RRDS GOVT DEGREE COLLEGE

ATTAINMENT OF PROGRAM OUTCOMES-B.SC BZC (2021-22 ADMITTED BATCH)

SEMESTER I ATTAINMENTS

COURSE	SEM	CREDITS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
ENGLISH	1	4	63.83	63.73	63.83			64.3			63.83			
TELUGU	1	4	68.06	68.06	68.06	67.84	68.1	68.1	67.99	67.87	68.06			
BOTANY-I	1	4+1	65.9	65.9	65.9						65.9	65.9		
ZOOLOGY-I	1	4+1	67.92	67.92	67.92						67.92	67.92		
CHEMISTRY-I	1	4+1	60.45	60.54	60.58		60.7	60.8					60.62	60.62
SEMESTER I ATTAINMENTS	1	23	65.2	65.2	65.3	67.8	64.4	64.4	68	67.9	66.4	66.9	60.6	60.6

REMARKS:

The above statistics shows that the course wise attainment of Program outcomes is above the targeted level (60%) for all courses.

Congratulations to all the faculty members and try to improve it further.

P. A. Jyothi

SIGNATURE OF THE IQAC COORDINATOR

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R.R.D.S.Govt. Degree College
BHIMAVARAM-534 202

SIGNATURE OF THE PRINCIPAL

RRDS GOVT DEGREE COLLEGE

ATTAINMENT OF PROGRAM OUTCOMES-BSC BZC (2021-22 ADMITTED BATCH)

SEMESTER II ATTAINMENTS

COURSE	SEM	CREDITS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
ENGLISH	2	4	59.38	59.37	59.29		59.06	59.06	59.26		59.29			
TELUGU	2	4	77.96	77.96	77.96	77.93	77.97	77.96	77.97	77.96	77.96			
BOTANY-I	2	4+1	68	68	68						68	68		
ZOOLOGY-I	2	4+1	66.33	66.33	66.33						66.33	66.33		
CHEMISTRY-I	2	4+1	65.28	65.82	65.55		65.66	65.66					65.61	65.68
SEMESTER II ATTAINMENTS	2	23	67.39	67.496	67.426	77.93	67.56	67.56	68.615	77.96	67.895	67.165	65.61	65.68

REMARKS:

The above statistics shows that the Course cose attainment of program outcomes is above the targeted level (60%) for all Courses except English.

Please try to improve it.

P. A. Swamy

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PROGRAM OUTCOMES- BSC(BZC) 2021-22

TOTAL PROGRAM ATTAINMENTS FOR I & II SEMESTER

SEMESTER	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
I	65.2	65.2	65.3	67.8	64.4	64.4	68	67.9	66.43	66.91	60.62	60.62
II	67.4	67.5	67.4	77.9	67.6	67.6	68.6	78	67.9	67.17	65.61	65.68
TOTAL ATTAINMENT	66.3	66.4	66.3	72.9	66	66	68.3	72.9	67.16	67.04	63.12	63.15

REMARKS:

overall picture of the attainment of program outcomes of B.Sc (BZC) revealed that PO's attainment is above the targeted level (60%) for all POs and PSOs.
Congratulations to all the faculty members. and try to enhance the attainment level further.

P. A. [signature]

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PROGRAM OUTCOMES

BSC BZC

2021-2022 ADMITTED BATCH

DEPARTMENT OF ENGLISH

PROGRAM: BZC	**YEAR: 1**	**SEMESTER: 1**
COURSE: ENGLISH	**CREDITS: 3**	**HOURS: 4**

ENGLISH PAPER I - A Course In Communication And Soft Skills

COURSE OBJECTIVES

CO1 To use grammar effectively in writing and speaking

CO2 To use soft skills in practical situations

CO3 To be able to use communication skills confidently.

COURSE CONTENTS

CONTENT	CO	HOURS
UNIT I: Listening Skills i.Importance of Listening ii.Types of Listening iii.Barriers to Listening iv. Effective Listening.	2, 3	10
UNIT II: Speaking Skills a. Sounds of English: Vowels and Consonants b. Word Accent c. Intonation	3	10
UNIT III: Grammar a) Concord b) Modals c) Tenses (Present/Past/Future) d) Articles e) Prepositions f) Question Tags g) Sentence Transformation (Voice, Reported Speech & Degrees of Comparison) h) Error Correction	1, 2, 3	20
UNIT IV: Writing : v.Punctuation vi.Spelling vii.Paragraph Writing	1	10

UNIT V: Soft Skills a. SWOC b. Attitude c. Emotional Intelligence d. Telephone Etiquette e. Interpersonal Skills	**2, 3**	**10**

