# (P.G. DEPARTMENT OF COMPUTER SCIENCE)

# OUTLINES OF TESTS, SYLLABI AND COURSES OF READING

FOR

# B.SC.(HONS.) IN ARTIFICIAL INTELLIGENCE AND DATA SCIENCE (SEMESTER SYSTEM) FIRST YEAR (Semester I & II) (2021-22, 2022-23 and 2023-24 Sessions)

# FACULTY OF COMPUTING SCIENCES



# SRI GURU TEG BAHADUR KHALSA COLLEGE

Sri Anandpur Sahib

An Autonomous College

Affiliated to Punjabi University, Patiala

#### APPROVED

Board of Studies Meeting held on 19<sup>th</sup> June, 2021

# SYLLABI, OUTLINES OF PAPERS AND TESTS FOR B.Sc.(Hons.) in ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

#### **First Year - First Semester Examinations** Sessions 2021-22, 2022-23 and 2023-24

CODE NO.	TITLE OF THE PAPER	Schedule of Teaching (Hrs/Week)		TOTAL HOURS	CREDITS	MARKS		
		L	Т	Р			Internal	External
BSCHAI-111	English (Communication Skills)	4	0	0	4	4	30	70
BSCHAI-112		4	0	0	4	4	30	70
BSP-101A,	**Punjabi Compulsory or							
101B	**Punjabi Mudla Gyan							
BSCHAI-113	Computer Fundamentals	5	1	0	6	6	30	70
BSCHAI-114	Problem Solving and Programming in C	4	0	0	4	4	30	70
BSCHAI-115	Introduction to Artificial Intelligence	5	1	0	6	6	30	70
BSCHAI-116	Open Elective –I*	4	0	0	4	4	30	70
BSCHAI-117	Software Lab – I	0	0	4	4	2	30	70
BSCHAI-118 (SAE-1.1)	Drug Abuse-Problem, Prevention & Management (Qualifying)	2	0	0	2		15	35
	Total	28	2	4	34	30	210	490

**Open Elective** –**I**\* (Choose any one among below)

BSCHAI-116 (i) Better Spoken English

BSCHAI-116(ii) Stress Management

BSCHAI-116(iii) Introduction to Logic

BSCHAI-116(iv) Introduction to Sociology

BSCHAI-116(v) Brief introduction to Psychology

BSCHAI-116(vi) Developing Soft Skills and Personality

BSCHAI-116(vii) Ethics

Note:

#### 1. The break up of marks for the practical will be as under:

i. Internal Assessment	30 Marks
ii. Viva Voce (External Evaluation)	30 Marks
iii. Lab Record Program Development and Execution(External Evaluation)	40 Marks

#### 2. The breakup of marks for the internal assessment for theory Subjects will be as under: 10 Marks

Mid semester test – I

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h	ose students who have not studied Punjabi up to matriculation can opt for	r Punjabi Mudla
	Assignment	5 Marks
	Attendance	5 Marks
	Mid semester test – II	10 Marks

\*\*Only those students who have not studied Punjabi up to matriculation can opt for Punjabi Gyan. The code for the paper is same.

#### SYLLABI, OUTLINES OF PAPERS AND TESTS FOR

#### B.Sc. (Hons.) in ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

**First Year - Second Semester Examinations** Sessions 2021-22, 2022-23 and 2023-24

CODE NO.	TITLE OF THE PAPER	Schedule of Teaching (Hrs/Week)		le of ng (eek)	TOTAL HOURS	CREDITS	MARKS	
		L	Т	Р			Internal	External
BSCHAI-121	Object Oriented Programming Concepts using C++	4	0	0	4	4	30	70
BSCHAI-122	Data Structures	4	0	0	4	4	30	70
BSCHAI-123	Open Elective-II*	5	1	0	6	6	30	70
BSCHAI-124	Software Lab-II (Based on BSCHAI- 121)	0	0	4	4	2	30	70
BSCHAI-125	Software Lab-III (Based on BSCHAI- 122)	0	0	4	4	2	30	70
BSCHAI-126 (SAE-1.2)	Environmental and Road Safety Awareness	4	0	0	4	4	30	70
BSCHAI-127 BSP-201A,B	Punjabi Compulsory OR Punjabi Mudhla Gyan	4	0	0	4	4	30	70
	Total	22	2	8	32	28	210	490

**Open Elective –II\*** (Choose any one amongst below)

BSCHAI-123(i) Cyber Laws

BSCHAI-123(ii) Knowledge Management

BSCHAI-123(iii) English (Communication Skills)

BSCHAI-123(iv) Economics of Intellectual Property Rights

\*\*BSCHAI-126 -Qualifying Examination

Note:

#### 1. The break up of marks for the practical will be as under:

i. Internal Assessmen	it	30 Marks
ii. Viva Voce (Extern	nal Evaluation)	20 Marks
··· I I D I D		

iii. Lab Record Program Development and Execution(External Evaluation) 40 Marks

#### 2. The breakup of marks for the internal assessment for theory Subjects will be as under: Mid semester test – I 10 Marks

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Mid semester test – II	10 Marks
Attendance	5 Marks
Assignment	5 Marks

#### Session 2021-22, 2022-23 & 2023-24 Code: BSCHAI-111 English (Communication Skills)

Time Allowed: 3 Hours Periods per week: 4 Credits: 04 Teaching Hours: 60 Max. Marks: 100 Written Examination: 70 Internal Assessment: 30 Pass Percentage: 35%

**Instructions for the Paper Setter:** The question paper will carry 70 marks and will be of three hours duration. The paper will consist of three Units. Following shall be the unit wise marks division:

- Unit-I 18 Marks
- Unit-II 22 Marks
- Unit-III 30 Marks

**Note:** - We humbly request that the paper setter consults the testing pattern given in testing section.

**Instructions for the candidates:** Candidates are required to attempt all the questions as per the instructions given in the testing section.

## **Course Objective:**

The chief objective of the paper is to sharpen the literary and grammatical skills of the students. Selected short stories have been incorporated in the syllabus to give impetus to creativity and imagination of the students. The syllabi will also help the students to understand the nuances of English language & usage.

**Pedagogy:** Primarily the chalk and duster method will be used to teach this course. To evoke the interest of the students in the curriculum due emphasis will be laid on assignments, homework and periodic tests.

#### Unit-I

#### Text Prescribed: Let's Go Home and Other Stories

The following stories are to be studied:

- 1. A shadow
- 2. The Meeting Pool
- 3. Green Parrots in a Cage
- 4. The Portrait of a Lady
- 5. Let's Go Home
- 6. The Terrorist
- 7. The Death of a Hero
- 8. The Cow of the Barricades

#### Unit-II

Text Prescribed: The Students' Companion by Wilfred D. Best, Rupa & Co.

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The following contents of this book are to be studied:

- 1. One word substitution (Professions or Trades)
- 2. Correction of frequently misspelt words
- 3. Antonyms and Synonyms

#### Unit-III

**Text Prescribed:** Living English Structure by W. Stannard Allen Grammar& Composition:

- 1. Voice
- 2. Narration
- 3. Composition: Précis Writing (Unseen Passage)

#### Testing Unit-I

- The examiner shall set one essay type question with internal alternative on theme, incident or character from *Let's Go Home and Other Stories* prescribed in unit-I of the syllabus. The candidate is required to write the answer in about 250 words.
   8 marks
- 2. The examiner shall set seven short-answer type questions from *Let's Go Home and Other Stories* prescribed in unit-I. The candidate is required to attempt any five out of the given seven. Each question shall carry two marks. 10 marks

#### Unit-II

- The examiner shall set ten sentences related to different Professions or Trades. The candidate shall give one word substitute for each sentence. The candidate is required to attempt any seven out of given ten. The examiner shall set these sentences from the book *The Students' Companion* prescribed in unit-II of the syllabus. Each answer shall carry one mark.
- 4. The examiner shall set seven misspelt words for correction from the prescribed book *The Students' Companion*. The candidate is required to attempt any five. Each word shall carry one mark. 5 marks
- 5. This question will be pertaining to Antonyms and Synonyms. The examiner shall set seven words for antonyms and seven for synonyms from the prescribed book *The Students' Companion*. The candidate is required to attempt any five from each. Each word shall carry one mark.

5+5=10 marks

#### Unit-III

- The examiner shall set 12 sentences for Change of Voice from the book *Living English Structure* prescribed in unit-III. The candidate is required to attempt any 10 sentences out of the given 12 sentences. Each correct answer shall carry one mark.
   10 marks
- The examiner shall set 12 sentences for Change of Narration from the book *Living English Structure* prescribed in unit-III. The candidate is required to attempt any 10 sentences out of the given 12 sentences. Each correct answer shall carry one mark. 10 marks

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8. The examiner shall set an unseen passage for précis writing. The passage shall be of at least 150 words and not exceeding 220 words. The candidate is required to make a précis of the given passage along with a suitable/relevant title. The précis shall be one third of the given passage.

10 marks

#### **Course Learning Outcomes:**

- 1. Students will learn the nuances of English language
- 2. The course content intends to improve their communicative skills and command over language
- 3. Students will acquire fundamental knowledge of language and literature.

#### **Suggested Readings:**

*Oxford Practice Grammar* by John Eastwood (Ed. 2014). *Current English Grammar and Usage with Composition* by R.P. Sinha, Oxford University Press.

