Polymorphism, Coral reefs

UNIT - V

Phylum Platyhelminthes

Type study- *Taenia*

Phylum Nemathelminthes

Ascaris (External features and life cycle), Parasitic adaptations of Helminthes

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प्रभारी
प्राणी विज्ञान विभाग
राजकीय महाविद्यालय, अलवर

B.Sc Semester I Zoology Paper II P C 1014

CELL BIOLOGY

Scheme of examination: ***MM: 35***

1. *In Semester End Examination there will be 10 questions in all, 2 from each unit. Candidate has to answer any 5 questions, taking one from each unit.*

UNIT – I

Applications of Tools & Techniques in Cytology:
Principles of microscope and application:
Light Microscopy, Phase contrast microscopy, Fluorescence Microscopy, Interference Microscopy, Electron Microscopy (SEM & TEM)
Cell fractionation (Homogenization & Centrifugation)
Calorimetry/Spectrophotometry

UNIT - II

The Cell: Diversity of Cell Size & shape, Characteristics of Prokaryotic & Eukaryotic cells, Cell theory, Cell membrane – composition & ultrastructure (membrane models – Danielli & Davson, unit membrane, Singer & Nicholson – Fluid Mosaic model), Transport across cell membrane – Permeability, Passive and Active transport, Exocytosis, Endocytosis, (Pinocytosis, Phagocytosis).

UNIT - III

Cell organelles: structure, composition & function
Endoplasmic reticulum, Golgi complex, Ribosome, Lysosomes
Mitochondria: biogenesis, electron transport chain, generation of ATP molecules, (Chemiosmotic hypothesis of Mitchele)
Peroxisomes, Microtubules & Centrioles, cilia & flagella

UNIT – IV

Nuclear Organization: Ultrastructure of Nucleus - nuclear envelope, nuclear matrix and nucleolus, Chromosomes: Morphology, Chromatids, Chromonema, Chromomeres, telomeres, Primary & secondary constrictions, Chromosome type- Polytene & Lampbrush
Chromosomal Organization: euchromatin, Heterochromatin , folded fibre model & nucleosome Concept.

UNIT - V

Cell Division

Cell cycle(S, G1, G2, M phase)

Mitosis: Phases & process of mitosis, structure & function of spindle apparatus

Meiosis: Phases & Process of meiosis

Cytology

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ANIMAL DIVERSITY - II

Scheme of examination: ***MM: 35***

1. *In Semester End Examination there will be 10 questions in all, 2 from each unit. Candidate has to answer any 5 questions, taking one from each unit.*

UNIT – I

Type study- Habit, Habitat & Salient features & structural organization:
Phylum Annelida

- **Type study: Earthworm**
- **Metamerism**
- **Vermiculture**

UNIT - II

Type study- Habit, Habitat & Salient features & structural organization:
Phylum Arthropoda

- **Type study: Prawn**
- **Metamorphosis in insects**
- **Sericulture**
- **Lac culture**
- **Apiculture**
- **Prawn culture**

UNIT III

Type study- Habit, Habitat & Salient features & structural organization:
Phylum Mollusca

- **Type study: Pila**
- **Respiration**
- **Torsion**
- **Pearl culture**

UNIT IV

Type study- Habit, Habitat & Salient features & structural organization:
Phylum Echinodermata

- **Type study: Starfish**

• Water vascular system

UNIT V

Larval forms of Invertebrates (Parasitic & Free living forms)

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MOLECULAR BIOLOGY AND GENETICS

Scheme of examination: ***MM: 35***

1. *In Semester End Examination there will be 10 questions in all, 2 from each unit. Candidate has to answer any 5 questions, taking one from each unit.*

UNIT – I

DNA structure (Watson & Crick's model). Polymorphism (A, B, Z type), Replication (Semiconservative mechanism), Replication forks (both Unidirectional & Bidirectional), Leading & lagging strand, Okazaki fragments). Experiments of Messelson & Stahl. Elementary idea about Polymerases, Topoisomerases, Single stranded binding protein, RNA Primer, DNA repair

UNIT II

Genetic code, Protein synthesis (Translation), Gene expression – Gene concept, molecular structure of gene, gene regulation (lac operon), gene splicing & gene sequencing.

UNIT III

Mendelism – I

Mendel's work and laws. Interactions of Genes: Co-dominance and incomplete dominance, Complementary, Epistasis(dominant & recessive), Polymorphic (multiple) genes. Multiple alleles- Inheritance of human blood group-(A, B, O) & Rh factor.

UNIT IV

Mendelism – II

Chromosomal theory of inheritance. Linkage & linkage maps. Crossing over-Mechanism, theories, Cytological detection & significance, Mutations-Chromosomal & Gene, mutagens. Cytoplasmic inheritance.

UNIT V

Determination of Sex – Chromosomal mechanism, Genic Balance Theory, sexual function of X &Y chromosome, Non disjunction, Gyandromorphs. Sex linked inheritance in man. Y linked genes, Sex limited genes, Sex influenced genes,

Human genetics – Human Chromosomes, Karyotype & Idiogram: Chromosomal abnormalities (Autosomes & Sex chromosomes), Genetics counseling, Eugenics & Euthenics.

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