

Gondwana University, Gadchiroli



Choice Based Credit System (CBCS)

Syllabus of

B.Sc. (Information Technology)- I (Three Years Degree Course)

**Prepared by
Dr. S. B. Kishor**

2017-2018

B.Sc. (IT)– I (Semester - I)								
Subject	Paper Code	Paper Name	Total Period /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (35%)
Ability Enhancement Compulsory Code (AECC-I and AECC-II)	UBITT101	English	4	4	20	80	100	35
	UBITT102.1 UBITT102.2 UBITT102.3	<u>Elective</u> 1. Supplementary English 2. Marathi 3. Hindi	4	4	20	80	100	35
	UBITT103	Information and Communication Technology	4	4	20	80	100	35
	UBITT104	Developing Programming Logic and Techniques	4	4	20	80	100	35
Elective Course (EC-I)	UBITT105.1 UBITT105.2	<u>Elective</u> 1. Digital Electronics 2. Hardware Interfacing	4	4	20	80	100	35
Core III Lab (based on Core I and Core II)	UBITP106	Lab on UBITT103	4 Prac. Per Batch	2	20	30	50	20
	UBITP107	Lab on UBITT104	4 Prac. Per Batch	2	20	30	50	20
EC based Lab	UBITP108	Lab on UBITT105.1 or UBITT105.2	4 Prac. Per Batch	2	20	30	50	20
Total				26	160	490	650	235

Note: Student must appear for University Practical Examination.

Note :Direction and scheme of course is available in the website of Gondwana University, Gadchiroli(www.gondwana.digitaluniversity.ac)

B.Sc. (IT) -I (Semester - II)								
Subject	Paper Code	Paper Name	Total Period /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (35%)
Ability Enhancement Compulsory Course (AECC-III and AECC-IV)	UBITT201	English	4	4	20	80	100	35
	UBITT202.1 UBITT202.2 UBITT202.3	<u>Elective</u> 1. Supplementary English 2. Marathi 3. Hindi	4	4	20	80	100	35
Core Courses (Core IV and Core V)	UBITT203	Structured Programming using 'C'	4	4	20	80	100	35
	UBITT204	Discrete Mathematics	4	4	20	80	100	35
Elective Course (EC-II)	UBITT205.1 UBITT205.2	<u>Elective</u> 1. Database Management System 2. Operation Research	4	4	20	80	100	35
Core VI Lab (based on Core IV and Core V)	UBITP206	Lab on UBITT203	4 Prac. Per Batch	2	20	30	50	20
	UBITP207	Lab on UBITT204	4 Prac. Per Batch	2	20	30	50	20
EC based Lab	UBITP208	Lab on UBITT205.1 or UBITT205.2	4 Prac. Per Batch	2	20	30	50	20
Total				26	160	490	650	235

Pattern of Question Paper other than Languages

General Rules and Regulations regarding pattern of question paper for the semester end examination is as given below:

1. There will be four units in each paper.
2. Maximum marks of each theory paper will be 80.
3. Question paper will consist of five questions, each of 16 marks.
4. Four questions will be based on four units with internal choice.
5. Fifth question will be compulsory with questions from each of the four units having equal weightage and there will be no internal choice.

Bachelor of Science (Information Technology)	
B.Sc. (IT) – [I / II / III]	Semester – [I / II/ III / IV / V / VI]
Paper Code:	Paper: Name of Paper
Time: 3 Hours]	[Max. Marks: 80
Note: 1) All questions are compulsory and carry equal marks. 2) Draw Neat and Labeled diagram and use supporting data wherever necessary. 3) Avoid vague answers and write specific points/answer related to questions.	
<hr/>	
Q1 Either (From Unit 1)	
a)	8
b)	8
Or	
c)	8
d)	8
Q2 Either (From Unit 2)	
a)	8
b)	8
Or	
c)	8
d)	8
Q3 Either (From Unit 3)	
a)	8
b)	8
Or	
c)	8
d)	8
Q4 Either (From Unit 4)	
a)	8
b)	8
Or	
c)	8
d)	8
Q5 Solve all questions	
a)(From Unit 1)	4
b) (From Unit 2)	4
c)(From Unit 3)	4
d) (From Unit 4)	4

Pattern of Question Paper for English

F. Y. B. Sc. (I.T)

Semester- I

English

Pattern of Question Paper-

Time : Three Hours

Total Marks :80

Que. 1. A) One Long Answer Question out of Two to be answered in about 150 words

(Based on Prescribed Prose) 10

B) One Long Answer Question out of Two to be answered in about 150 words

(Based on Prescribed Poems) 10

Que. 2. A) Three Short Answer Questions out of Four to be answered in about 75 words each

(Based on Prescribed Prose) 3X5=15

B) One Short Answer Question out of Two to be answered in about 75 words each

(Based on Prescribed Poems) 1X5=5

Que. 3. A) Fill in the Blanks with appropriate Articles 3X1 = 3

B) Fill in the Blanks with appropriate Prepositions 3X1 = 3

C) Fill in the Blanks with appropriate Tense forms of Verbs 4X1 = 4

D) Correction of Sentences 4X1= 4

E) i) Synonyms 3X1 = 3

ii) Antonyms 3X1 = 3

Que. 4. A) Paragraph Writing with the help of given points 10

Que. 5. A) Two Short Answer Questions out of Four with internal choice on Leadership Skills, Team Work Skills, Time Management and Goal Setting. 2X5= 10

Unit Wise Allotment of Marks

Sr. No.	Unit	Portion	Marks Allotted
1	I	Prose	25
2	II	Poetry	15
3	III	Grammar	20
4	IV	Writing Skills, Communication Skills and Personality Development Skills	20

Pattern of Question Paper for Supplementary English

B. Sc. (I.T.) Supplementary English Pattern of Question Paper- Sem-I

Time : Three Hours

Total Marks :80

- Que. 1. A) One Long Answer Question out of Two to be answered in about 150 words
(Based on First Two Prescribed Essays) 10
- B) One Long Answer Question out of Two to be answered in about 150 words
(Based on Last Two Prescribed Essays) 10
- Que. 2. Three Short Answer Questions out of Five to be answered in about 75 words
each (Based on Prescribed Poems) $3 \times 5 = 15$
- Que. 3 Two Short Answer Questions out of Four to be answered in about 75 words
each (Based on Four Prescribed Essays) $2 \times 5 = 10$
- Que. 4. A) Tenses $5 \times 1 = 5$
B) Synonyms $5 \times 1 = 5$
C) Antonyms $5 \times 1 = 5$
- Que. 5. A) Transformation of Sentences 10
- i) Assertive and Exclamatory
 - ii) Affirmative and Negative
 - iii) Assertive and Interrogative
 - iv) Remove 'too'
 - v) Use of 'No sooner... than.
- B) Unseen Passage 10

Unit Wise Allotment of Marks

Sr. No.	Unit	Portion	Marks Allotted
1	I	Prose	30
2	II	Poetry	15
3	III	Grammar	25
4	IV	Writing Skills	10

Pattern of Question Paper for Marathi

गोंडवाना विद्यापीठ, गडचिरोली

बी. कॉम / बी. एससी / बी. एससी. (I. T.) / बी. सी. ए. भाग १

मराठी आवश्यक : प्रथम सत्र

विद्यापीठ परीक्षा: एकूण गुण: ८०

गुणविभाजन

प्रश्न १: गद्य विभागावर आधारित एक दीर्घोत्तरी प्रश्न	(पर्यायासह)	१५ गुण
प्रश्न २: पद्य विभागावर आधारित एक दीर्घोत्तरी प्रश्न	(पर्यायासह)	१५ गुण
प्रश्न ३: तीन लघुत्तरी उपप्रश्नांचा एक गट (गद्य विभाग— पर्यायासह)		१५ गुण
प्रश्न ४: तीन लघुत्तरी उपप्रश्नांचा एक गट (पद्य विभाग— पर्यायासह)		१५ गुण
प्रश्न ५. अ: व्यावहारिक मराठी विभागावर दोन प्रश्न	(पर्यायासह)	१० गुण
ब: मराठी व्याकरणावर सात पैकी पाच प्रश्न अनिवार्य		१० गुण

अंतर्गत मुल्यमापन : एकूण गुण: २०

१. वर्गातील उपस्थिती	: ५ गुण
२. गृहपाठ	: ५ गुण
३. महाविद्यालयीन उपक्रमांत सहभाग	: ५ गुण
४. मौखिक परीक्षा	: ५ गुण