Parrie Ajany -

Dr.Gurpreet Kaur

Dr. Ajay Verma

Dr. Swaraj Raj

ਬੀ.ਐਸ.ਸੀ.ਆਨਰਜ਼ ਆਰਟੀਫੀਸ਼ੀਅਲ ਇੰਟੈਲੀਜੈਂਸ ਐਂਡ ਡਾਟਾ ਸਾਇੰਸ ਭਾਗ ਪਹਿਲਾ,ਸਮੈਸਟਰ ਪਹਿਲਾ ਸੈਸ਼ਨ:2021-22 ,ਪੇਪਰ ਕੋਡ:BSP-101A ਵਿਸ਼ਾ: ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ

ਕੁੱਲ ਅੰਕ :100 ਬਾਹਰੀ ਪਰੀਖਿਆ:70 ਅੰਕ ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ :30 ਅੰਕ ਕ੍ਰੈਡਿਟ–04 ਸਮਾਂ:3 ਘੰਟੇ ਪਾਸ ਅੰਕ: 35% ਕੁੱਲ ਲੈਕਚਰ:60

# ਪਾਠਕ੍ਰਮ ਅਤੇ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੀ ਰੂਪ-ਰੇਖਾ

ਭਾਗ–ੳ

ੳ -ਮੇਰਾ ਜੀਵਨ ਅਨੁਭਵ (ਵਾਰਤਕ -ਸੰਗ੍ਰਹਿ),ਮੁੱਖ ਸੰਪਾਦਕ ਡਾ.ਜਸਵੀਰ ਸਿੰਘ ,ਸੰਪਾ.ਡਾ.ਅਵਤਾਰ ਸਿੰਘ,

ਡਾ.ਗੁਰਪ੍ਰੀਤ ਕੌਰ,ਪ੍ਰੋ.ਸੁਖਵਿੰਦਰ ਸਿੰਘ,ਸ੍ਰੀ ਗੁਰੂ ਤੇਗ਼ ਬਹਾਦਰ ਖ਼ਾਲਸਾ ਕਾਲਜ,ਸ੍ਰੀ ਅਨੰਦਪੁਰ ਸਾਹਿਬ,ਪਬਲੀਕੇਸ਼ਨ ਬਿਉਰੋ

#### ਭਾਗ–ਅ

ਅ-1:ਸਮਾਜਿਕ ਅਤੇ ਵਾਤਾਵਰਨ ਵਿਸ਼ਿਆ ਨਾਲ ਸੰਬੰਧਿਤ ਨਿਬੰਧ ਰਚਨਾ

ਅ-2: ਵਿਆਕਰਨ

- (i) ਸਵਰ:ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਰਗੀਕਰਨ
- (ii) ਵਿਅੰਜਨ:ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਰਗੀਕਰਨ
- (iii) ਉਚਾਰਨ ਅੰਗ
- (iv) ਨਾਂਵ ਅਤੇ ਇਸਦਾ ਰੂਪਾਂਤਰਣ
- (v) ਪੜਨਾਂਵ ਅਤੇ ਇਸਦਾ ਰੂਪਾਂਤਰਣ
- (vi) ਕਿਰਿਆ ਅਤੇ ਇਸਦਾ ਰੁਪਾਂਤਰਣ

#### ਭਾਗ–ੲ

ਮੇਰਾ ਜੀਵਨ ਅਨੁਭਵ ਅਤੇ ਵਿਆਕਰਨ ਵਾਲੇ ਭਾਗ ਵਿਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ 15 ਲਾਜ਼ਮੀ ਪ੍ਰਸ਼ਨ

#### ਪੇਪਰ ਸੈਟਰ ਅਤੇ ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਹਦਾਇਤਾਂ

1.ਭਾਗ-ੳ: ਵਿਚੋਂ ਨਿਬੰਧ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਜਾਂ ਸਾਰ (ਤਿੰਨ ਵਿਚੋਂ ਇੱਕ)10 ਅੰਕ 2.ਭਾਗ-ੳ: ਵਿਚੋਂ ਪੁਸਤਕ ਵਿਚਲੇ ਵਿਚਾਰਾਂ ਸੰਬੰਧੀ ਪ੍ਰਸ਼ਨ (ਪੰਜ ਵਿਚੋਂ ਤਿੰਨ) 4+4+4=12 ਅੰਕ 3.ਭਾਗ-ਅ:1 ਵਿਚੋਂ ਨਿਬੰਧ ਰਚਨਾ (ਤਿੰਨ ਵਿਚੋਂ ਇੱਕ) 08 ਅੰਕ 4.ਭਾਗ-ਅ:2 ਵਿਚੋਂ ਵਿਆਕਰਨ ਨਾਲ ਸੰਬੰਧਿਤ ਵਰਣਾਤਮਕ ਪ੍ਰਸ਼ਨ (ਦੋ ਵਿਚੋਂ ਇੱਕ) 10 ਅੰਕ 5. ਭਾਗ-ੲ ਵਿਚ ਮੇਰਾ ਜੀਵਨ ਅਨੁਭਵ ਅਤੇ ਵਿਆਕਰਨ ਵਿੱਚੋਂ ਕੁੱਲ 15(8+7) ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਲਾਜ਼ਮੀ ਪ੍ਰਸ਼ਨ।ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ 2ਅੰਕਾਂ ਦਾ ਹੋਵੇਗਾ। 15X2=30 ਅੰਕ

# ਪਾਠਕ੍ਰਮ ਦਾ ਉਦੇਸ਼:

1.ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਾਹਿਤ ਪੜ੍ਹਨ ਦੀ ਰੁਚੀ ਪੈਦਾ ਕਰਨਾ।

- 2.ਮਾਤ ਭਾਸ਼ਾ ਵਿੱਚ ਉਚੇਰੀ ਸਿੱਖਿਆ ਗ੍ਰਹਿਣ ਕਰਨ ਦੀ ਜਾਗ ਲਾਉਣਾ।
- 3.ਵਿਆਕਰਨਕ ਪੱਖਾਂ ਨਾਲ ਰਾਬਤਾ ਕਾਇਮ ਕਰਵਾਉਣਾ।
- 4.ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਵਾਤਾਵਰਣ ਅਤੇ ਸਮਾਜਿਕ ਵਿਸ਼ਿਆਂ /ਸਮੱਸਿਆਵਾਂ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ।

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# ਪਾਠਕ੍ਰਮ ਨਤੀਜੇ:

1. ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਨਿਬੰਧਾਂ ਨਾਲ ਸੰਬੰਧਿਤ ਪਰਤਾਂ ਨੂੰ ਉਜਾਗਰ ਕਰਨ ਦਾ ਹੁਨਰ ਪੈਦਾ ਹੋਵੇਗਾ।

2. ਵਿਦਿਆਰਥੀ ਵਿਆਕਰਨਕ ਨੇਮ-ਵਿਧਾਨ ਅਤੇ ਸਮਕਾਲੀ ਸਮਾਜ ਵਿਚਲੇ ਮਸਲਿਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

# ਸਹਾਇਕ ਪੁਸਤਕਾਂ:

1.ਬਲਵੀਰ ਸਿੰਘ ਦਿਲ, ਪੰਜਾਬੀ ਨਿਬੰਧ :ਸਰੂਪ, ਸਿਧਾਂਤ ਅਤੇ ਵਿਕਾਸ,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ,ਯੁਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ।

2.ਖੋਜ ਪੱਤ੍ਰਿਕਾ, ਨਿਬੰਧ ਅੰਕ-29,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ,ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ

3. ਬੂਟਾ ਸਿੰਘ ਬਰਾੜ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਸ਼੍ਰੋਤ ਤੇ ਸਰੂਪ, ਵਾਰਿਸ਼ ਸ਼ਾਹ ਫਾਂਉਡੇਸ਼ਨ ਅੰਮ੍ਰਿਤਸਰ, 2012

4. ਬਲਦੇਵ ਸਿੰਘ ਚੀਮਾ, ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਤੇ ਭਾਸ਼ਾ ਵਿਗਿਆਨ,ਤਕਨੀਕੀ ਸ਼ਬਦਾਵਲੀ ਦਾ ਵਿਸ਼ਾ ਕੋਸ਼,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ,2009

5.ਡਾ.ਜੋਗਿੰਦਰ ਸਿੰਘ ਪੁਆਰ ਅਤੇ ਹੋਰ,ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਵਿਆਕਰਨਕ ਭਾਗ I,ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਦਮੀ,ਜਲੰਧਰ,1991

6.ਗਿਆਨੀ ਲਾਲ ਸਿੰਘ ਤੇ ਹਰਕੀਰਤ ਸਿੰਘ ,ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਣ ,ਪੰਜਾਬ ਸਟੇਟ ਯੂਨੀ.ਟੈਕਸਟ ਬੁੱਕ ਬੋਰਡ,ਚੰਡੀਗੜ੍ਹ

7.ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ,ਸਾਹਿਤਆਰਥ,ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ,ਲੁਧਿਆਣਾ

## ਬੀ.ਐਸ.ਸੀ.ਆਨਰਜ਼ ਆਰਟੀਫੀਸ਼ੀਅਲ ਇੰਟੈਲੀਜੈਂਸ ਐਂਡ ਡਾਟਾ ਸਾਇੰਸ

ਭਾਗ ਪਹਿਲਾ,ਸਮੈਸਟਰ ਪਹਿਲਾ ਸੈਸ਼ਨ :2021–22 ਪੇਪਰ ਕੋਡ:BSP-101B ਵਿਸ਼ਾ: ਪੰਜਾਬੀ ਮੁੱਢਲਾ ਗਿਆਨ

ਕੁੱਲ ਅੰਕ :100 ਬਾਹਰੀ ਪਰੀਖਿਆ:70 ਅੰਕ ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ :30 ਅੰਕ ਕ੍ਰੈਡਿਟ–04 ਸਮਾਂ:3 ਘੰਟੇ ਪਾਸ ਅੰਕ: 35% ਕੁੱਲ ਲੈਕਚਰ:60

# ਪਾਠਕ੍ਰਮ ਅਤੇ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੀ ਰੂਪ-ਰੇਖਾ ਭਾਗ-ੳ

ਓ -1.ਪੈਂਤੀ ਅੱਖਰੀ ਅਤੇ ਭੁਲਾਵੇਂ ਅੱਖਰ 2.ਦੋ ਅੱਖਰਾਂ ਵਾਲੇ,ਤਿੰਨ ਅੱਖਰਾਂ ਵਾਲੇ ਅਤੇ ਚਾਰ ਅੱਖਰਾਂ ਵਾਲੇ ਪੰਜ-ਪੰਜ ਸ਼ਬਦ 3.ਲਗਾਂ-ਮਾਤਰਾਵਾਂ ਦੀ ਵਰਤੋਂ ਕਰਕੇ ਪੰਜ-ਪੰਜ ਸ਼ਬਦ 4.ਲਗਾਖਰਾਂ ਦੀ ਵਰਤੋਂ ਕਰਕੇ ਪੰਜ-ਪੰਜ ਸ਼ਬਦ

#### ਭਾਗ–ਅ

- ਅ−1. ਇੱਕ ਤੋਂ ਪੰਜਾਹ ਤੱਕ ਗਿਣਤੀ
- 2. ਹਫ਼ਤੇ ਦੇ ਦਿਨਾਂ ਦੇ ਨਾਂ
- 3. ਪੰਜ ਫਲਾਂ ਅਤੇ ਸਬਜ਼ੀਆਂ ਦੇ ਨਾਂ
- 4. ਪੰਜ ਘਰੇਲੁ ਵਸਤਾਂ ਅਤੇ ਆਵਾਜਾਈ ਦੇ ਸਾਧਨਾਂ ਦੇ ਨਾਂ
- 5. ਪੰਜ ਰਿਸ਼ਤਿਆਂ ਦੇ ਨਾਂ
- ਪੰਜ ਪਸ਼ੁ ਪੰਛੀਆਂ ਦੇ ਨਾਂ