ASSESSMENT/EVALUATION METHODS

ASSESSMENT TOOL	**WEIGHTAGE (Marks)**
MID I (20 Marks)	TOTAL 50 Marks SCALE DOWN TO 25 Marks
MID II (15 Marks)	
ASSIGNMENTS (5 Marks)	
CLASSROOM ACTIVITIES (5 Marks)	
CLEAN & GREEN ACTIVITIES (5 Marks)	
FINAL EXAMINATION	75 Marks
TOTAL	**100**

MID I Questions

Question	**Course Objective**	**Bloom's Taxonomy Level**
What do you know about interpersonal skills?	**1,2**	**Remembering and Understanding**
What is a positive attitude?	**1,2**	**Remembering and Understanding**

How can you improve your positive attitude?	1,2	Remembering and Understanding
What is the difference between hearing and listening?	1,2	Remembering and Understanding
What is passive listening?	1,2	Remembering and Understanding
Write any two barriers to effective listening.	1,2	Remembering and Understanding
Explain any two strategies for effective listening..	1,2	Remembering and Understanding
Write the names of types of listening (only names).	1,2	Remembering and Understanding
What is the stress shift?	3	Remembering and Understanding
What is SWOC analysis?	2	Applying and evaluating
Spell the following.	1	Remembering and applying

MID II Questions

Question	Course Objective	Bloom's Taxonomy Level
Fill in the blanks with the correct form of the verb	1	Remembering and applying

Add question tags.	1	Remembering and applying
Fill in the blanks with the appropriate prepositions	1	Remembering and applying

Assignments

S. No.	Topic	Bloom's Taxonomy Level
1	What is a positive attitude?	Understanding
2	What is the difference between hearing and listening?	Understanding and applying
3	What is swoc analysis?	Remembering and analyzing
4	Write any two barriers to effective listening.	Remembering Understanding
5	Add question tags.	Understanding and applying
6	Fill in the blanks with the appropriate prepositions	Understanding and applying

Classroom Activities

S. No.	Activity and Topic	Bloom's Taxonomy Level
1	Teach back session	Understanding and Analyzing

2	Student Seminar on 'Importance of listening'	Understanding and Analyzing
3	Group discussion on 'SWOC Analysis'	Analyzing and Evaluating
4	Google Quiz on 'Articles'	Understanding and Applying
5	Google Quiz on 'Prepositions'	Understanding and Applying,
7	Group Discussion on 'English as a Global Language	Thinking and analyzing skills

Mapping of Course Outcomes with program and Program Specific Outcomes (CO, PO & PSO Matrix)

CO/PO/PSO	PO 1	PO 2	PO 3	PO 6	PSO1
CO 1	3	3	3	3	1
CO 2	3	3	3	3	3
CO 3	3	3	3	3	3

CO Attainments (Direct and Indirect)

CO	Direct	Indirect	Total CO Attainment
CO 1	61.81	82.00	63.83
CO 2	61.81	81.00	63.73
CO 3	62.13	84.00	64.31

PO and PSO Attainment (Direct and Indirect)

	PO 1	PO 2	PO 3	PO 6	PSO 1
	3	3	3	3	3
CO 1	63.83	63.83	63.83	63.83	63.83
CO 2	63.83	63.83	63.83	63.83	63.73
CO 3	63.73	63.73	63.73	63.73	64.31

CO's attainment is good, try to improve it further.

PROGRAMME CO-ORDINAT

DEPARTMENT OF TELUGU

PROGRAM: B.SC BZC	**YEAR: I**	**SEMESTER: 1**
COURSE: CORE	**CREDITS: 4**	**HOURS: 4**

కోర్సు -1 : PAPER-1 Pracheena Telugu Kavitvam (ప్రాచీన తెలుగు కవిత్వం)

COURSE OBJECTIVES

CO 1. ప్రాచీన తెలుగుసాహిత్యం యొక్క ప్రాచీనతను , విశిష్టతను గుర్తిస్తారు . తెలుగు సాహిత్యంలో ఆదికవి నన్నయ కాలంనాటి భాషాసంస్కృతులను , ఇతిహాసకాలం నాటి రాజనీతి విషయాలపట్ల పరిజ్ఞానాన్ని సంపాదించగలరు.

CO 2. శివకవుల కాలంనాటి మతపరిస్థితులను , భాషావిశేషాలను గ్రహిస్తారు . తెలుగు నుడికారం , సామెతలు , లోకోక్తులు మొదలైన భాషాంశాల పట్ల పరిజ్ఞానాన్ని పొందగలరు.

CO 3. తిక్కన భారతంలాంటి మత , ధార్మిక పరిస్థితులను , తిక్కన కవితాశిల్పాన్ని , నాటకీయతను అవగాహన చేసుకోగలరు.