प्रश्नपत्र का प्रारूप एवं अंकविभाजन

समय—3 घंटें

अंक—80

प्रश्न कं1—इकाई एक गद्य विभाग से दो दीर्घोत्तरी प्रश्न कहानी एवं निबंध से विकल्प के साथ पूछे जाएंगे। जिनमें से किसी एक प्रश्न का उत्तर लिखना अनिवार्य है।

अंक 10

प्रश्न कं2—इकाई एक गद्य विभाग से चार-चार प्रश्नों के दो समूह विकल्प के साथ होंगे। जिनमें से किसी एक ही समूह से चारों लघुत्तरी प्रश्नों के उत्तर लिखना अनिवार्य है।

अंक 20

प्रश्न कं3—इकाई दो पद्य विभाग से दो दीर्घोत्तरी प्रश्न कविताओं से विकल्प के साथ पूछे जाएंगे। जिनमें से किसी एक प्रश्न का उत्तर लिखना अनिवार्य है।

अंक 10

प्रश्न कं4—इकाई दो पद्य विभाग से चार-चार प्रश्नों के दो विभाग विकल्प के साथ होंगे। जिनमें से किसी एक ही विभाग से चारों लघुत्तरी प्रश्नों के उत्तर लिखना अनिवार्य है।

अंक 20

प्रश्न कं 5 अ—इकाई तीन व्यवहारिक ज्ञान पत्रलेखन से आवेदन पत्र व व्यावसायिक पत्र दो में से एक पत्र लिखना अनिवार्य है।

अंक 10

ब—इकाई चार और पाँच व्यावहारिक हिन्दी ज्ञान से पारिभाषिक शब्द, देवनागरी लीपि और कम्प्यूटर का सामान्य परिचय से पाँच लघुत्तरी प्रश्नों के उत्तर लिखना है। पाँचो प्रश्न अनिवार्य

अंक 10

अंतर्गत मूल्यांकन—

उपस्थिति एवं वर्तन—

यूनिट टेस्ट, गृहकार्य एवं चर्चासत्र

लेखक एवं साहित्यिक विधाओं का परिचय

कुल 20 अंक

05

10

05

Pattern of Question Paper for English

B. Sc. (I.T.) Semester- II English

Pattern of Question Paper-Sem-II

Time : Three Hours

Total Marks :80

Que. 1. A) One Long Answer Question out of Two to be answered in about 150 words

(Based on Prescribed Prose) 10

B) One Long Answer Question out of Two to be answered in about 150 words

(Based on Prescribed Poems) 10

Que. 2. A) Three Short Answer Questions out of Four to be answered in about 75 words

each (Based on Prescribed Prose) 3X5=15

B) One Short Answer Question out of Two to be answered in about 75 words

(Based on Prescribed Poems) 1X5=5

Que. 3. A) Question Tags 2X2=4

B) Change the Voice (Three out of Five) 3X2= 6

Que. 4. A) Writing Advertisements (One out of Two) 10

B) Dialogue Writing (One Long Answer Question out of Two) 10

Que. 5. A) Giving Personal Information or Describing Daily Routine (Any One) 5

B) One Short Answer Question out of Two on Notices, Agenda & Minutes 5

Unit Wise Allotment of Marks

Sr. No.	Unit	Portion	Marks Allotted
1	I	Prose	25
2	II	Poetry	15
3	III	Grammar	10
4	IV	Writing Skills,	30

Paper Pattern of Supplementary English

Pattern of Question Paper B. Sc. (I.T.) Sem-II Supplementary English Sem-II

Time : Three Hours

Total Marks :80

Que. 1. A) One Long Answer Question out of Two to be answered in about 150 words

(Based on First Two Prescribed Essays) 10

B) One Long Answer Question out of Two to be answered in about 150 words

(Based on Last Two Prescribed Poems) 10

Que. 2. A) Three Short Answer Questions out of Five to be answered in about 75 words

each (Based on Prescribed Poems) $3 \times 5 = 15$

Que. 3. Two Short Answer Questions out of Four to be answered in about 75 words

each (Based on Four Prescribed Essays) $2 \times 5 = 10$

Que. 4. A) Active and Passive Voice (Any Three out of Five) $3 \times 2 = 6$

B) Interchange of Simple Compound and Complex Sentences

(Any Three out of Five) $3 \times 2 = 6$

C) Idioms/Phrases $3 \times 1 = 3$

Que. 5. A) Letter Writing- Personal / Official (Any One) 10

B) Paragraph Writing 10

Unit Wise Allotment of Marks

Sr.	Unit	Portion	Marks
1	I	Prose	30
2	II	Poetry	15
3	III	Grammar	15
4	IV	Writing Skills	20

Paper Pattern for Marathi

मराठी आवश्यक : द्वितीय सत्र

विद्यापीठ परीक्षा: एकूण गुण: ८०

गुणविभाजन

प्रश्न १: गद्य विभागावर आधारित एक दीर्घोत्तरी प्रश्न (पर्यायासह)	१५ गुण
प्रश्न २: पद्य विभागावर आधारित एक दीर्घोत्तरी प्रश्न (पर्यायासह)	१५ गुण
प्रश्न ३: तीन लघुत्तरी उपप्रश्नांचा एक गट (गद्य विभाग— पर्यायासह)	१५ गुण
प्रश्न ४: तीन लघुत्तरी उपप्रश्नांचा एक गट (पद्य विभाग— पर्यायासह)	१५ गुण
प्रश्न ५. अ: व्यावहारिक मराठी विभागावर दोन प्रश्न (पर्यायासह)	१० गुण
ब: मराठी व्याकरणावर सात पैकी पाच प्रश्न अनिवार्य	१० गुण

अंतर्गत मुल्यमापन : एकूण गुण: २०

५. वर्गातील उपस्थिती	: ५ गुण
६. गृहपाठ	: ५ गुण
७. महाविद्यालयीन उपक्रमांत सहभाग	: ५ गुण
८. मौखिक परीक्षा	: ५ गुण

Paper Pattern for Hindi

प्रश्नपत्र का प्रारूप एवं अंकविभाजन

समय—3 घंटें

अंक—80

प्रश्न कं1—इकाई एक गद्य विभाग से दो दीर्घोत्तरी प्रश्न कहानी एवं एकांकी से विकल्प के साथ पूछे जाएंगे। जिनमें से किसी एक प्रश्न का उत्तर लिखना अनिवार्य है।

अंक 10

प्रश्न कं2—इकाई एक गद्य विभाग से चार-चार प्रश्नों के दो समूह विकल्प के साथ होंगे। जिनमें से किसी एक ही समूह से चारों लघुत्तरी प्रश्नों के उत्तर लिखना अनिवार्य है।

अंक 20

प्रश्न कं3—इकाई दो पद्य विभाग से दो दीर्घोत्तरी प्रश्न कविताओं से विकल्प के साथ पूछे जाएंगे। जिनमें से किसी एक प्रश्न का उत्तर लिखना अनिवार्य है।

अंक 10

प्रश्न कं4—इकाई दो पद्य विभाग से चार-चार प्रश्नों के दो विभाग विकल्प के साथ होंगे। जिनमें से किसी एक ही विभाग से चारों लघुत्तरी प्रश्नों के उत्तर लिखना अनिवार्य है।

अंक 20

प्रश्न कं 5 अ—इकाई तीन व्यावहारिक ज्ञान पत्रलेखन से व्यावहारिक पत्र व कार्यालयीन पत्र दो में से एक पत्र लिखना अनिवार्य होगा।

अंक 10

ब—इकाई चार और पाँच व्यावहारिक हिन्दी ज्ञान से पारिभाषिक शब्द, देवनागरी लीपि और कम्प्यूटर का सामान्य परिचय से पाँच लघुत्तरी प्रश्नों के उत्तर लिखना है। पाँचो प्रश्न अनिवार्य है।

अंक 10

अंतर्गत मूल्यांकन—

कुल 20 अंक

उपस्थिति एवं वर्तन—

05

यूनिट टेस्ट, गृहकार्य एवं चर्चासत्र

10

लेखक एवं साहित्यिक विधाओं का परिचय

05

B.Sc. (IT) - I (Semester-I)

UNIT I: Prose Section

1. The Homecoming – Rabindranath Tagore
2. Playing the English Gentleman – M. K. Gandhi
3. Prospects of Democracy in India- Dr. B. R. Ambedkar
4. IndraNooyi : A Corporate Giant