ਭਾਗ–ੲ

# ਭਾਗ ੳ ਅਤੇ ਅ ਵਿਚੋਂ 15 ਅਬਜੈਕਟਿਵ ਪ੍ਰਸ਼ਨ

# ਨੋਟ:ਵਿਦਿਆਰਥੀ ਪਹਿਲੀ ਵਾਰ ਗੁਰਮੁਖੀ ਸਿੱਖ ਰਹੇ ਹਨ।ਇਸ ਲਈ ਵਿਦਿਆਰਥੀਆਂ ਦੇ ਪੱਧਰ ਨੂੰ ਧਿਆਨ ਵਿੱਚ ਰੱਖਦੇ ਹੋਏ ਸਰਲ ਅਤੇ ਸਪੱਸ਼ਟ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ।

#### ਪੇਪਰ ਸੈਟਰ ਅਤੇ ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਹਦਾਇਤਾਂ:

 1.ਭਾਗ-ੳ: ਵਿਚੋਂ ਪ੍ਰਸ਼ਨ
 (ਦੋ ਵਿਚੋਂ ਇੱਕ)10 ਅੰਕ

 2.ਭਾਗ-ੳ ਵਿਚੋਂ ਪ੍ਰਸ਼ਨ
 (ਛੇ ਵਿਚੋਂ ਤਿੰਨ) 5+5+5=15 ਅੰਕ

 3.ਭਾਗ-ਅ ਵਿਚੋਂ ਪ੍ਰਸ਼ਨ
 (ਦੋ ਵਿਚੋਂ ਇੱਕ)10 ਅੰਕ

 4.ਭਾਗ-ਅ ਵਿਚੋਂ ਪ੍ਰਸ਼ਨ
 (ਛੇ ਵਿਚੋਂ ਤਿੰਨ) 5+5+5=15 ਅੰਕ

 5.ਭਾਗ-ੲ ਵਿਚ ਭਾਗ ੳ ਅਤੇ ਅ ਵਿਚੋਂ ਕੁੱਲ 10 ਅਬਜੈਕਟਿਵ ਪ੍ਰਸ਼ਨ। ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ

 ਲਾਜ਼ਮੀ ਹਨ । ਹਰੇਕ ਪ੍ਰਸ਼ਨ 2 ਅੰਕਾਂ ਦਾ ਹੋਵੇਗਾ ।
 (10X2=20 ਅੰਕ)

## ਪਾਠਕ੍ਰਮ ਦਾ ਉਦੇਸ਼:

1.ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਗੁਰਮੁਖੀ ਲਿਪੀ ਸਿਖਾਉਣਾ। 2.ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸ਼ੁੱਧ ਪੰਜਾਬੀ ਬੋਲਣਾ,ਪੜ੍ਹਨਾ ਅਤੇ ਲਿਖਣਾ ਸਿਖਾਉਣਾ।

#### APPROVED

Board of Studies Meeting held on 19th June, 2021

# ਪਾਠਕ੍ਰਮ ਨਤੀਜੇ:

ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਸ਼ੁੱਧ ਸੰਚਾਰ ਕਰਨ ਦੇ ਯੋਗ ਹੋਣਗੇ।
 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਿਆਕਰਨਕ ਨੇਮਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

# ਸਹਾਇਕ ਪਾਠ ਸਮੱਗਰੀ:

1.ਸਤਿਨਾਮ ਸਿੰਘ ਸੰਧੂ,ਆਓ ਪੰਜਾਬੀ ਸਿੱਖੀਏ,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ,ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ,2009

2. ਸਤਿਨਾਮ ਸਿੰਘ ਸੰਧੂ,ਗੁਰਮੁਖੀ ਸਿੱਖੋ,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ,ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ,2011

3.ਸੀਤਾ ਰਾਮ ਬਾਹਰੀ, ਪੰਜਾਬੀ ਸਿੱਖੀਏ,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ,ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ,2002

4.ਪੰਜਾਬੀ ਗਿਆਨ ਸੀ.ਡੀ.(ਕੰਪਿਊਟਰ ਐਪਲੀਕੇਸ਼ਨ ਟੂ-ਲਰਨ ਐਂਡ ਟੀਚ ਪੰਜਾਬੀ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ

5. ਚਰਨ ਪੁਆਧੀ,ਆਓ ਪੰਜਾਬੀ ਸਿੱਖੀਏ,ਸੰਗਮ ਪਬਲੀਕੇਸ਼ਨ,ਪਟਿਆਲਾ

#### **BSCHAI - 113: Computer Fundamentals**

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 6 (5L+1T) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 6H per week

#### **Instructions for the Paper Setter**

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### **Instructions for the Candidates**

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

**Course Objectives:** The focus of the subject is on introducing skills relating to IT basics, computer applications, computer memory, number systems, Office tools etc.

#### SECTION A

What are computers? The evolution of computers, Computers generations, classifications of computers. Block Diagram: Input-output devices, Description of Computer Input Units, Other Input Methods, and Computer Output Units.

Number Systems: Introduction, Classification of Number System, Types of Number System, Conversions from One Base to Another. Milestones in hardware and software

Computer Memory: Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Physical Devices Used to construct Memories, Magnetic Hard disk, floppy Disk drives, Compact Disk, Read Only Memory, Magnetic Tape Drives.

Low level and high level languages, assemblers, compilers, interpreters, linkers. Internet: internet applications.

#### **SECTION - B**

MS-Word: Overview, creating, saving, opening, importing, exporting and inserting files, formatting pages, paragraphs and sections, indents and outdents, creating lists and numbering. Headings, styles, Fonts and font size Editing, positioning and viewing texts, Finding and replacing text, inserting page breaks, page numbers, bookmarks, symbols and dates. Using tabs and tables, header, footer and printing MS–PowerPoint: Presentation overview, entering information, Presentation creation, opening and saving presentation, inserting audio and video

#### **LEARNING OUTCOMES:**

Upon completing requirements for this course, the student will be able to

- Identify the basic elements required in a computer system.
- Creating Professional Documents using MS-Word.
- Creating Professional Presentation using MS-Excel.
- Illustrate the role of the computer for personal and professional uses.

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## **Text Books:**

- 1. Computer Fundamentals, P.K. Sinha.
- 2. Introduction to Computers, N. Subramanian.
- 3. MS–Office, BPB Publications.

## **Reference Books:**

- 1. Peter Nortorn, Introduction to Computers, Seventh Edition.
- 2. V. Rajaraman, Fundamentals of Computers, PHI.
- 3. Larry E. Long and Nancy Long, Computers: Information Technology in Perspective, PHI.
- 4. N. Subramanian, Introduction to Computers, Tata McGraw-Hill.
- 5. D.H. Sanders, Computers Today, McGraw-Hill.

#### **BSCHAI - 114: Problem Solving and Programming in C**

Maximum Marks: 100	Time Allowed: 3 Hours
External Examination: 70	Pass Percentage: 35%
Internal Assessment: 30	Teaching Hours: 4H per week
Credits: 4 (4L)	

#### **Instructions for the Paper Setter**

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### **Instructions for the Candidates**

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

**Course Objective:** This is a first course in programming. The objective of this paper is to teach the Programming Language C. However, the process of learning a computer language will also be emphasized. Emphasis is also on semantics and problem solving.

#### SECTION A

**Programming Process:**Problem Identification, Analysis, Algorithm, Flowchart, Coding, Compilation and debugging.

**Basic structure of C program:** History of C, Structure of a C program, Character set, Identifiers and keywords, constants, variables, data types.

**Operators and expressions:** Arithmetic, Unary, Logical, Relational operators, assignment operators, Conditional operators, Hierarchy and associativity of operations type conversion.

**Control statements:** Branching statements (if, if else, switch), loop statements (for, while and do-while), jump statements (break, continue, goto), nested control structures.

**Functions:** Library functions and user defined functions, definition and call, formal and actual arguments, local and global variables, methods of parameter passing to functions, recursion.

**I/O functions**: Formatted & unformatted console I/O functions.

#### **SECTION - B**

Storage Classes: Automatic, external, static and register variables.

**Arrays:**– One dimensional and two dimensional arrays Declaration, initialization, reading values into an array, displaying array contents, working with rows and columns.

Strings : Input/output of strings, string handling functions (strlen, strcpy, strcmp, strcat & strrev).

Structures and unions: using structures and unions, comparison of structure with arrays and union.

**Pointers**: Pointer data type, pointer declaration, initialization, accessing values using pointers, pointers and arrays.

**Introduction to Files in C:** opening and closing files. Basic I/O operation on files, Reading and writing Text Files, using fprintf(), fscanf(), getc(), putc(), fgets(), fputs() functions,

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## Learning Outcomes:

Upon completion of this course, students will acquire knowledge about:

- 1. Able to implement the algorithms and draw flowcharts for solving Mathematical and Engineering problems.
- 2. Demonstrate an understanding of computer programming language concepts.
- 3. To be able to develop C programs on linux platform.
- 4. Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.
- 5. Able to define data types and use them in simple data processing applications also he/she must be able to use the concept of array of structures. Student must be able to define union and enumeration user defined data types.
- **6.** Develop confidence for self education and ability for life-long learning needed for Computer language.

#### **Text Book:**

1 E. Balagurusamy, "Programming in C", Tata McGraw Hill.

#### **References:**

- 1 Kernighan and Ritchie, "The C Programming Language", PHI.
- 2 Byron Gotfried, "Programming in C".
- 3 Kamathane, "Programming in C", Oxford University Press.
- 4 Yashvant P Kanetkar, "Let us C", Seventh Edition, BPB Publications, New Delhi.

#### **BSCHAI - 115: Introduction to Artificial Intelligence**

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 6 (5L+1T) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 6H per week

#### Instructions for the Paper Setter

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### **Instructions for the Candidates**

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### **Objectives:**

The primary objective of this course is to introduce the basic principles, techniques, and applications of Artificial Intelligence.

- 1. Gain a historical perspective of AI and its foundations.
- 2. Become familiar with basic principles of AI toward problem solving, inference, perception, knowledge representation, and learning.
- 3. Investigate applications of AI techniques in intelligent agents, expert systems and other machine learning models.

#### SECTION A

**Introduction:** Introduction to Artificial Intelligence, Background and Applications, Intelligent agents: reactive, deliberative, goal-driven, utility-driven, and learning agents

**Problem Solving**: Defining problem as state space search, problem characteristics, Blind search, Heuristic search, hill climbing, Best-first, constraint satisfaction.