CO 4. ఎఱ్ఱన సూక్తివైచిత్రిని,ఇతిహాస కవిత్వంలోని విభిన్న రీతులపట్ల అభిరుచిని పొందగలరు . శ్రీనాథుని కాలం నాటి కవితావిశేషాలను , మొల్ల కవితా విశిష్టతను గుర్తించగలరు.

CO 5. తెలుగు పద్యం స్వరూప స్వభావాలను , సాహిత్యాభిరుచిని పెంపొందించుకుంటారు. ప్రాచీన కావ్యభాషలోని వ్యాకరణాంశాలను అధ్యయనం చేయడం ద్వారా భాషాసామర్థ్యాన్ని , రచనలో మెళకువలను గ్రహించగలరు.

COURSE CONTENTS

CONTENT	CO	HOURS
యూనిట్-I రాజనీతి- నన్నయమహాభారతం - సభాపర్వం- ప్రథమాశ్వాసం- (26- 57 పద్యాలు)	1,5	12
యూనిట్-II దక్షయజ్ఞం –నన్నెచోడుడు కుమార సంభవం - ద్వితీయ శ్వాసం (49 - 86 పద్యాలు)	2 & 5	15

యూనిట్-III దౌమ్యధర్మోపదేశము - తిక్కన మహాభారతం - విరాటపర్వం - ప్రథమాశ్వాసం(116- 146) పద్యాలు	3 & 5	12
యూనిట్-IV పలనాటిబెబ్బులి - శ్రీ నాథుడు (పలనాటి వీర చరిత్ర - ద్విపద కావ్యం పుట 108- 112'బాలచంద్రుడు భీమంబగు సంగ్రామం బొనర్చుట.(108)....వెరగంది కుంది' (112) సం.అక్కిరాజు ఉమాకాంతం ముద్రణ: వి. కె .స్వామి, బెజవాడ 1911.	4&5	15
యూనిట్ - V సీతారావణసంవాదం-మొల్ల రామాయణము-సుందరకాండము–(40 - 87పద్యాలు)	4 & 5	12

ASSESSMENT/EVALUATION METHODS

ASSESSMENT TOOL	WEIGHTAGE (Marks)
MID I (20 Marks)	TOTAL 50 Marks SCALE DOWN TO 25 Marks
MID II (15 Marks)	
ASSIGNMENTS (5 Marks)	
CLASSROOM ACTIVITIES (5 Marks)	
CLEAN & GREEN ACTIVITIES (5 Marks)	
FINAL EXAMINATION	75 Marks
TOTAL	100

MID I Questions

Question	Course Objective	Bloom's Taxonomy Level

ఈ క్రింది పద్యాలలో ఒక దానికి తప్పనిసరిగా ప్రతిపదార్థ తాత్పర్యాలను వ్యాకరణాంశాలను రాయండి ? బహు ధన ధాన్య సంగ్రహము బాణ శరాసన యోధ వీరసం గ్రహము నిరంత రాంతరుదకంబులు ఘాసర సేంధ నౌఘసం గ్రహము ననేక యంత్రములుఁ గల్గియ సాధ్యములై ద్విషద్భయా వహులగు చుండ నొప్పునె భావత్పరి రక్ష్యములైన దుర్గముల్.	1,2 & 4	Remembering and Understanding
నారదుడు ధర్మరాజుకు చెప్పిన రాజనీతిని సంగ్రహంగా తెలుపండి ?	1,2 & 4	Remembering and Understanding
ధౌమ్యుడు పాండవులకు చేసిన ధర్మోపదేశాన్ని వివరించండి ?	1,2 & 4	Applying and Analyzing
దక్ష యజ్ఞం పాఠ్య భాగ సారాంశాన్ని రాయండి ?	1 & 4	Remembering
ఈ క్రింది వానికి సందర్భ సహిత వ్యాఖ్యలను రాయండి? i). వార్తయందు జగము వర్ధిల్లుచున్నది ii) ఉపదేశం బవశ్య కర్తవ్యంబు	1,2 & 4	Remembering&Analyzing
i)రాజులు చేయకూడని దోషాలను తెలపండి? ii) ధౌమ్యుడు పాండవులకు ధర్మోపదేశం ఎందుకు చేశాడు?	1,2 & 4	Remembering&Analyzing
ఈ క్రింది ఇవ్వబడిన వానికి విడదీసి సంధి కార్యములు వ్రాయుము? 1 దేహోత్తములు2. అభ్యంతరము 3. విశ్వదాభిరామ4. ఇట్లనిరి		