UNIT II : Poetry Section

1. The Village School Master – Oliver Goldsmith
2. If- Rudyard Kipling
3. My Grandmother's House – Kamala Das

UNIT III : Grammar

1. Articles
2. Prepositions
3. Tenses
4. Synonyms and Antonyms
5. Correction of Sentences
6. Paragraph Writing

UNIT IV: Communication Skills

Introduction to Soft Skills- Leadership Skills, Team Work Skills, Time Management, Goal Setting

Books :- Prescribed for Semester I and II:

Prelude: A Text Book for College Students, edited by the Board of Editors (Published by OrientBlackSwan)

Recommended reading for Grammar, Writing Skills and Soft Skills:

- i) English Grammar and Composition, R. C. Jain, Macmillan India Limited, Chennai, 2003.
- ii) A Course in English Grammar by R. N. Bakshi, Orient Black Swan.
- iii) The Communicator, Orient BlackSwan, 2013.
- iv) A Course in English Grammar by R. N. Bakshi, Orient Black Swan.
- v) Macmillan Foundation English by R. K. Dwivedi & A. Kumar (Macmillan).
- vi) Contemporary English Grammar & Composition by David Green (Macmillan).

B.Sc. (IT) - I (SEMESTER – I)
Elective – I
Paper II : SUPPLEMENTARY ENGLISH

[Max. Marks: 80]

UNIT I: Prose Section

1. Playing the English Gentleman- M. K. Gandhi
2. The Home Coming- Rabindranath Tagore
3. A Letter by Hazlitt to His Son- William Hazlitt
4. Freedom of the Press- Shashi Tharoor

UNIT II : Poetry Section

1. The Quality of Mercy- William Shakespeare
2. The Village Schoolmaster- Oliver Goldsmith
3. Laugh and Be Merry- John Masefield

UNIT III : Grammar

1. Tenses
2. Synonyms and Antonyms
3. Transformation of Sentences
4. Unseen Passage

UNIT IV: Writing Skills

Books :- Prescribed for Semester I and II:

Prelude: A Text Book for College Students, edited by the Board of Editors (Published by Orient BlackSwan)

Recommended reading for Grammar, Writing Skills and Soft Skills:

- vii) English Grammar and Composition, R. C. Jain, Macmillan India Limited, Chennai, 2003.
- viii) A Course in English Grammar by R. N. Bakshi, Orient Black Swan.
- ix) The Communicator, Orient BlackSwan, 2013.
- x) A Course in English Grammar by R. N. Bakshi, Orient Black Swan.
- xi) Macmillan Foundation English by R. K. Dwivedi & A. Kumar (Macmillan).

Contemporary English Grammar & Composition by David Green (Macmillan).

B.Sc. (IT) - I (SEMESTER – I)

Elective– II

Paper II : MARATHI

[Max. Marks: 80]

गद्य विभाग:—

१. अखेरचेकीर्तन—गाडगेबाबा
२. लोकशाहीचेभवितव्य—डॉ. बाबासाहेबआंबेडकर
३. विज्ञानयुगातभारत. जयंतनारळीकर
४. भटक्या—कचरू जनार्दनगिन्हे
५. माणूस—उत्तमकांबळे

पद्य विभाग:—

१. पसायदान—ज्ञानेश्वर
२. विद्यार्थ्याप्रत—केशवसुत
३. भंगू दे काठीण्य माझे—बा. सी. मर्ढेकर
४. स्वप्नांचीसमाप्ती—कुसुमाग्रज
५. लेखनीच्यातलवारी—उषाकिरणआत्राम

व्यावहारिकमराठी व व्याकरण:—

१. भाषिककौशल्य आणिव्यक्तीमत्वविकास
२. भाषा, लिपीआणिवर्णविचार

B.Sc. (IT) - I (SEMESTER – I)

Elective – III

Paper II : HINDI

[Max. Marks: 80]

घटकीकरण

इकाई एक— गद्य विभाग पाठ्यपुस्तक साहित्य रश्मि में सम्मिलित प्रथम पाँच पाठ ।

1. उसने कहा था—(कहानी) चंद्रधर शर्मा गुलेरी
2. पाप के चार हथियार—(निबंध) कन्हैयालाल मिश्र 'प्रभाकर'
3. घर बाजार और कबीर—(ललित निबंध) श्रीराम परिहार
4. बाबर की ममता—(एकांकी) देवेंद्रनाथ शर्मा
5. पर्यावरण संरक्षण: हमारा नैतिक दायित्व—(लोकोपयोगी लेख) शुकदेव प्रसाद

इकाई दो— (पद्य विभाग) पाठ्यपुस्तक साहित्य रश्मि में सम्मिलित प्रथम पाँच कविताएँ ।

1. कबीर के दोहे—कबीर (दस लोकोपयोगी दोहे)
2. प्रथम रश्मि—सुमित्रानंदन पंत
3. चार विचार—हरिवंशराय बच्चन
4. कलम और तलवार—रामधारीसिंह 'दिनकर'
5. बदली—महादेवी वर्मा

इकाई तीन— व्यावहारिक हिन्दी ज्ञान

पत्र लेखन—

- 1—आवेदन पत्र
- 2—व्यावसायिक पत्र

इकाई चार— पारिभाषिक शब्द

1. हिन्दी से अंग्रेजी पारिभाषिक शब्द और
2. अंग्रेजी से हिन्दी पारिभाषिक शब्द
3. देवनागरी लिपि का परिचय, और परिभाषा

इकाई पाँच—कम्प्यूटर का सामान्य परिचय

- 1 कम्प्यूटर का परिचय
- 2—कम्प्यूटर की विभिन्न क्षेत्रों में उपयोगिता
- 3—कम्प्यूटर की संरचना

पाठ्यपुस्तक— साहित्य रश्मि

पाठ्यविषय— व्यावहारिक हिन्दी ज्ञान

अ—पत्र लेखन,

ब—पारिभाषिक शब्द, और देवनागरी लिपि

क—कम्प्यूटर का सामान्य परिचय ।

B.Sc. (IT) - I (Semester-I)

Paper III : INFORMATION AND COMMUNICATION TECHNOLOGY

[Max Marks:80]

UNIT – I : Basic of Computer

Introduction to Computer: Function of computers, Advantage of computers

Basic Anatomy of Computer: Block Diagram. **CPU:** Function of Each Unit.

Memory: Primary, Secondary, Cache, Flash, virtual

Storage Devices: Pen Drive, Hard Disk, Optical Disk, Blu Ray Disc.

UNIT–II : Input /Output Peripherals

Input Devices: Keyboard **Locator Device:** Mouse, Joystick Digitizing Tablet

Pick Device: LightPen, Touch Screen **Scanning:** MICR, OCR, OMR, Barcode Reader,

Vision Capturing: Webcam, Digital Camera

Output devices: VDU, Dot Matrix, Laser, Line, Inkjet Printers, Plotters.

UNIT–III : Computer Software

What is Software? Relationship between Hardware and Software, Logical System Architectures how relationship between hardware,

Types of Software: System Software, Application Software, Firmware, Functions of System Software, Types of System Software: Operating Systems, Language Translators, Utility Programs, Communications Software. Application Software,

Open Source Terminologies: Open Source Software, Freeware, Shareware, Proprietary Software

UNIT – IV : PC Maintenance

PC Maintenance- Active Software Maintenance-Passive Maintenance Procedures Trouble Shooting-Introduction-Types of Pc Faults- Diagnostic and Repair Tools Diagnostic Software Tools- Diagnostic Hardware Tools-Advanced Testing Tools-Hand Tools For Service Engineers-Disassembling PC.