**Logical Reasoning:** Introduction to Prepositional Logic: Syntax, Semantics, Inference methods in Prepositional Logic. Introduction to Predicate Logic: Syntax, Semantics of Predicate Logic, Clausal form, Resolution, Unification, Inference Mechanisms.

#### **SECTION B**

**Knowledge**: Introduction and Importance of Knowledge, Knowledge based systems, Knowledge Representation: Approaches to Knowledge representation, Issues in Knowledge representation, Knowledge representation using rules. Semantic Nets, Frames, Conceptual Dependencies, Scripts, CYC, Knowledge Organization and Manipulation.

**Expert System**: Introduction, Rule-Based Architectures, Nonproduction system architectures, Expert System Shells, Knowledge acquisition and Validation.

Learning: Introduction, Role of Learning, Types of Learning, General Learning Model, Performance Measures

**Communication**: Communication among agents, natural language processing, formal grammar, parsing, grammar

Learning Outcomes: Students will be able to:

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- 1. Ability to develop a basic understanding of AI building blocks presented in intelligent agents.
- 2. Ability to choose an appropriate problem solving method and knowledge representation technique.
- 3. Ability to analyze the strength and weaknesses of AI approaches to knowledge– intensive problem solving.
- 1. Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications.

## **Text Book:**

- 1. DAN.W. Patterson, Introduction to A.I and Expert Systems PHI, 2007.
- 2. Russell & Norvig, Artificial Intelligence-A Modern Approach, LPE, Pearson Prentice Hall, 2nd edition, 2005.
- 3. Rich & Knight, Artificial Intelligence Tata McGraw Hill, 2nd edition, 1991.

#### BSCHAI – 116 (i): Better Spoken English

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 4 (4L) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

#### Instructions for the paper setter

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section A.

#### SECTION A

Skills of effective speaking, Components of effective talk, Mock dialogues/ conversation for developing speaking skills, Guidelines for effective conversation.

Speeches and debates, Preparing and delivering multi-media presentation, Audio-visual aids-Types and role of audio-visual aids.

Role of body language in effective presentation, Manner of speaking-Clarity, Correctness, Pace, pitch & power of voice, pausing.

#### **SECTION B**

Articulation of English Speech Sounds – Place and Manner of Articulation, Vowels and consonants, Word Stress in English, Primary stress in simple English words.

Group discussion- Introduction, importance and objectives of group discussion. Skills for success in group discussion.

Conducting Meeting : Purpose, & process of meeting, Role of chairman, secretary & participants in meeting.

Interview: Types of interviews, preparing for a successful job interview, Appropriate use of non-verbal communication.

#### **Recommended Books :**

- Chaudhary, Shreesh, Better Spoken English, New Delhi : Vikas Publishing, 1992/2004
- Pease, Allan and Barbara Pease, The Definitive Book of Body Language. New Delhi: Manjul Publishing House, 2005.
- Turk, Christopher. *Effective Speaking*, South Asia Division: Taylor & Francis, 1985.
- Lucas, Stephen E. The Art of Public Speaking, 11th Edn., McGraw Hill Book Co., 2014.

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- Sharma, Sangeeta and Binod Mishra, *Communication Skills for Engineers and Scientists*. New Delhi: PHI Learning. 2009, 6th Reprint 2015.
- Thorpe, Edgar and Showick Thorpe, Winning at Interviews. Pearson Education. 2004.
- Taylor, Grount English Conversation Practice, Tata McGraw Hill
- Sethi, J, Sadanand, Kamlesh& Jindal, D V, *Practical Course in English Pronunciation* by Published by PHI Learning Pvt. Ltd; New Delhi.
- Roach, Peter, English Phonetics and Phonology Fourth Edition: A Practical Course, Cambridge University Press, 2010.

# The following exercises to be conducted in practical sessions:

- Listening Practical: Listening to pre-recorded talks with the intent of grasping correct pronunciation and along with understanding and comprehending the content.
- Introducing oneself, others and leave taking(talking about yourself)
- Recognizing and articulating English Speech Sounds
- Mock dialogues/ Conversation
- Paper reading before an audience.
- Preparing & delivering a Power point presentation
- Participating in a group discussion.
- Conducting a mock meeting.
- Participating in a mock interview.
- Learning the skills of a compère.

#### BSCHAI – 116 (ii): Stress Management

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 4 (4L) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

#### Instructions for the paper setter

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section A.

#### **SECTION A**

**Understanding Stress:** Meaning and Nature; Body's Reactions to Stress; Sources of Stress Across, Adaptive and Maladaptive Behaviour, Individual and Cultural Differences.

#### **SECTION B**

**Strategies of Stress Management and Prevention:** Challenging Stressful Thinking, Problem Solving and Time Management, Psychological and Spiritual Relaxation Methods, Physical Methods of Stress Reduction, Preparing for the Future: Occupational Stress, Care of the Self: Nutrition and Other Lifestyle Issues, Stress and Conflict in Relationships, Resilience and Stress.

#### **Suggested Readings:**

Kottler, J. A. & Chen, D. D. (2011): Stress management and prevention: Applications to daily life (2nd Ed.). London and New York: Routledge.

Alex, Roney and Cooper, Cary (1997): Professionals on work place stress: John Wiley and Sons Ltd.

Batra, Promod (1995): Simple ways to manage Stress: Thompson Press, India.

Charlesworth, Edward A, Nathan, G Ronald (1982): Stress Management – A Comprehensive guide to wellness, London: Souvenir press.

Chrissie, Wildwood (1997): The Complete Guide to Reducing Stress, London: Judy Piatkus Ltd.

#### BSCHAI – 116 (iii): Introduction to Logic

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 4 (4L) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

#### Instructions for the paper setter

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### SECTION A

Introduction: Logic and its relationship to other disciplines.

Argument, Premises, conclusion, Indicators. Nature and scope of Deductive and Inductive Arguments. Validity and strength of Deductive and Inductive arguments. Truth and Soundness, Counter example method for invalidity of deductive arguments. Diagramming Arguments.

Formal and Informal Fallacies: Denial of Antecedent, Affirming the consequent. Fallacies of relevance. Fallacies arising from the ambiguities in Language.

#### **SECTION-B**

Traditional Logic: Why formal Logic? Aristotle Theory of Syllogisms. Square of Opposition, Validity of syllogisms using Venn, Euler diagrams. Limitations of Aristotle Logic, Boolean logic and birth of Modern Logic.

Modern Logic: Propositional and predicate Logic: Syntax and Semantics. Validity, Consistency, Soundness, Proof, Completeness. Various techniques such as Truth Table method. Indirect truth table method. Natural Deduction. Tree Method. Godels incompleteness theorem. Limitations of standard two valued logic.

#### **Text Books:**

- 1. Patrick Hurley A Concise Introduction to Logic, Wardsworth, 2007.
- 2. Elliot Mendelson Introduction to Mathematical Logic, pp: 1-90 [Propositional and Predicate Logic].

#### **References Books:**

- 1. Shawn Hedman, A first course in Mathematical Logic, oxford university press, pp 1-115.
- 2. Bertrand Russell and A. N. Whitehead, Principia Mathematica, 1910, pp. 89-135.
- 3. Raymond Smullyan, Forever Undecided: A Puzzle Guide to G"odel, 1987.
- 4. Martin Gardner, aha! Insight & aha! Gotcha. The mathematical association of America, 2002.
- 5. Stephen Read, Thinking about Logic: An Introduction to the Philosophy of Logic, Oxford University Press.
- 6. Graham Priest, Logic: A Very Short Introduction, Oxford University Press, 2001.

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#### BSCHAI – 116 (iv): Introduction to Sociology

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 4 (4L) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

#### Instructions for the paper setter

The question paper will consist of three sections: A, B & C. SECTIONS A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. SECTION C will have 5-10 short-answer type questions carrying a total of 28 marks, which will cover the entire syllabus uniformly.

#### Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### **SECTION A**

**Introduction to Sociology :** Sociological approaches, Nature of society: Individuals and groups, Definition and classification of family, Perspectives on family, Institutions, Community and Association Culture, Cooperation and conflict, Sociological Methods, The Sociology of Anomie: Conformity and Deviance

**Social Structure and Social Change:** Basic Concepts, Social Differentiation and Social Stratification, Theoretical Perspectives on Social Stratification, Systems of Stratification, Factors of Social Change, Rural-Urban Continuum: Meaning and Context

#### **SECTION B**

**Sociology of work:** Need for work, Social change and work, Development and work, Capitalism and motivation for work.

Socialization: Socialisation, Social Control, Social Roles and Identity.

**Sociological Theories:** An Overview, Auguste Comte and Herbert Spencer, Emile Durkheim and Max Weber, Karl Marx, Georg Simmel, Thorstein Veblen and Karl Mannheim, Feminism and Sociological Theory.

#### **Text Books:**

1. A. Giddens, Sociology, Polity Press, 2006.

#### **References Books:**

- 1. A. Inkeles, *What is Sociology: An Introduction to the Discipline and Profession*, Prentice-Hall of India Private Ltd., 1977.
- 2. T.B. Bottomore, *Sociology: A Guide to Problems and Literature*, Blackie and Sons Publishers, 1978.
- 3. R.M. MacIver and C.H. Page, *Society: An Introductory Analysis*, The Macmillan Co. India Pvt. Ltd., 1974.
- 4. R. Bierstedt, The Social Order, Tata McGraw-Hill Publishing Co. Ltd., 1970.

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5. E.A. Ross, *Social Psychology*, Macmillan, 1921.

#### **BSCHAI – 116 (v): Brief introduction to Psychology**

Maximum Marks: 100	Time Allowed: 3 Hours
External Examination: 70	Pass Percentage: 35%
Internal Assessment: 30	<b>Teaching Hours: 4H per week</b>
Credits: 4 (4L)	

#### Instructions for the paper setter

The question paper will consist of three sections: A, B & C. SECTIONs A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. SECTION C will have 5-10 short-answer type questions carrying a total of 28 marks, which will cover the entire syllabus uniformly.

#### **Instructions for the candidates**

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### SECTION A

Introduction to Psychology: Definitions, Historical background, Nature and Scope; Branches of Psychology; Methods of Psychology: Experimental Method, Observational Method, Sampling Techniques, Survey Method; Personality: Nature, Determinants of Personality and Assessment; Motivation: Meaning, techniques and types, Theories of Motivation: Maslow's Hierarchy of Need.

#### **SECTION B**

Intelligence: Meaning and theories of Intelligence (Spearman, Unitary and Thurston), measurement of Intelligence; Introduction to Memory: Nature, Memory Systems; Nature and Causes of Forgetting; Thinking: Concept, Problem Solving, Reasoning, Decision Making; Learning and its Types, Theories of Learning: Trial and Error theory, Pavlov's classical conditioning theory and Operant Conditioning theory.