Computer Virus: Types of Virus, Characteristics of Virus, Properties of Virus

Books:

- 1) Peter Nortorn's, "Introduction to Computer", TMH, 2004, ISBN-0-07-05-3142-0
- 2) Chetan Shrivastava, "Fundamentals of Information Technology", Kalyani publishers, 2002, ISBN-81-7663-576-6
- 3) Dr. Madhulika Jain, "Information Technology Concept", BPB, 2006, ISBN-81-7656-276-9
- 4) Dr. S. B. Kishor, "Information & Communication Technology", Das Ganu Publication, ISBN: 978-93-81660-73-7

References:

- 1) Kamlesh Agarwal, "WAP the NET", MacMillan
- 2) Douglas Comer, "The Internet Book", PHI, ISBN: 0132335530

- 3) Pradeep K.Sinha and Priti Sinha“Computer Fundamentals”,BPB,2007,ISBN-10:81-7656-752-3/13:978-81-7656-752-7

B.Sc. (IT) - I (Semester - I)

Paper IV: DEVELOPING PROGRAMMING LOGIC AND TECHNIQUES

[Max. Marks: 80]

UNIT–I: Language Evolution

Machine Language, Assembly Language, High Level Language. Translators: Compiler, Interpreter and Assembler. Linker, Loader, Study of HLL, Characteristics of Good Language, Generation of Languages, Study of Programming Languages (Function Oriented, Object Oriented, Event-Based).

UNIT–II: Programming Construction Tools

Problem Analysis, Process Analysis, Conceptual Development of Solution. **Development Tools: Algorithm** : Types of Algorithm, Algorithm of Analysis, Advantage and Disadvantage of Algorithm, Complexity of Algorithm, Big-O Notation

Flowcharts : Concept, Symbols, Rules of drawing flowcharts, Advantage and Disadvantage of Flowchart. **Pseudo Code**: Definition and Its Characteristics.

UNIT–III: Control Statements

Basics of Programming Language: Usage of Character Set, Meaning of Keywords and Identifiers, Role of Data Types, Constants and Variables. Importance of Casting, Different Types of Operators and their Precedence, Expressions.

Conditional Statements (One-Way, Two-Way and Multi-Way Conditional)

Looping Statements (For, While, do-while), Usage of Exit, Continue, Break and Goto Statement.

UNIT–IV: Arrays

Arrays: Arrays, One dimensional array, Various Operation on Array (Inserting of Element, Deleting of Element, Rotating List, Sorting, Searching, Merging Etc) and Two dimensional arrays (Matrix Addition, Transpose of Matrix, Matrix Multiplication), Modular programming and its features.

Books:

- 1) Anil V. Chouduri, “The Art of Programming through Flowchart and Algorithms”, Laxmi Publication, ISBN-8170087791
- 2) Dr. S.B.Kishor, “Programming Logic and Techniques”, Blackswan (Universities Press) ,2013, ISBN 9788173718229
- 3) BehrouzForouzan, “Basic of Computer Science”,Cengage Learning, ISBN 81-315-1118-9

References:

- 1) Donald Knuth, “The Art of Computer Programming Vol-I,II III”, Pearson.
- 2) Horowitz, Sahani, “Fundamental of Computer Algorithm”, Orient Longman,

B.Sc. (IT) - I (SEMESTER-I)
Elective – EC - I
Paper V : DIGITAL ELECTRONICS

[Max. Marks: 80]

UNIT –I: Number System and Data Representation

Number System: Binary, Octal, Decimal and Hexadecimal Number System and their Inter Conversion.

Binary Codes: BCD, Excess3, Parity, Gray, ASCII, EBCDIC Codes and their Advantages and Disadvantages.

Data Representation : Positive, Negative, Maximum and Minimum Number Representation (Related to 8 bit Number), Real Number Representation, Underflow, Overflow, Range and Accuracy.

UNIT–II: Binary Arithmetic & Logic Gates

Binary Arithmetic: Binary Addition, Decimal Subtraction Using 9's and 10's Complement Binary Subtraction Using 1's and 2's Complement Multiplication and Division.

Logic Gates: Truth Table, Properties and Symbolic Representation of NOT, AND, OR, NOR, NAND, EX-OR, EX-NOR Gates. NOR and NAND Gates as Universal Gates.

UNIT– III : Boolean algebra and Combinational Circuits

Boolean Algebra : Laws and Identities of Boolean Algebra, Demorgan's Theorem, Use of Boolean Algebra for Simplification of Logic Expression, K-Map for 2,3,4 Variables, Simplification of SOP and POS Logic Expression Using K-Map.

Combinational Circuits: Half Adder, Full Adder, Parallel Adder, Half Subtractor, Full Subtractor, 4-Bit Binary Adder Subtractor, Multiplexer, Demultiplexer, Decoder, Encoder, Parity Detector.

UNIT– IV: Sequential Circuits and Counters

Sequential Circuits: Flip-Flops Construction and Working of RSFF, JKRSFF, DFF, TFF, JKFF and JKMSFF.

Counters: Construction and Working of Asynchronous, Synchronous, Up-Down Counter, Shift Registers and Their Types, Ring Counter, Johnson Counter with their Time Diagram.

Books:

- 1) Gothman, "Digital Electronics", PHI.
- 2) Navaneeth, Kale and Gokhale, "Digital and Analog Technique", ISBN-81-225-0153-2

References:

- 1) SoumitraMandal, "Digital Electronics", TMH, ISBN 0-07015382-5
- 2) B Ram, "Fundamental of Microprocessor and Microcomputer", DhanpatRai Publication.
- 3) Liu Gibson , "Microcomputer System" The 8086/8088 Family, ISBN-1-55623-874-6

B.Sc. (IT) - I (Semester-I)
Elective – EC - II
Paper V : HARDWARE INTERFACING

[Max. Marks: 80]

UNIT –I: Multiple Microprocessor System and Buses:

8086/8088 maximum and minimum modes, DMA Data transfer, Interfacing and refreshing dynamic RAM, math coprocessor-8087 and I/O processor-8089, Buses-Industry Standard Architecture (ISA), Peripheral Component Interconnect (PCI), Accelerated Graphics Port(AGP), Plug-and-play devices, SCSI concepts, USB Architecture

UNIT –II: Data Communication:

Asynchronous serial data communication (Intel 8251 chip study), serial data transmission methods and standards: RS-232, RS-422, RS-423 AND RS-499.

UNIT –III: Microcomputer System Peripherals

CRT terminals, Graphic terminals, choice of display cards MGA, CGA, EGA and monitors (monochrome and colours). Floppy Disk, Magnetic Storage, Magnetic Recording Principles, Data & Disk organization, Hard disk, Optical disk, Data storage, Printer Mechanism, Speech Synthesis and Recognition with a computer.

UNIT –IV: Hardware Layout of IBM PC/XT

Motherboard, Motherboard BIOS-POST-BIOS features, BIOS and Boot Sequences, BIOS shortcoming and compatibility issues, Power Supplies and Power Management CMOS-Configuring the standard CMOS setup, DiskControl, Multi-serial I/O Card, Fax and Telex card EGA/VGA.

Books:

- 1) Microprocessor and Interfacing by Douglas Hall.
- 2) Stephen J. Bigelow, “Trouble Shooting, maintaining and Repairing PCs”, Tata McGraw-Hill, New Delhi, 2001.
- 3) Mike Meyers, “Introduction to PC Hardware and Troubleshooting”, Tata McGraw-Hill, New Delhi, 2003.

References:

- 1) Microprocessor Systems: The 8086/8088 Family Architecture, Programming and Design by Liu and Gibson.
- 2) Craig Zacker & John Rourke, “The complete Reference: PC hardware”, Tata McGraw-Hill, New Delhi, 2001.
- 3) IBM PC/XT Hardware: Reference Manual.

B.Sc. (IT) - I (Semester - I)
Practical based on UBITT103

[Max.Marks :50]

A) Practical based on Information Technology

1. Study of various input devices with troubleshooting.
2. Study of various output devices.
3. Study of booting process.
4. To study assembling and disassembling the PC.
5. To study and installation of antivirus software
6. Procedure to cleanup Disk, Disk fragmentation

B) Practical based on LibreOffice Writer/Ms-Word

1. a) Type the Content Heading and then set the Index option using Tab setting. Finally take a print out.

CONTENTS

Chapter	Page No.
Windows	1
Ms-Word	18
Ms-Excel	27
Power-Point.....	98
Ms-Access	131

[Chapter names at 1" with left alignment while Page number at 4.5" with right alignment and with leader]

b) Draw a Block diagram of computer system using auto-shapes, and name them using textbox and join each parts using line-style. At the end give the page border to it. Finally take a print out.

c) Type the following set of equation. Finally take a printout.

1. $B^2 - 4AC = 0$

2. H_2SO_4

3. If $(A^2 \geq 0)$

4. $f(x) = \sum_{i=1}^{i=5} 5 * x^i$

5. $k^2 - 4 = 0$, if $b_0 \neq 0$

$$6. e^{i\theta} + e^{-i\theta} = 2\cos\theta$$

2. Type the following letter and take printout

ABC
SAI Nagar
Mumbai
☎020-1111111

Dear Sir,

Kindly provide the **rate** of following set of peripherals,

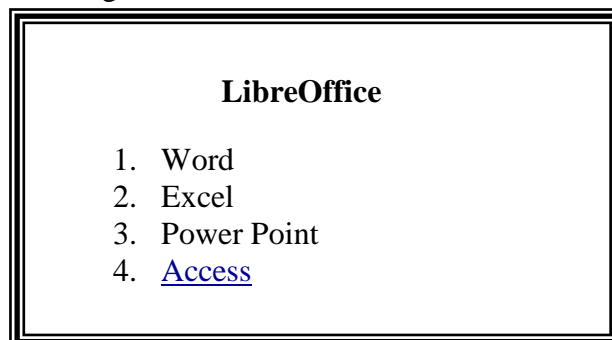
- Computer 🖥 with following configuration
 - Intel® Pentium® Processor T4400 (2.2 Ghz, 1MB L2 Cache, 800 MHz FSB)
 - 250 GB HDD, DVD RW, 35.56cms (14) CSV LED Backlit, 1GB DDR3 RAM
- Floppy disk 🖨 of 1.44 MB of 12 Box
 - Sony
 - Verbatin
- 3-Button mouse 🖱 of following 5 each
 - a) i-ball
 - b) Logitech

Thanking you,

Date : < Insert System Date >

Your
XYZ

3. Type the following

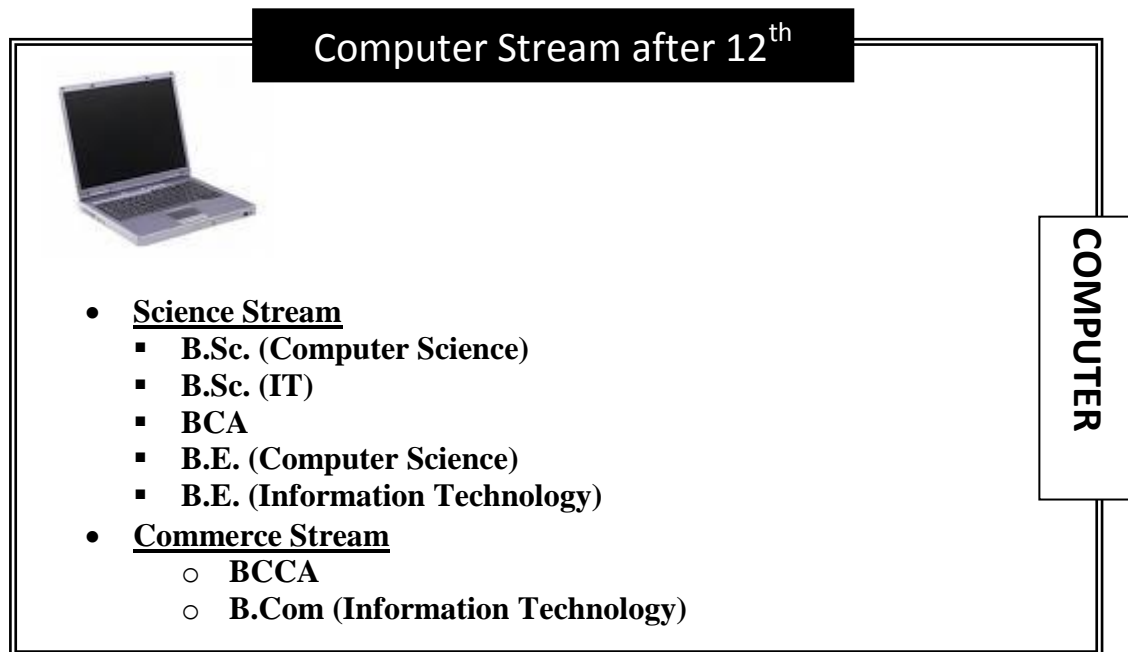


- a) **Ms-Word:** MS-Word is the application software and one of the most powerful word processor in Windows operating system. It is used for formatting of letters or the text. In simple meaning it is a word processor having various functions for text you may insert different objects like pictures, sound and video or calendar in word file.
- b) **Ms-Excel:** Ms-Excel is a powerful spreadsheet or worksheet application that can use for managing, analyzing and presenting data in tabular format. It also helps to display data in graphical format using charts.
- c) **Ms-Power Point:** Ms-Powerpoint is a powerful tool to create professional looking presentation and slide shows.
- d) **Ms-Access:** Ms-Access is a powerful program to create and manage database.

Perform the following operation,

- i. When user presses on Access it should jump to Access Paragraph within page.
 - ii. Similarly create a hyperlink for other option within a page.
 - iii. Print it.
4. Define and write the characteristic of computer and perform following operation,
- a. Divide the text in two columns
 - b. Insert the picture of computer in the background in each column.
 - c. Insert header with your name
 - d. In footer write name of your college
 - e. Give proper heading for phrase.
 - f. Use Drop Cap for 1st letter of each paragraph
 - g. Define line spacing 1.5 with left margin 1.25" and right margin 0.75"
 - h. Font : Courier New, Font size for heading 14 and for normal text 11
 - i. Finally take a print out.
5. Type the following letter exactly as given below,
Before start of typing, set up page in the following format

- 1) Page Size : A4 with Landscape Orientation
- 2) Left Margin: 2" Right Margin: 1" Top Margin: 0.5"



[If Computer Picture is not loaded on your computer then simply select one of the pictures loaded in clip-art]

6. Write a letter to publisher for supplying the list of books along with book details. For ex.
- To,
Publisher,
Das GanuPrakasan,
Nagpur.
- R/Sir,
Supply following title of books at the earliest.

Sr.No.	Title	Author	No. of Copies
1	Information System	S.Kishor	10
2	Information Technology	S. Kishor	15
3	Principle of Business Management	S. Kishor	12
4	Financial Accounting	Dr. KishorMohrir	13

Thanking you,

Date: < Insert System Date >

Yours

Principal
(Dr. WWW)

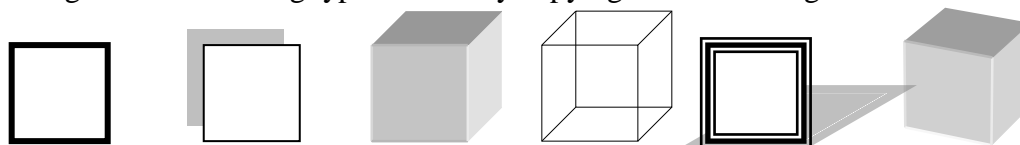
Perform Following option

- 1) Take a printout
- 2) Assume Librarian forget to enter one of the entry of book so, kindly add it between number 3 and 4 say,

4
Business Economics
GurbirKaurKhalsa
10
- 3) Replace author name S. Kishor by S.B. Kishor at once.
- 4) Finally print the copy of this document with following settings,
 - Left Margin = 1.75"
 - Right Margin = 1"
 - Top Margin = 1.5"
 - Bottom Margin = 1"
7. Using Mail-Merge write a letter to all selected candidate for their final admission on specific date say (30-June) at XYZ Institute, with necessary documents at 10 AM. Name should be highlighted while course and date of commencing class should be underlined
8. Create a document and while saving give a security to open the saved document. Take a screen shot while opening it.
9. Draw the following shape using rectangle option found in Drawing Toolbar



And generate following types of box by copying and formatting above box



C) Practical based on LibreOffice Calc/MS-Excel

1) Prepare following table in a worksheet using MS-Excel.

Name	Basic	DA	HRA	Gross Pay	PF	Net Pay
Rahul	10000					
Sachin	20000					
Nilesh	15000					
Bharti	25000					

Perform following operations:-

1. Complete the table using formulas
 - o $DA = \text{Basic} * 27 \%$
 - o $Hra = \text{Basic} * 10 \%$
 - o $PF = \text{Basic} * 12.5 \%$
 - o $Gross\ Pay = \text{Basic} + DA + HRA$
 - o $Net\ Pay = \text{Gross Pay} - PF$
2. Give the Proper Heading.
3. Take the printout in landscape orientation

2) Enter following data in MS-Excel worksheet.