#### **Suggested Readings:**

- 1. Ciccarelli, D. (2008): Introduction to Psychology, Delhi: Pearson.
- 2. Baron, R.A. (2003): Psychology, New Delhi: Pearson Education.
- 3. Das, J.P. (1998): The Working Mind: Introduction to Psychology, New Delhi: Sage.
- 4. Morgan, C.T., King, R.A., Weisz. J.R., & Schopler. J. (1986): *Introduction of Psychology*, New York: McGraw Hill Book Co.

## BSCHAI – 116 (vi): Developing Soft Skills & Personality

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 4 (4L) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

#### Instructions for the paper setter

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. SECTION C will have 5-10 short-answer type questions carrying a total of 28 marks, which will cover the entire syllabus uniformly.

#### Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### SECTION A

- Introduction to Soft Skills, Interpersonal skills, Importance of Soft Skills.
- Communication: Verbal & Non-verbal communication, Role of body language, Essentials of Effective Communication, barriers to Communication.
- Team building and team work, Leadership, Qualities of a leader.
- Managing Self: Techniques of Time Management, Stress Management.

# **SECTION B**

- Problem Solving: Approaches for problem solving, Steps followed in problem solving.
- Art of listening: Skills for effective listening, Art of Persuasion and Negotiation.
- Speaking Skills: Preparing and delivering effective multimedia presentation.
- Interview Skills, Participation in Group Discussion, Conducting meeting.

# **Recommended Books :**

- Dorch, Patricia. What Are Soft Skills. New York: Execu Dress Publisher, 2013.
- Kamin, Maxine. Soft Skills Revolution: A Guide for Connecting with Compassion for Trainers, Teams, and Leaders. Washington, DC: Pfeiffer & Company, 2013.
- Klaus, Peggy, Jane Rohman & Molly Hamaker. *The Hard Truth about Soft Skills*.London: Harper Collins E-books, 2007.
- Petes S. J. Francis. *Soft Skills and Professional Communication*. New Delhi: Tata McGraw-Hill Education, 2011.
- Turk, Christopher. *Effective Speaking*, South Asia Division: Taylor & Francis, 1985.
- Lucas, Stephen E. *The Art of Public Speaking*, 11th Edn., International Edn., McGraw Hill Book Co., 2014.
- Holtz, Shel, Corporate Conversations, PHI, New Delhi, 2007.
- Chauhan, G.S. and Sharma, S. Soft Skills. Wiley, New Delhi, 2016.
- Kumar, Sanajy and Pushp Lata. Communication Skills. New Delhi: OUP. 2011.

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#### BSCHAI - 116 (vii): Ethics

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 4 (4L) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

#### Instructions for the paper setter

The question paper will consist of three sections: A, B & C. SECTIONS A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. SECTION C will have 5-10 short-answer type questions carrying a total of 28 marks, which will cover the entire syllabus uniformly.

#### Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### SECTION A

**Introduction to Ethical Theories:** Consequentialist and Non-consequentialist theories, Hedonism, Utilitarianism, Deontological theories, Ethical Rules ,Situation Ethics, Virtue Ethics.

Meta-ethical Theories: Ethical Relativism: Is Anything Wrong at all? ,Ethical Naturalism, Non-naturalism.

Non-cognitive or Non descripitivist Theories, Intuitionism, Approach to an Adequate Theory; the moral point of view, Why be Moral?

#### **SECTION B**

**Ethics in the Indian tradition:** Dharma- meaning, definition and classification, Theory of Karma, Nishkam Karma, Gandhian Ethics, Pursarthas, Buddhist Ethics, Jaina Ethics.

#### Some Ethical Issues:

The Personal life: Family and friends; Virtues, Liberty and Equality: Free Speech; Sexual and Racial Discrimination; Affirmative Action.

Justice: Punishment; Economic Justice; World Hunger and International Justice, Environmental Ethics. **Text Books:** 

- 1. Frankena, W.K. Ethics. New Delhi: Prentice Hall of India, 1999.
- 2. LaFollette, Hugh, ed. Ethics in Practice: An Anthology. Cambridge: Blackwell, 1997.

#### **References Books:**

- 1. Hospers, John. An Introduction to Philosophical Analysis. New Delhi: Allied Publishers, 1967.
- 2. Radhakrishnan, S. Indian Philosophy. 2 Vols. New Delhi: Oxford University Press, 1940.
- 3. Blackburn, Simon. The Oxford dictionary of philosophy. Oxford: Oxford University Press, 1996.
- 4. Weston, Anthony. A 21st Century Ethical Toolbox. New York: Oxford University Press, 2008.
- 5. Hospers, John. An introduction to philosophical analysis. New Delhi: Allied Publishers Private Limited, 1967.

# BSCHAI – 117: Software Lab – I (Based on paper BSCHAI-114: Problem Solving and Programming in C)

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 2 (2P) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

This course will mainly comprise of exercises on the basis of the following theory paper BSCHAI-114: Problem Solving and Programming in C.

\*The splitting of marks is as under: Maximum Marks for Continuous Assessment: 30 Maximum Marks for University Examination: 70

#### BSCHAI - 118 (SAE-1.1) DRUG ABUSE: PROBLEM, MANAGEMENT & PREVENTIONS

Maximum Marks: 50 External Examination: 35 Internal Assessment: 15 Credits: --- Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 2H per week

#### **INSTRUCTIONS FOR THE PAPER SETTERS**

The question paper will consist of three sections A, B and C. Each of sections A and B will have four questions from the respective sections of the syllabus. Each question shall carry 7 marks. Section C will consist of 14 short answer type of 2 marks each.

#### INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt any three questions from section A and any three questions from section B. Section C is compulsory.

#### **SECTION-A**

#### UNIT: I - Problem of Drug Abuse: Concept and Overview; Types of Drug Often Abused

#### a. Concept and Overview

What are drugs and what constitutes Drug Abuse?

Prevalence of menace of Drug Abuse

How drug Abuse is different from Drug Dependence and Drug Addiction?

Physical and psychological dependence- concepts of drug tolerance

#### b. Introduction to drugs of abuse: Short Term, Long term effects & withdrawal symptoms

Stimulants: Amphetamines, Cocaine, Nicotine

Depressants: Alcohol, Barbiturates- Nembutal, Seconal, Phenobarbital Benzodiazepines-

Diazepam, Alprazolam, Flunitrazepam

Narcotics: Opium, morphine, heroin

Hallucinogens: Cannabis & derivatives (marijuana, hashish, hash oil)

Steroids

Inhalants

#### **UNIT: II –Nature of the Problem**

Vulnerable Age Groups

Signs and symptoms of Drug Abuse

- (a)- Physical indicators
- (b)- Academic indicators
- (c)- Behavioral and Psychological indicators

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#### **SECTION B**

#### UNIT: III - Causes and Consequences of Drug Abuse

a. Causes

Physiological

Psychological

Sociological

# b. Consequences of Drug Abuse

For individuals

For families

For society & Nation

# Unit: IV- Management & Prevention of Drug Abuse

Management of Drug Abuse

Prevention of Drug Abuse

Role of Family, School, Media, Legislation & Deaddiction Centers

#### **Suggested Readings:**

- 1. Kapoor.T. (1985) Drug Epidemic among Indian Youth, New Delhi: Mittal Pub
- 2. Modi, Ishwar and Modi, Shalini (1997) Drugs: Addiction and Prevention, Jaipur: Rawat Publication.
- 3. Ahuja, Ram,(2003),Social Problems in India, Rawat Publications: Jaipur
- 4. 2003 National Household Survey of Alcohol and Drug Abuse. New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
- 5. World Drug Report 2011, United Nations Office of Drug and Crime.
- 6. World Drug Report 2010, United Nations Office of Drug and Crime.
- 7. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
- 8. The Narcotic Drugs and Psychotropic Substances Act, 1985, (New Delhi: Universal, 2012)

# **SEMESTER - II**

**APPROVED** Board of Studies Meeting held on 19<sup>th</sup> June, 2021

#### BSCHAI – 121: Object Oriented Programming Concepts using C++

Maximum Marks: 100	Time Allowed: 3 Hours
External Examination: 70	Pass Percentage: 35%
Internal Assessment: 30	Teaching Hours: 4H per week
Credits: 4 (4L)	

#### **Instructions for the Paper Setter**

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### **Instructions for the Candidates**

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### **Course Objectives:**

- 1. To know different programming paradigms.
- 2. To study and understand the object oriented programming concepts and methodology.
- 3. To implement object oriented programming concepts in C++.

#### **SECTION A**

**Principles of Object Oriented Programming (OOP):** Introduction to OOP, Difference between OOP and Procedure Oriented Programming;

**Concepts:** Object, Class, Encapsulation, Abstraction, Polymorphism and Inheritance, Applications of OOP.

**Special operators:** scope resolution operator, Member Dereferencing operators, Memory management operators, Manipulators and Typecast operator

**Structure of a C++ Program and Classes and Objects:** Class Declaration: Data Members, Member Functions, Private and Public members, Creating Objects, Accessing class data members, Accessing member functions;

**Class Function Definition:** Member Function definition inside the class declaration and outside the class declaration. Friend function, inline function, Static members, Function Overloading, Arrays within a class. Arrays of Objects; Objects as function arguments: Pass by value, Pass by reference, Pointers to Objects.

**Constructors:** Declaration and Definition, Types of Constructors, (Default, Parameterized, Copy Constructors). Destructors: Definition and use. Operator Overloading & Type Conversion: Conversion from basic type to user defined type, User defined to basic type and one user defined conversion to another user defined type

#### **SECTION B**

**Inheritance:** Extending Classes Concept of inheritance, Base class, Defining derived classes, Visibility modes: Public, Private, Protected; Types of Inheritance: Single inheritance: Privately derived, publicly derived; Making a protected member inheritable, multilevel inheritance, multiple Inheritance and ambiguity of multiple inheritance, Hierarchal Inheritance, Hybrid, Nesting of classes.

**Polymorphism:** Definition, Application and demonstration of Data Abstraction, Encapsulation and Polymorphism. Early Binding, Polymorphism with pointers, Virtual Functions, Late binding, pure virtual functions.

**Exception Handling:** Definition, Exception Handling Mechanism: Throwing mechanism and Catching Mechanism, Rethrowing an Exception

File Processing: Opening and closing of file, Binary file operations.

Learning Outcomes: By the end of the course students will be able to

- 1. Understand key features of the object-oriented programming language such as encapsulation (abstraction), inheritance, and polymorphism.
- 2. Design and implement object-oriented applications.
- 3. Analyze problems and implement simple C++ applications using an object-oriented approach.

#### **Text Books :**

1. E. Balaguruswamy, 2008: Object Oriented Programming with C++

#### **References:**

- $1. \ \ Robert Lafore, 2003: Object Oriented Programming in Turbo C++, Galgotia Publications$
- 2. Salaria, R.S.: ObjectOrientedProgrammingUsingC++, KhannaBookPublishing
- 3. Co.(P.)Ltd., New Delhi

#### BSCHAI – 122: Data Structures

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 4 (4L) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

#### **Instructions for the Paper Setter**

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### **Instructions for the Candidates**

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### **Course Objectives:**

- 1. To teach various storage mechanisms of data.
- 2. To design and implement various data structures.
- 3. To introduce various techniques for representation of the data in the real world.
- 4. To teach different sorting techniques.
- 5. To teach different searching techniques.

#### SECTION A

**Introduction:** Definition of data structures, Operations on Data Structures, Abstract Data Types, Algorithmic Complexity, Big O Notation, Time Space Tradeoff, Recursion.

Classification: Linear and Non-linear, homogeneous and non-homogeneous, static and dynamic data structures.

Pointers: Basic Concepts, pointers and arrays, pointers and strings, pointers and structures.

Arrays: Definition, Types of arrays, Representation in memory, Operations on arrays, Sparse matrices.

**Stacks:** Introduction, representation in memory, operations on stacks, applications of stacks- string reversal, parenthesis matching. Use of stacks in implementation of recursion.

**Queues:** Introduction, types of queues, various representations of queues using array and linked list, operations on queues, applications

#### Section – B

**Linked List**: Introduction, memory representation of linked list, operations on linked lists (insertion, deletion, reversing, searching and sorting), applications.

**Trees:** Introduction, Binary tree and its types, binary tree traversals, operations on binary trees, Binary search tree (BST), applications.

**Graphs:** Introduction, Graph terminology, memory representation of graphs, operations on graphs, minimum spanning tree, applications of graphs

#### **Text Books:**

- 1. Vishal Goyal, Lalit Goyal, Pawan Kumar, "A Simplified Approach to Data Structures", Shroff Publications.
- 2. Yashvant Kanetkar," Data Structures through C++ ", BPB Publications

#### **Reference Books:**

- 1. Sartaj Sahni "Data Structure, Algorithms and Applications in C++", Orient Black Swan.
- 2. Seymour Lipschultz," Theory and Practice of Data Structures", McGraw-Hill.
- 3. J.P. Trembley, P.G. Sorenson, "An Introduction to Data Structures with Applications", McGraw-Hill.
- 4. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", Addison-Wesley.

#### BSCHAI – 123(i): Cyber Laws

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 6 (5L+1T) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 6H per week

#### **Instructions for the Paper Setter**

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### **Instructions for the Candidates**

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### SECTION A

Introduction, Computers and Society, Computer and Web Technology, Need for Cyber Law, Cyber Jurisprudence at International and Indian Level, Cyber Law - International Perspectives, UN & International Telecommunication Union (ITU) Initiatives, Council of Europe - Budapest Convention on Cybercrime

Human Rights Issues in Cyberspace, Freedom of Speech and Expression in Cyberspace, Right to Access Cyberspace – Access to Internet, Right to Privacy, Right to Data Protection, Cyber Crimes & Legal Framework, Cyber Crimes against Individuals, Institution and State

#### **SECTION B**

Hacking, Digital Forgery, Cyber Stalking/Harassment, Cyber Pornography, Identity Theft & Fraud, Cyber terrorism, Cyber Defamation, Different offences under IT Act, 2000

Intellectual Property Issues in Cyber Space, Interface with Copyright Law, Interface with Patent Law, Trademarks & Domain Names Related issues, Online contracts, Click Wrap Contracts, Dispute Resolution in Cyberspace, Concept of Jurisdiction, Indian Context of Jurisdiction and IT Act, 2000, International Law and Jurisdictional Issues in Cyberspace

#### **References:**

- 1. Justice Yatindra Singh, Cyber Laws, Universal Law Publishing Co, New Delhi, (2012).
- 2. Verma S, K, Mittal Raman, Legal Dimensions of Cyber Space, Indian Law Institute, New Delhi, (2004)
- 3. Jonthan Rosenoer, Cyber Law, Springer, New York, (1997).

#### BSCHAI – 123(ii): Knowledge Management

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 6 (5L+1T) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 6H per week

#### **Instructions for the Paper Setter**

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### **Instructions for the Candidates**

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### Section A

The foundations of knowledge management- including cultural issues- technology applications organizational concepts and processes- management aspects- and decision support systems, The Evolution of Knowledge management: From Information Management to Knowledge Management - Key Challenges Facing the Evolution of Knowledge Management - Ethics for Knowledge Management.

Organization and Knowledge Management - Building the Learning Organization, Knowledge Markets:Cooperation among Distributed Technical Specialists – Tacit Knowledge and Quality Assurance

#### Section B

Telecommunications and Networks in Knowledge Management - Internet Search Engines and Knowledge Management - Information Technology in Support of Knowledge Management -Knowledge Management and Vocabulary Control - Information Mapping in Information Retrieval -Information Coding in the Internet Environment - Repackaging Information.

Components of a Knowledge Strategy - Case Studies (From Library to Knowledge Center, Knowledge Management in the Health Sciences, Knowledge Management in Developing Countries).

#### **References:**

- 1. Create the Dynamics of Innovation", Oxford University Press, 1995.
- 2. Kimiz Dalkir, Jay Liebowitz, "Knowledge Management in theory & practices", 2011, 2nd edition.

## Session 2021-22, 2022-23 & 2023-24 Code: BSCHAI-123 (iii) (Semester-II) English (Communication Skills)

Time Allowed: 3 Hours Periods per week: 4 Credits: 04 Teaching Hours: 60 Max. Marks: 100 Written Examination: 70 Internal Assessment: 30 Pass Percentage: 35%

**Instructions for the Paper Setter:** The question paper will carry 70 marks and will be of three hours duration. The paper will consist of two units. Following shall be the unit wise marks division:

- Unit-I 20 Marks
- Unit-II 50 Marks

**Note:** - We humbly request that the paper setter consults the testing pattern given in testing section. **Instructions for the candidates:** Candidates are required to attempt all the questions as per the instructions given in the testing section.

#### **Course Objective:**

The objective of the paper is to introduce the students to the theory, fundamentals and tools of communication. The course aims at developing the vital communication skills among students for personal, social and professional interactions

**Pedagogy:** Primarily the chalk and duster method will be used to teach this course. To evoke the interest of the students in the curriculum due emphasis will be laid on assignments, homework and periodic tests.

#### Unit I

#### **Part-A: Communication Skills**

- 1. Meaning of Communication
- 2. Importance of Communication
- 3. Process of Communication
- 4. Types of Communication
- 5. Channels of Communication
- 6. Barriers to Effective Communication
- 7. Effective listening skills
- 8. Public speaking skills

## Part-B: Interview Skills

- 1. Types of Interview
- 2. Appearing for an Interview
- 3. Conducting an Interview
- 4. Body Language & Dress Code
- 5. Group Discussion

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#### Unit III

#### **Composition:**

- 1. Report Writing
- 2. E-mail Writing (Address, Subject, Content, Complementary Closed)
- 3. Meeting Skills (Writing Agenda and Minutes of Meeting)
- 4. Job application along with Resume/ Curriculum Vitae
- 5. Business Letters/ Official Letters/Memorandum Writing

#### Testing

#### Unit-I

- 1. The examiner shall set one long answer type question with internal choice from Part-A of Unit-I of the syllabus. 10 marks
- 2. The examiner shall set one long answer type question with internal choice from Part -B of unit-I of the syllabus. 10 marks

#### Unit-II

- 3. The examiner shall set one question pertaining to report writing with internal choice. 10 marks
- 4. The examiner shall set one question pertaining to email writing with internal choice. 10 marks
- 5. The examiner shall set one question about the Meeting Skills. An internal choice will be given between Agenda and Minutes of Meeting. 10 marks
- 6. The examiner shall set one question with an internal choice pertaining to job application & Resume/CV Writing. The candidate is required to write a job application along with resume/C.V.

5+5=10 marks

7. The examiner shall one question relating to letter and memorandum writing. There shall be internal choice between business/official letters and Memorandum Writing. 10 marks

#### **Course learning outcome:**

- 1. Communication skills of students will improve.
- 2. The students will distinguish among various levels of organizational communication.
- 3. Students will develop an ability for effective business correspondence with brevity and clarity.

#### Suggested Readings:

Business Communication by MK Sehgal, Vandana Khetarpal.

Bovee and Thill. Business Communication Today, Pearson Education.

Brian R Hollaway. *Technical Writing Basis: A Guide to Style and Form*. 4th Pearson -Prentice Hall.

Kaur, Gurpreet. *Communication Skills and Technical Writings*. New Academic Publishing Co. 2014.

Kumar, Varinder and Bodhraj. Business Communication. 2014.

Dr.Gurpreet Kaur

Dr. Ajay Verma

Dr. Swaraj Raj

## BSCHAI – 123(iv): Economics of Intellectual Property Rights

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 6 (5L+1T) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 6H per week

#### Instructions for the Paper Setter

The question paper will consist of three sections: A, B & C. Sections A & B will have four questions each from the respective sections of the syllabus carrying 10.5 marks for each question. Section C will have 5-10 short-answer type questions carrying at total of 28 marks, which will cover the entire syllabus uniformly.

#### **Instructions for the Candidates**

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

#### Section A

Meaning of property, Is IP a property, Justifications for protection of IP, Major forms of IP, Copyright, Patent, Trade Marks, Designs, Geographic indication, Semi conductors, Plant varieties, Major international documents relating to the protection of IP: Berne Convention, Paris Convention, TRIPS

Meaning and historical development of copyright, Subject matter : Original literary, dramatic, musical, artistic works, Cinematograph films, Sound recordings, Ownership of copyright, Term of copyright, Rights of owner:. Economic Rights, Moral Rights, Assignment and licence of rights, Performers rights, Infringement of copyright, Exceptions of infringement, Remedies, Registration

#### Section B

Patents, Criteria for obtaining patents, Procedure for registration, Term of patent, Rights of patentee,. Compulsory licence, Revocation,. Government use of patent, Infringement of patents, Exceptions to infringement, Remedies, Patent office and Appellate Board

Trade Marks Meaning and historical development, Functions of marks, Concept of distinctiveness, Absolute grounds of refusal, Relative grounds for registration, Doctrine of honest concurrent user, Procedure for registration, Term of mark, Rights of holder, Assignment and licensing of marks, Infringement, Trade Marks Registry and Appellate Board

#### **References:**

- 1. P. Narayanan, Intellectual Property Law, Eastern Law House
- 2. B.L. Wadehra, Law relating to Intellectual Property, Universal Law Publishing Co.