Name	Date of joining	Salary	Designation
Rahul	Jan-05	10000	Peon
Sachin	Oct-10	20000	Accountant
Nilesh	Jan-05	15000	Clerk
Bharti	Dec-09	25000	Manager

Perform following operations:-

1. Copy the above data and place in sheet2 and sort the table in the ascending order or date of joining and give proper heading.
2. Copy the above data and place in sheet3 and sort the table in the ascending order or date of joining followed by order of name and give proper heading.
3. Copy all the above data to sheet4 and take printout

3) Prepare following using MS-Excel.

Players	Match 1	Match 2	Match 3	Average	Highest Score	Sum
Schwag	78	43	91			
Sachin	45	77	62			
Yuvraj	65	80	37			
Dhoni	34	15	46			
Raina	23	75	55			

Perform following:-

- Calculate Average and High score of each player using AVERAGE & MAX function
 - Calculate total score of each match using SUM function.
 - Sort above records in descending order on the basis of average.
 - Take the printout in landscape orientation
- 4) Prepare the Mark sheet of IT subject on the basis of 3 Unit test. Each of 30 Marks and perform following,
- Calculate total marks, Average and Grade
 - Auto format to the above table.
 - Take the printout
- 5) Prepare the multiplication using
- Relative cell reference
 - Absolute cell reference.

Multiplicand	Multiplier	Product using Relative	Product using Absolute
13	1		
	2		
	3		
	:		
	:		
	10		

- 6) Create profit and prepare a column chart in MS-EXCEL using the data.

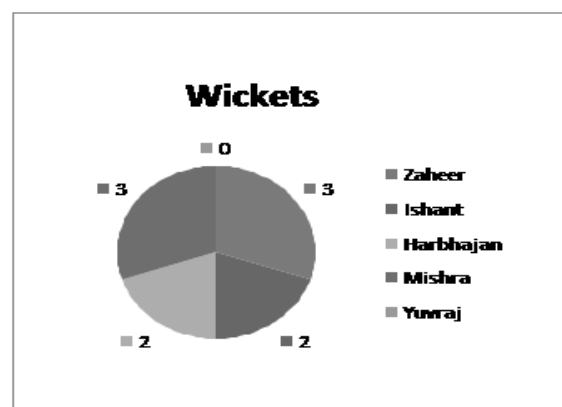
Month	Net Sales	Actual Cost	Profit
Jan. 10	22000	18000	
Feb. 10	24500	9555	
Mar. 10	32450	24850	

Perform following operations:-

- Find the profit
- Give a chart title "Profit Report"
- Take the printout.

- 7) Draw Pie chart of following excel sheet.

Bowler	Over	Maiden	Runs	Wickets
Zaheer	10	2	22	3
Ishant	10	1	36	2
Harbhajan	10	0	48	2
Mishra	10	0	37	3
Yuvraj	10	0	43	0



D) Practical based on LibreOffice Impress/Ms-PowerPoint

1. Prepare the following slides with the information given below:

- Select the slide of your choice and write about yourself.
- Write about your family members name with relation.
Tip: By using Title and 2 column text
- Using Title Content and text slide insert the picture of your favourite hero with the list of their movies.
- Finally run the slide continuously until Esc key is not pressed.

At last, write the steps that you have perform.

2. Create the following slide.

ICAT PVT LTD	
• COURSES	• FEES STRUCTURE
✓ C	❖ 1500
✓ C++	❖ 2500
✓ VB	❖ 2000
✓ ORACLE	❖ 3000
✓ JAVA	❖ 4000

1. Change the bullet style in the first and the second level.
2. Change the case of the first level text to upper case and second level text to lower case.(By using Change Case option)
3. Change the attribute of the text to: Font : Arial, Font Style : Italics, Size:20
4. Justify the text.

3. Select the 10 slides of your choice. Apply the following settings and write the steps you have perform in each options.

- Insert page number in each slide
- Timer should be displayed during execution.
- Change the background color of each slide.
- Set the interval time for each slide to be displayed.
- Use Flash bulb animation in your presentation.
- Select a Color Schemes of your choice.
- Insert Chart in one of your slide.
- Insert a table in your presentation

B.Sc. (IT) - I (Semester - I)
Practical based on UBITT104

[Max. marks :50]

Minimum Five Case study under the guidance of Subject Teacher

B.Sc. (IT) - I (Semester - I)
Practical : Elective – EC - I
based on UBITT105.1

[Max. Marks: 50]

Practical based on Digital Electronics

- 1) To Study and Design the characteristics of basic gates (AND, OR, NOT).
- 2) To Study and Design the characteristics of Universal gates (NAND, NOR).
- 3) To Study and Design the Derived gates (EX-OR, EX-NOR)
- 4) To Study and Design the basic gates (AND, OR, NOT) using Universal NAND gate.
- 5) To Study and Design the basic gates (AND, OR, NOT) using Universal NOR gate.
- 6) To Study and Design the basic gates (EX-OR, EX-NOR) using Universal NAND gate.
- 7) To Study and Design the derived gates (EX-OR, EX-NOR) using Universal NOR gate.
- 8) To Study and Design NOR gate using NAND gate.
- 9) To Study and Design NAND gate using NOR gate.
- 10) To Study and Design RS FLIP FLOP using NAND gate.
- 11) To Study and Design RS FLIP FLOP using NOR gate.
- 12) To Study and Design JK FLIP FLOP.
- 13) To Study and Design JKMS FLIP FLOP.
- 14) To Study and Design the Half-adder.
- 15) To Study and Design the Full-adder.
- 16) To Study and Design the Half Subtractor.

B.Sc. (IT) - I (Semester-I)
Practical : Elective - EC – II
based on UBITT105.2

[Max. Marks: 50]

Practical is based on Hardware Interfacing

- 1) To study and verify the Thevenin's theorem.
- 2) To study and verify the Maximum power transfer theorem.
- 3) To verify the ohms law
- 4) To study the V-I characteristics of P-N junction semiconductor diode as forward bias & Reverse bias.
- 5) To study the Zener diode as a voltage regulator.
- 6) To study the Half wave and Full wave rectifier.
- 7) To study the input/output characteristics of CE mode transistor (NPN /PNP)
- 8) To study the input/output characteristics of CB mode transistor NPN /PNP)
- 9) To study the characteristics of JFET (Junction Field Effect Transistor)
- 10) To study the op-amp as an adder and subtractor.
- 11) To study the op-amp as an integrator and differentiator.
- 12) To study the op-amp as an Inverting and non-inverting amplifier.

B.Sc. (IT) - I (Semester-II)

UNIT I : Prose Section

1. The Three Questions – Leo Tolstoy
2. The Chicago Speech – Swami Vivekananda
3. Work Brings Solace – APJ Abdul Kalam
4. Why Is the Sea Blue? – G. Venkataraman

UNIT II: Poetry Section

1. Where the Mind is Without Fear – Rabindranath Tagore
2. Money-Madness – D. H. Lawrence
3. Leisure – W. H. Davies.

UNIT III: Grammar

Question Tag
Voice
Advertisements
Dialogue Writing

UNIT IV: Communication Skills

Giving Personal information
Describing Daily Routine
Notices, Agenda & Minutes.

Books :- Prescribed for Semester I and II:

Prelude: A Text Book for College Students, edited by the Board of Editors (Published by Orient BlackSwan)

Recommended reading for Grammar, Writing Skills and Soft Skills:

- i) English Grammar and Composition, R. C. Jain, Macmillan India Limited, Chennai, 2003.
- ii) A Course in English Grammar by R. N. Bakshi, Orient Black Swan.
- iii) The Communicator, Orient BlackSwan, 2013.
- iv) A Course in English Grammar by R. N. Bakshi, Orient Black Swan.
- v) Macmillan Foundation English by R. K. Dwivedi & A. Kumar (Macmillan).
- vi) Contemporary English Grammar & Composition by David Green (Macmillan).