# B.Sc.(Hons.) in Artificial Intelligence & Data Science, Part- I(Sem-1 & 2) Sessions 2021-22, 2022-23 and 2023-24 BSCHAI – 124: Software Lab-II (Based on BSCHAI-121)

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 2 (2P) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

This course will mainly comprise of exercises on the basis of the following theory paper BSCHAI-121: Object Oriented Programming Concepts using C++

\*The splitting of marks is as under:

Maximum Marks for Continuous Assessment: 30 Maximum Marks for University Examination: 70

# B.Sc.(Hons.) in Artificial Intelligence & Data Science, Part- I(Sem-1 & 2) Sessions 2021-22, 2022-23 and 2023-24 BSCHAI – 125: Software Lab-III (Based on BSCHAI-122)

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 2 (2P) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

This course will mainly comprise of exercises on the basis of the following theory paper BSCHAI-122: Data Structures.

\*The splitting of marks is as under:

Maximum Marks for Continuous Assessment: 30 Maximum Marks for University Examination: 70 B.Sc.(Hons.) in Artificial Intelligence & Data Science, Part- I(Sem-1 & 2) Sessions 2021-22, 2022-23 and 2023-24 BSCHAI – 126 (SAE-1.2): Environmental and Road Safety Awareness

Maximum Marks: 100 External Examination: 70 Internal Assessment: 30 Credits: 4 (4L) Time Allowed: 3 Hours Pass Percentage: 35% Teaching Hours: 4H per week

#### **INSTRUCTIONS FOR THE PAPER SETTERS**

The question paper will consist of three sections A, B and C. Each of sections A and B will have four questions from the respective sections of the syllabus. Each question shall carry 7 marks. Section C will consist of 7 short answer type questions of 1 mark each.

#### **INSTRUCTIONS FOR THE CANDIDATES**

Candidates are required to attempt any two questions from each section A and B. Section C is compulsory.

#### **SECTION-A**

**INTRODUCTION TO ENVIRONMENTAL STUDIES:** The multidisciplinary nature of environmental studies. Definition, scope and importance, Concept of Biosphere – Lithosphere, Hydrosphere, Atmosphere.

#### **ECOSYSTEM & BIODIVERSITY CONSERVATION**

Ecosystem and its components, Types of Ecosystems

Biodiversity - Definition and Value, Threats to biodiversity and its conservation

Level of biological diversity: genetic, species and ecosystem diversity; bio-geographic zones of India; biodiversity patterns and global biodiversity hot spots.

India as Mega-biodiversity nation; Endangered and endemic species of India.

Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational value.

#### NATURAL RESOURCES-RENEWABLE AND NON-RENEWABLE RESOURCES

Land resources and land use change; land degradation, soil erosion and desertification.

Deforestation: causes and impacts due to mining, dam building on environment, Forests, Biodiversity and tribal populations.

Water: Use and over-exploitation of surface and ground water, Floods, droughts, conflicts over water (international & inter-state)

Energy resources: renewable and nonrenewable energy sources, use of alternate energy sources, growing energy needs, case studies.

#### **SECTION-B**

#### **ENVIRONMENTAL POLLUTION**

Environmental Pollution: types, causes, effects and controls; Air, water, soil, chemical and noise pollution, Nuclear hazards and human health risks, Solid waste management: Control measures of urban and industrial waste, Pollution case studies.

# ENVIRONMENTAL POLICIES AND PRACTICES

Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture.

Environment Laws : Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act; International agreements; Montreal and Kyoto protocols and conservation on Biological Diversity (CBD). The Chemical Weapons Convention (CWC), Nature reserves, tribal population and rights, and human, wildlife conflicts in Indian context.

**Human Communities and the Environment:** Human population growth: Impacts on environment, human health and welfare, Sanitation & Hygiene. Resettlement and rehabilitation of project affected persons; case studies. Disaster management: floods, earthquake, cyclones and landslides. Environment movements: Chipko, Silent valley, Bishnois of Rajasthan. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation for a Clean-green pollution free state.

Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi)

# **Suggested Readings:**

1. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.

2. Gadgil, M., & Guha, R.1993. This *Fissured Land:* An Ecological History of India. Univ. of California Press.

3. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.

4. Gleick, P.H. 1993. Water in *Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.

5. Groom, Martha J. Gary K. Meffe, and Carl Ronald carroll. *Principles of Conservation Biology.* 

Sunderland: Sinauer Associates, 2006.

6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36-37.

7. McCully, P.1996. *Rivers no more: the environmental effects of dams*(pp. 29-64). Zed Books.

8. McNeil, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.

9. Odum, E.P., Odum, h.T. & Andrews, J.1971. Fundamentals of Ecology.

Philadelphia: Saunders.

10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.

11.Rao, M.N. & Datta, A.K. 1987. Waste Water Treatement.OxfordandIBH Publishing Co. Pvt. Ltd.

12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.

13. Rosencranz, A., Divan, S., & Noble, M.L. 2001. *Environmental law and policy in India*. Tripathi 1992.

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14. Sengupta, R. 2003. *Ecology and economics:* An approach to sustainable development. OUP.

15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.

16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.

17. Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent.

18. Warren, C.E. 1971. *Biology and Water Pollution Control.* WB Saunders.

19. Wilson, E.O. 2006. *The Creation: An appeal to save life on earth.* New York: Norton.

20. World Commission on environment and Development. 1987. Our

Common Future. Oxford University Press.

21. <u>www.nacwc.nic.in</u>

22. <u>www.opcw.org</u>

B.Sc.(Hons.) in Artificial Intelligence & Data Science, Part- I(Sem-1 & 2) Sessions 2021-22, 2022-23 and 2023-24 ਬੀ.ਐਸ.ਸੀ.ਆਨਰਜ਼ ਆਰਟੀਫੀਸ਼ੀਅਲ ਇੰਟੈਲੀਜੈਂਸ ਐਂਡ ਡਾਟਾ ਸਾਇੰਸ ਭਾਗ ਪਹਿਲਾ,ਸਮੈਸਟਰ ਦੂਜਾ ਸੈਸ਼ਨ :2021-22, ਪੇਪਰ ਕੋਡ:BSP-201A ਵਿਸ਼ਾ: ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ

ਕੁੱਲ ਅੰਕ :100 ਬਾਹਰੀ ਪਰੀਖਿਆ:70 ਅੰਕ ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ :30 ਅੰਕ ਕ੍ਰੈਡਿਟ–04 ਸਮਾਂ:3 ਘੰਟੇ ਪਾਸ ਅੰਕ: 35% ਕੁੱਲ ਲੈਕਚਰ:60

#### ਪਾਠਕ੍ਰਮ ਅਤੇ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੀ ਰੂਪ-ਰੇਖਾ ਭਾਗ-ੳ

ੳ -ਜੀਵਨ-ਵਿਹਾਰ (ਵਾਰਤਕ-ਸੰਗ੍ਰਹਿ),ਮੁੱਖ ਸੰਪਾ.ਡਾ.ਜਸਵੀਰ ਸਿੰਘ,ਸੰਪਾ.ਡਾ.ਅਵਤਾਰ ਸਿੰਘ ,

ਡਾ.ਗੁਰਪ੍ਰੀਤ ਕੌਰ,ਪ੍ਰੋ.ਸੁਖਵਿੰਦਰ ਸਿੰਘ,ਸ੍ਰੀ ਗੁਰੂ ਤੇਗ਼ ਬਹਾਦਰ ਖ਼ਾਲਸਾ ਕਾਲਜ,ਸ੍ਰੀ ਅਨੰਦਪੁਰ ਸਾਹਿਬ ਪਬਲੀਕੇਸ਼ਨ ਬਿਉਰੋ

ਭਾਗ–ਅ

ਅ-1: ਦਫ਼ਤਰੀ ਚਿੱਠੀ- ਪੱਤਰ

ਅ-2: ਵਿਆਕਰਨ

- (i) ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ
- (ii) ਭਾਸ਼ਾ ਅਤੇ ਉਪਭਾਸ਼ਾ ਦਾ ਅੰਤਰ
- (iii) ਪੂਰਬੀ ਪੰਜਾਬ ਦੀਆਂ ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ- ਚਿੰਨ੍ਹ
- (iv) ਸ਼ਬਦ :ਪਰਿਭਾਸ਼ਾ,ਬਣਤਰ ਅਤੇ ਕਾਰਜ

#### ਭਾਗ–ੲ

ਜੀਵਨ-ਵਿਹਾਰ ਅਤੇ ਵਿਆਕਰਨ ਵਿਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ 15 ਲਾਜ਼ਮੀ ਪ੍ਰਸ਼ਨ

# ਪੇਪਰ ਸੈਟਰ ਅਤੇ ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਹਦਾਇਤਾਂ

1.ਭਾਗ-ੳ: ਵਿਚੋਂ ਨਿਬੰਧ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਜਾਂ ਸਾਰ (ਤਿੰਨ ਵਿਚੋਂ ਇੱਕ)10 ਅੰਕ 2.ਭਾਗ-ੳ: ਵਿਚੋਂ ਪੁਸਤਕ ਵਿਚਲੇ ਵਿਚਾਰਾਂ ਸੰਬੰਧੀ ਪ੍ਰਸ਼ਨ (ਪੰਜ ਵਿਚੋਂ ਤਿੰਨ) 4+4+4=12 ਅੰਕ 3.ਭਾਗ-ਅ:1 ਵਿਚੋਂ ਚਿੱਠੀ-ਪੱਤਰ (ਤਿੰਨ ਵਿਚੋਂ ਇੱਕ) 08 ਅੰਕ 4.ਭਾਗ-ਅ:2 ਵਿਚੋਂ ਵਿਆਕਰਨ ਨਾਲ ਸੰਬੰਧਿਤ ਵਰਣਾਤਮਕ ਪ੍ਰਸ਼ਨ (ਦੋ ਵਿਚੋਂ ਇੱਕ) 10 ਅੰਕ 5. ਭਾਗ-ੲ ਵਿਚ ਜੀਵਨ-ਵਿਹਾਰ ਅਤੇ ਵਿਆਕਰਨ ਵਿੱਚੋਂ ਕੁੱਲ 15(8+7) ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਲਾਜ਼ਮੀ ਪ੍ਰਸ਼ਨ।ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਜ਼ਰੂਰੀ ਹਨ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ 2 ਅੰਕਾਂ ਦਾ ਹੋਵੇਗਾ। 15X2=30ਅੰਕ

# ਪਾਠਕ੍ਰਮ ਦਾ ਉਦੇਸ਼:

1.ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਾਹਿਤ ਪੜ੍ਹਨ ਲਈ ਪ੍ਰੇਰਿਤ ਕਰਨਾ।

2.ਮਾਤ ਭਾਸ਼ਾ ਵਿੱਚ ਉਚੇਰੀ ਸਿੱਖਿਆ ਗ੍ਰਹਿਣ ਕਰਨ ਦੀ ਜਾਗ ਲਾਉਣਾ।

3.ਵਿਆਕਰਨਕ ਪੱਖਾਂ ਨਾਲ ਰਾਬਤਾ ਕਾਇਮ ਕਰਵਾਉਣਾ।

4.ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਚਿੱਠੀ-ਪੱਤਰ ਲਿਖਣਾ ਸਿਖਾਉਣਾ।

# ਪਾਠਕ੍ਰਮ ਨਤੀਜੇ:

1. ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਨਿਬੰਧਾਂ ਨਾਲ ਸੰਬੰਧਿਤ ਪਰਤਾਂ ਨੂੰ ਉਜਾਗਰ ਕਰਨ ਦਾ ਹੁਨਰ ਪੈਦਾ ਹੋਵੇਗਾ।

2. ਵਿਦਿਆਰਥੀ ਵਿਆਕਰਨਕ ਨੇਮ-ਵਿਧਾਨ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

# ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1.ਬਲਵੀਰ ਸਿੰਘ ਦਿਲ, ਪੰਜਾਬੀ ਨਿਬੰਧ :ਸਰੂਪ, ਸਿਧਾਂਤ ਅਤੇ ਵਿਕਾਸ,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ,ਯੁਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ।

2.ਖੋਜ ਪੱਤ੍ਰਿਕਾ, ਨਿਬੰਧ ਅੰਕ-29,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ,ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ

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3. ਬੂਟਾ ਸਿੰਘ ਬਰਾੜ,ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਸ਼੍ਰੋਤ ਤੇ ਸਰੂਪ,ਵਾਰਿਸ਼ ਸ਼ਾਹ ਫਾਂਊਡੇਸ਼ਨ ਅੰਮ੍ਰਿਤਸਰ,2012

4. ਬਲਦੇਵ ਸਿੰਘ ਚੀਮਾ, ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਤੇ ਭਾਸ਼ਾ ਵਿਗਿਆਨ,ਤਕਨੀਕੀ ਸ਼ਬਦਾਵਲੀ ਦਾ ਵਿਸ਼ਾ ਕੋਸ਼,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ,2009

5.ਡਾ.ਜੋਗਿੰਦਰ ਸਿੰਘ ਪੁਆਰ ਅਤੇ ਹੋਰ,ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਵਿਆਕਰਨਕ ਭਾਗ I,ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਦਮੀ,ਜਲੰਧਰ,1991

6.ਗਿਆਨੀ ਲਾਲ ਸਿੰਘ ਤੇ ਹਰਕੀਰਤ ਸਿੰਘ ,ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਣ ,ਪੰਜਾਬ ਸਟੇਟ ਯੂਨੀ.ਟੈਕਸਟ ਬੁੱਕ ਬੋਰਡ,ਚੰਡੀਗੜ੍ਹ

7.ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ,ਸਾਹਿਤਆਰਥ,ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ,ਲੁਧਿਆਣਾ

B.Sc.(Hons.) in Artificial Intelligence & Data Science, Part- I(Sem-1 & 2) Sessions 2021-22, 2022-23 and 2023-24 ਬੀ.ਐਸ.ਸੀ.ਆਨਰਜ਼ ਆਰਟੀਫੀਸ਼ੀਅਲ ਇੰਟੈਲੀਜੈਂਸ ਐਂਡ ਡਾਟਾ ਸਾਇੰਸ ਭਾਗ ਪਹਿਲਾ,ਸਮੈਸਟਰ ਦੂਜਾ ਸੈਸ਼ਨ :2021-22 ,ਪੇਪਰ ਕੋਡ:BSP-201B ਵਿਸ਼ਾ: ਪੰਜਾਬੀ ਮੁੱਢਲਾ ਗਿਆਨ

ਕੁੱਲ ਅੰਕ :100 ਬਾਹਰੀ ਪਰੀਖਿਆ:70 ਅੰਕ ਅੰਦਰੂਨੀ ਮੁਲਾਂਕਣ :30 ਅੰਕ ਕ੍ਰੈਡਿਟ–04 ਸਮਾਂ:3 ਘੰਟੇ ਪਾਸ ਅੰਕ: 35% ਕੁੱਲ ਲੈਕਚਰ:60

#### ਪਾਠਕ੍ਰਮ ਅਤੇ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੀ ਰੂਪ-ਰੇਖਾ ਭਾਗ-ੳ

ੳ -1.ਵਿਰੋਧੀ ਸ਼ਬਦ,ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ

2.ਲਿੰਗ,ਵਚਨ,ਕਾਲ ਅਤੇ ਪੁਰਖ

3.ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ(ਨਾਂਵ,ਪੜਨਾਂਵ ਅਤੇ ਕਿਰਿਆ):ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਉਦਾਹਰਣਾਂ

4.ਵਿਸ਼ਰਾਮ ਚਿੰਨ੍ਹਾਂ ਦੀ ਵਰਤੋਂ

## ਭਾਗ–ਅ

ਅ -1.ਲੇਖ ਰਚਨਾ(200 ਸ਼ਬਦਾਂ ਵਿੱਚ):ਮੇਰਾ ਅਧਿਆਪਕ,ਮੇਰਾ ਕਾਲਜ ਅਤੇ ਦੀਵਾਲੀ
 2. ਚਿੱਠੀ ਪੱਤਰ:ਫ਼ੀਸ ਮੁਆਫ਼ੀ ਅਤੇ ਬਿਮਾਰੀ ਕਾਰਨ ਛੁੱਟੀ ਲੈਣ ਸੰਬੰਧੀ
 3.ਦੇਸੀ ਅਤੇ ਅੰਗਰੇਜ਼ੀ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ
 4. ਇੱਕ ਤੋਂ ਸੌ ਤੱਕ ਗਿਣਤੀ

ਭਾਗ–ੲ

ਭਾਗ ੳ ਅਤੇ ਅ ਵਿਚੋਂ 10 ਅਬਜੈਕਟਿਵ ਪ੍ਰਸ਼ਨ

ਨੋਟ:ਵਿਦਿਆਰਥੀ ਗੁਰਮੁਖੀ ਸਿੱਖ ਰਹੇ ਹਨ।ਇਸ ਲਈ ਵਿਦਿਆਰਥੀਆਂ ਦੇ ਪੱਧਰ ਨੂੰ ਧਿਆਨ ਵਿੱਚ ਰੱਖਦੇ ਹੋਏ ਸਰਲ ਅਤੇ ਸਪੱਸ਼ਟ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ।

# ਪੇਪਰ ਸੈਟਰ ਅਤੇ ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਹਦਾਇਤਾਂ:

1.ਭਾਗ-ੳ: ਵਿਚੋਂ ਪ੍ਰਸ਼ਨ (ਦੋ ਵਿਚੋਂ ਇੱਕ)10 ਅੰਕ 2.ਭਾਗ-ੳ ਵਿਚੋਂ ਪ੍ਰਸ਼ਨ (ਛੇ ਵਿਚੋਂ ਤਿੰਨ) 5+5+5=15 ਅੰਕ 3.ਭਾਗ-ਅ ਵਿਚੋਂ ਪ੍ਰਸ਼ਨ (ਦੋ ਵਿਚੋਂ ਇੱਕ)10 ਅੰਕ 4.ਭਾਗ-ਅ ਵਿਚੋਂ ਪ੍ਰਸ਼ਨ (ਛੇ ਵਿਚੋਂ ਤਿੰਨ) 5+5+5=15 ਅੰਕ 5.ਭਾਗ-ੲ ਵਿਚ ਭਾਗ ੳ ਅਤੇ ਭਾਗ ਅ ਵਿਚੋ ਕੁੱਲ 10 ਅਬਜੈਕਟਿਵ ਪ੍ਰਸ਼ਨ। ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ । ਹਰੇਕ ਪ੍ਰਸ਼ਨ 2 ਅੰਕਾਂ ਦਾ ਹੋਵੇਗਾ । (10X2=20 ਅੰਕ)

# ਪਾਠਕ੍ਰਮ ਦਾ ਉਦੇਸ਼:

1.ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਲੇਖ ਲਿਖਣਾ ਅਤੇ ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣਾ ਸਿਖਾਉਣਾ। 2.ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸ਼ੁੱਧ ਪੰਜਾਬੀ ਬੋਲਣਾ,ਪੜ੍ਹਨਾ ਅਤੇ ਲਿਖਣਾ ਸਿਖਾਉਣਾ।

# ਪਾਠਕ੍ਰਮ ਨਤੀਜੇ:

ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਸ਼ੁੱਧ ਸੰਚਾਰ ਕਰਨ ਦੇ ਯੋਗ ਹੋਣਗੇ।
 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਿਆਕਰਨਕ ਨੇਮਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

# ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1.ਸਤਿਨਾਮ ਸਿੰਘ ਸੰਧੂ,ਆਓ ਪੰਜਾਬੀ ਸਿੱਖੀਏ,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ,ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ,2009 2. ਸਤਿਨਾਮ ਸਿੰਘ ਸੰਧੂ,ਗੁਰਮੁਖੀ ਸਿੱਖੋ,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ,ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ,2011

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3.ਸੀਤਾ ਰਾਮ ਬਾਹਰੀ, ਪੰਜਾਬੀ ਸਿੱਖੀਏ,ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ,ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ,2002

4.ਪੰਜਾਬੀ ਗਿਆਨ ਸੀ.ਡੀ.(ਕੰਪਿਊਟਰ ਐਪਲੀਕੇਸ਼ਨ ਟੂ-ਲਰਨ ਐਂਡ ਟੀਚ ਪੰਜਾਬੀ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ

5. ਚਰਨ ਪੁਆਧੀ,ਆਓ ਪੰਜਾਬੀ ਸਿੱਖੀਏ,ਸੰਗਮ ਪਬਲੀਕੇਸ਼ਨ,ਪਟਿਆਲਾ

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