B.Sc. (IT) - I (SEMESTER – II)
Elective I
Paper II : SUPPLEMENTARY ENGLISH

[Max Marks: 80]

Unit-I : Prose Section

1. A Cup of Tea- Katherine Mansfield
2. The Last Leaf- O. Henry
3. Kalpana Chawla
4. My Lost Dollar- Stephen Leacock

Unit-II : Poetry Section

1. Still I Rise- Maya Angelou
2. Another Woman- Imtiaz Dharker
3. My Grandmother's House-Kamala Das

Unit-III: Grammar

1. Voice
2. Interchange of Simple Compound and Complex Sentences
3. Idioms/Phrases

Unit-IV: Communication Skills

1. Letter Writing
2. Paragraph Writing

B.Sc. (IT) - I (SEMESTER – II)

Elective II

Paper II : MARATHI

[Max Marks: 80]

गद्य विभाग:—

१. तोडून टाका हया सात स्वदेशी बेडया— स्वा. वि. दा. सावरकर
२. शिक्षक हाच राष्ट्राचा भाग्यविधाता— राष्ट्रसंत तुकडोजी महाराज
३. संकुचित प्रांतियतेचे धोके— पु. ल. देशपांडे
४. भरती— वसंत वऱ्हाडपांडे
५. पाणी अडवा, पाणी जिरवा— बाबा भांड

पद्य विभाग:—

१. तुकारामाचे अभंग— तुकाराम
२. खरा धर्म— साने गुरूजी
३. प्रेमाचा गुलकंद— प्र. के. अत्रे
४. आडवेळचा पाऊस— शांता शेळके
५. जहर खाऊ नका— ज्ञानेश वाकुडकर

व्यावहारिक मराठी व व्याकरण:—

१. पत्रव्यवहार — व्यक्तीगत व कार्यालयीन
२. संधी — स्वरसंधी, व्यंजनसंधी व विसर्गसंधी

B.Sc. (IT) - I (SEMESTER – II)

Elective III

Paper II : HINDI

[Max Marks: 80]

1^प **इकाई एक**— गद्य विभाग पाठ्यपुस्तक साहित्य रश्मि में संमिलित निम्नांकित पाँच पाठ ।

अकेली—(कहानी) मन्नू भंडारी

सायबर कौतुक (एकांकी) मधु धवन

अफसर—(व्यंग लेख) डॉ. श्रीराम परिहार

रेत का घर (कहानी) सुनिता प. बनसोड

अग्नि की उडान—(आत्मकथा) ए.पी.जे.अब्दुल कलाम आजाद

इकाई दो—(पद्य विभाग) पाठ्यपुस्तक साहित्य रश्मि में संमिलित निम्नांकित पाँच कविताएँ ।

रहीम के दोहे—रहीम

सखी वे मुझसे कहकर जाते—मैथिलीशरण गुप्त

मन आजाद नहीं—गोपालदास सक्सेना 'नीरज'

बाल लीला—सूरदास

पथिक से—उदयशंकर भट

इकाई तीन— व्यावहारिक हिन्दी ज्ञान

पत्र लेखन—

1—व्यावहारिक पत्र

2—कार्यालयीन पत्र

इकाई चार—पारिभाषिक शब्द

- हिन्दी से अंग्रेजी पारिभाषिक शब्द
- अंग्रेजी से हिन्दी पारिभाषिक शब्द और
- देवनागरी लिपि की विशेषताएँ

इकाई पाँच—कम्प्यूटर का सामान्य परिचय

- कम्प्यूटर के अंग
- कम्प्यूटर के प्रकार
- कम्प्यूटर में हिन्दी का प्रयोग.

पाठ्यपुस्तक— साहित्य रश्मि

पाठ्यविषय— व्यावहारिक हिन्दी ज्ञान

अ—पत्र लेखन,

ब—पारिभाषिक शब्द, और देवनागरी लिपि

क—कम्प्यूटर का सामान्य परिचय ।

घटकीकरण

B.Sc. (IT) - I (SEMESTER – II)
Paper III : Structured Programming using ‘C’
[Max. Marks: 80]

UNIT–I: Basic Programming Elements:

History of ‘C’, Application of ‘C’, C language as Middle Level, C Character Set, Tokens, Keywords, Data Types, Identifiers, Types of Constants, Variables, Type Declaration Instruction, Type Casting.

Operators and Expressions: – Arithmetic, Relational, Logical, Assignment, Increment and Decrement Operator, Updating Assignment, Conditional Operator, Special Operators, Hierarchy of Operators, and Mathematical Functions in ‘C’.

Basic Structure of ‘C’ Program.

UNIT–II: Input/Output Statements & Conditional Statement:

Input and Output statements in C

Unformatted Function: Single Character I/O functions: getch, getche, getchar/fgetchar, putchar/fputchar, String I/O functions: gets, puts

Formatted Function: scanf, printf, Backslash Character, Role of Field Width in printf Statement.

Conditional Statement : if statement, if-else statement, Nested if statement, else-if ladder, switch statement, Ternary Operator

UNIT–III: Looping Statements and Jumping Constructs :

Looping Statement: Need of Looping Statement, for Loop, Comma operator, while statement, do- while statement, validating INPUT using do- while statement, Infinite loops, Nested Loop.

Jump Constructs: break statement, use of break, continue, goto statements and exit().

UNIT–IV :Arrays

Need of Array, Array Definition, One Dimensional Array, Declaration and Initialization of one dimensional array, Bounds Checking, Sorting (Bubble, Sequential), Searching (Linear, Binary), Merging, Two Dimensional Array, Addition and Multiplication of Two Dimensional Arrays, **Character and String Handling.**

Books:

- 1) E. Balagurusamy , “ Programming in ANSI C”, TMH, 5th Ed., ISBN 0-07-068182-1
- 2) Dr. S.B. Kishor, ”PROGRAMMING IN C”, Das GanuPrakashan, ISBN 9789384336219

References:

- 1) K.R.Venugopal and S.R.Prasad, “Mastering C”, 3rd Reprint, ISBN 0-07-061667-1
- 2) S.Shrivastav, “ C In Depth”, 1st Ed., ISBN 81-7656-107-X

B.Sc. (IT) - I (Semester - II)
Paper IV : DISCRETE MATHEMATICS

[Max Marks: 80]

UNIT-I: Fundamentals of Sets

Fundamental- Sets and Subsets, Types of Sets, Venn-Euler Diagram, Operations on Sets, The Addition Principle, Sequences, Characteristics of Functions, Properties of Integers, GCD, LCM, Matrices and their Operations, Mathematical Structure

Logic- Proposition and Logical Operations, Conditional Statements, Methods of Proof, Mathematical Induction.

UNIT-II: Counting and Functions

Counting- Basic Counting Principles, Permutations, Distinguishable Permutation, Combinations, The Pigeonhole Principle, Recurrences Relations, Theorem Based Method

Functions- Definition and Introduction Functions for Computer Science, Types of Functions, Permutation Functions, Cyclic Permutation, Even and Odd Permutation, Composite Functions.

UNIT-III: Graph Theory and Trees

Graph Theory- Basic Concept of Graph Theory, Isomorphism of Graphs, Subgraph, Euler Paths and Circuits, Hamiltonian Paths and Circuits.

Trees- Introduction, Types of Trees, Undirected Trees, Spanning Tree, Minimal Spanning Trees, Kruskal's Algorithm.

UNIT-IV: Groups and Semi Group

Groups and Semi Group - Binary Operations, Semi Groups, Products and Quotients of Semi Groups, Monoids, Groups, Products and Quotients of Groups, Isomorphism, Homomorphism, Subgroup, Abelian Group, Normal Subgroup

Books:

- 1) Dr. S.B. Kishor, "Discrete Mathematics", Das GanuPrakashan, 2014, ISBN-978-93-81660-21-8
- 2) J.P. Tremblay and R. Manohar, "Discrete Mathematical Structure with Applications to Computer Science", TMH, ISBN- 0-07-463113-6
- 3) Bernard Kolman, Robert C. Busby and Sharon Ross, "Discrete Mathematical Structure", PHI, ISBN- 978-81-203-3689-6

References:

- 1) E. Goodaire, "Discrete Mathematics with Graph theory", PHI, ISBN--10: 0131679953
- 2) J. K. Sharma, "Discrete Mathematics", McMillan, ISBN-9780230322301

B.Sc. (IT) - I (SEMESTER – II)
Elective – EC - I
Paper V : DATABASE MANAGEMENT SYSTEM

[Max. Marks: 80]

UNIT – I: Introduction to DBMS:

Database Environment, File Based System, Difference between File based System and DBMS Environment, Types of Database, Elements of DBMS, Components of DBMS, Types of Database Users, Functions of Database, Characteristic of DBMS, Advantages and Disadvantages of a DBMS, the Three-Level Architecture Proposal for DBMS, Database Administrator (DBA), Role of DBA, Functions of DBA.

UNIT–II: Data Models, Operations and Maintenance:

Data Model, Entities, Attributes, Relationship, Entity-Relationship Model, Mapping Cardinality/ Data Association, Integrity Constraints, Transforming E-R Diagram into Relation, Database Design, Classification, Approaches to the Relational Model, Hierarchical Model and Network Model with an Example, Normalization, Functional Dependency, First Normal Form, Second Normal Form, Third Normal Form, Codd's 12 Rules.

UNIT–III: Working With MS-Access:

Introduction to MS-Access, Designing a Database, Creating Database from Blank Database Creating Database from Template, Creating Tables using Design View, Creating Tables using Wizard, Working with Table. **Datatypes in MS-Access** - Auto number, Date/Time, Number, Text, Yes/No., Hyperlink Etc., Managing Table, Editing Table, Editing Records.

UNIT–IV: Query and Form Designing:

Queries: Queries Views, Filters, Types of Queries, Creating query in Design View, Creating Query By using Wizard, Specifying Criteria in Queries, Parameter, Action Query Update, Append Query, Query Filter using multiple criteria. **Forms:** Creating Forms using Wizard, **Reports:** Creating Reports by using Wizard, Elements of Reports, Printing a Report **Macros:** Types of Macros, Import Database, and Export Database.

Books:

- 1) Philip J. Pratt, "Database Management System", Cengage Learning, ISBN- 81-315-0969-9
- 2) Panneerselvem, "Database Management Systems", PHI, ISBN- 81-203-2028X.
- 3) Silberschatz, Korth, etl. "Database System Concepts", BPB, ISBN- 0-07-120413-X.

References:

- 1) Dr. S. B. Kishor, "Database Management System& MS-Access", Das Ganu, ISBN : 978-93-81660-92-8
- 2) C.J.Date, A. Kannan, S.Swamynathan, "An Introduction to Database Systems ", 8th Edition, Pearson ISBN- 978-81-7758-556-8.
- 3) Sanjay Saxena, "MS-OFFICE- 2007 in a Nutshell", Vikas Publishing, ISBN- 978-81-259-5036-3.

B.Sc. (IT) –I (SEMESTER-II)
Elective – EC - II
Paper V : OPERATION RESEARCH

[Max Marks: 80]

UNIT –I: Introduction to Operation Research

Introduction to Operation Research (OR) Origin and development of OR, Nature of OR, Characteristics of OR, Classification of Problems in OR, Models in OR, Phases of OR, Uses and Limitations of OR, Methodologies of OR, Applications in OR. Linear Programming – Concepts of Linear Programming Model, Mathematical Formulation of the Problem, Graphical solution methods.

UNIT –II: Linear Programming Problem

Linear Programming Methods – Simplex Methods, Big M methods, Dual Simplex Method, Two Phase methods. Duality in Linear Programming – Formulation of Dual Problem, Application of Duality.

UNIT –III: Game Theory

Game Theory – Terminologies of Game Theory, Two Person Zero-Sum Games, The Maximin-Minimax Principle, Games without Saddle points-Mixed Strategies, Graphical Solution of $2 \times n$ and $m \times 2$ games, Dominance Property.

UNIT –IV: Assignment and Transportation Problem

Assignment Problem – Zero-One Programming Model for Assignment Problem, Types of Assignment Problem, Hungarian Method, Branch and Bound Technique for Assignment Problem. **Transportation Problem:** Mathematical model for Transportation Problem, Types of Transportation Problem.

Books:

- 1) Dr. S.B. Kishor, “Operation Research”, Das GanuPrakashan, 2012.
ISBN-978-93-81660-01-0
- 2) Operation Research by R. Panneerselvem [PHI]
- 3) Operation Research by Hira Gupta

References:

- 1) Operation Research by KantiSwarup, P. K. Gupta, Man Mohan [Sultan]
- 2) Introduction to Operation Research by Billy E. Gillet [TMH]
- 3) Operation Research Problems and Solutions by Sharma J. K. [MacMillan]
- 4) Operation Research Theory and Application by Sharma J. K., [MacMillan]

B.Sc. (IT) - I (SEMESTER – II)

Practical based on UBITT203

[Max. Marks: 50]

Practical based on fundamental of 'C'

- 1) A program to find simple and compound interest for the rate of interest.
- 2) A program to find corresponding temperature in Fahrenheit from a given temperature in Celsius.
- 3) A program to swap the contents of two variables.
- 4) A Program to accept the distance between two cities in Kilometer and print the distance in meter, feet, inches and centimeter.
- 5) A Program to accept the two sides and angle included by these two sides to find area and third side of a Triangle.
- 6) A Program to check a number is even or odd using conditional operator.
- 7) A program for testing leap year.
- 8) A program to reverse a number.
- 9) A program to check entered number is palindrome or not.
- 10) A program to find roots of Quadratic equation ax^2+bx+c .
- 11) A Program to generate a menu driven program using switch statement.
 - i. Add
 - ii. Edit.
 - iii. Delete.
 - iv. Exit.
- 12) A Program to print multiplication Table of a number.
- 13) A program to print number, square and cube of the first 10 natural number.
- 14) A program to find the factorial of an integer number.
- 15) A program to generate and print Fibonacci sequences.
- 16) A program to print first 5 lines of the following pyramid

```
1
12
1 2 3
1 2 3 4
1 2 3 4 5
```
- 17) A program to find the GCD of two Positive integers by successive division.
- 18) A Program to find the number of Armstrong number between 123 to 425
- 19) A program to print all the prime number between 10 to 100
- 20) A program to search an element S among N numbers.
- 21) A program to rotate the list

For Eg. Before Rotate : 6 7 8 3 4 7

After Rotation : 7 8 3 4 7 6

22) A program to sort the list of N numbers using bubble sort.

23) A Program to delete an element from list of N number.

24) A Program to find sum of two matrices having size $m \times n$ and $p \times q$.

25) A Program to Transport the matrix of size $M \times N$.

Note: Practical should be performed either using Open Source Software 'C' or by using Turbo 'C'.

B.Sc. (IT) - I (SEMESTER – II)

Practical based on UBITT204

[Max. Marks: 50]

Minimum Five Case Study Under the Guidance of Subject Teacher

B.Sc. (IT) - I (SEMESTER – II)

Practical : Elective – EC – I

based on UBITT205.1

[Max. Marks: 50]

Practical based on Ms - Access

- A] Create table Student (Student_no, Student_name, and Course) in MS-ACCESS with the following details and perform following operations.

Student_no	Student_name	Course
101	Sunil	Vb
102	Anshu	Vb.Net
103	Sonam	Tally
104	Shital	Vb.Net

- 1) Use Column width as best fit.
- 2) Set Student no as a Primary Key.
- 3) Insert at least 10 student's records.
- 4) Display all the students whose name begins with letter "S".
- 5) Display the query view and take out the print out.
- 6) Add new fields such as Fees, Date_adm ,Date_of_birth, .Address)
- 7) Add data to above newly fields.
- 8) Select Student name, Course and Fees from student table.
- 9) Delete all the students who were admitted on specific date.
- 10) Update fees to increase it by thrice.
- 11) Select all the students of VB.NET paying course fees of 4000.
- 12) Update table by replacing the course name to TALLY wherever the course fees is 3500. Delete the record where Student name is SONAM.
- 13) Display the student name, student no who was born on "14/6/1996"

14) Replace the Address of student say, ANSHU to PUNE.

15) Remove all the records where number of students is less than 2 for particular course.

B] Create the Tables in which

Stud_per_Detail(Stud_no, Stud_name, Sex, date_of_birth, Address, Ph_no) and
Stud_off_detail(Stud_no, Course, Fees, date_Adm).

- 1) Select Stud_Name, Address from Stud_Per_Detail and Stud_no, Course, Fees from Stud_off_datail.
- 2) Create a report view for above query.
- 3) Append the records of above tables Stud_Per_Detail to Stud_History where Student Date_of_Birth is 14/06/1996.
- 4) Print the table design view and datasheet view.

C] Create a table Donar(Donar_no, Donar_name, BG, Sex) by using following instruction.

- 1) Use Columnar Layout.
- 2) Use Blueprint style.
- 3) Give the title for Form as Donar Details Form.
- 4) Enter 5 records.
- 5) Print the Form view.

B.Sc. (IT) - I (SEMESTER – II)

Practical : Elective – EC – II

based on UBITT205.2

[Max. Marks: 50]

Practical based on Operation Research

Minimum of 10 practical's should be conducted by concern teacher.