ఈ క్రింది వానికి విగ్రహవాక్యములు వ్రాసి, వాటి సమాసముల పేరును తెలియజేయుము ? 1.రాజుపుత్రులు2.ధనదాన్యములు3. గుణహీనుడు4. ప్రసన్నచిత్తులు	1,2 & 4	Remembering&Analyzing

MID II Questions

Question	Course Objective	Bloom's Taxonomy Level
1.పలనాటి బెబ్బులి కథాంశమును వ్రాయండి?	1 & 4	Remembering and Understanding
2.పలనాటి యుద్ధంలో బాలచంద్రునియుద్ధ కౌశలాన్ని వివరించండి?	1 & 4	Remembering and Understanding
3.సీతా రావణ సంవాదాన్ని సంగ్రహంగా రాయండి?	1 & 4	Remembering and Understanding
పారిపోతున్న తన సైన్యమునకు, నరసింహారాజు,చెప్పిన ధైర్య వచనములు ఏవి?	1&4	Remembering and Understanding
బాల చంద్రుని చూసి నలగామరాజు సైన్యం భయపడిన విధమెట్టిది?	1 & 2	Remembering and Understanding
తనను నిందించిన సీతను రావణుడు బెదిరించిన విధమెట్టిది?	1 & 2	Remembering and Understanding
త్రిజట తన స్వప్నాన్ని గురించి తోటి కావలికత్తెలతో ఏమని చెప్పింది?	2	Remembering and Applying
సందర్భం-దాల సేపీగతి సమరం బొనర్చె?	1	Remembering
సందర్భం-రాముడే రీతి లంకకు రాగలండు ?	1	Remembering and Applying

సందర్భం-సిద్ధం బీమాట వేద సిద్ధాంతముగన్	1	Remembering
పలనాటి బెబ్బులి పాఠ్యభాగ రచయిత ఎవరు ?	1	Remembering
శ్రీనాథుని బిరుదు ఏది ?	1	Applying
నాగమ్మ ఎవరి మంత్రి ?	1	Understanding
బ్రహ్మనాయునికొడుకుపేరేమి?	1	Understanding
కొదమ సింహము ఏ సమాసం ?	1	Remembering
సమరోర్వి- విడదీయండి ?	1	Understanding
దశరథునికి ఎంతమంది భార్యలు?	1	Remembering
మాయలేడి రూపంలో ఉన్న రాక్షసుని పేరేమిటి?	1	Applying
రావణుని సోదరి పేరేమిటి ? 'శాంతవచనములు' ఏ సమాసం?	1	Understanding

Assignments

S. No.	Topic	Bloom's Taxonomy Level
1	బహు ధన ధాన్య సంగ్రహము బాణ శరాసన యోధ వీరసం గ్రహము నిరంత రాంతరుదకంబులు ఘాసర సేంధ నౌఘసం గ్రహము ననేక యంత్రములుఁ గల్గియ సాధ్యములై ద్విషద్భయా వహులగు చుండ నొప్పునె భావత్పరి రక్ష్యములైన దుర్గముల్.	Understanding&Remembering

2	రాజులు చేయకూడని దోషాలను తెలపండి? ధౌమ్యుడుపాండవులకు ధర్మోపదేశం ఎందుకు చేశాడు? రాజనీతి పాఠ్య భాగ సారాంశం రాయండి?	Understanding and applying
3	దక్షయజ్ఞం పాఠ్య భాగ సారాంశాన్ని వివరించండి ?	Remembering and applying
4	సంధులు సమాసాలు అలంకారాలు చంధస్సు	Understanding
5	ఎండకు వాన కోర్చితనయిల్లుప్రవసపుఁజోటు నాక యా కొండునలంగుదున్నిదురకుందఱిదప్పెడుడప్పి వుట్టె నొ క్కండనయెట్లొకోయనక కార్యము ముట్టినచోటనేలినా తం డొకచాయ చూపినను దత్పరతం బని సేయుటొప్పగున్.	Understanding and applying
6	ధౌమ్యుడు పాండవులకు చేసిన ధర్మోపదేశాన్ని వివరించండి ?	Remembering, understanding and evaluation
7	పలనాటి బెబ్బులి కథాంశాన్ని రాయండి?	Understanding and applying
8	బాలచంద్రుని పరాక్రమం వర్ణించండి?పారిపోతున్న సైన్యానికి నరసింహ భూపతి చెప్పిన ధైర్య వచనాలేవి?	Understanding
9	సీతారావణ సంవాద పాఠ్యభాగ సారాంశాన్ని వివరించండి ?	Understanding and applying
10	మొల్లను పరిచయం చేయండి? మరియు త్రిజట స్వప్న వృత్తాంతాన్ని తెలపండి?	Understanding and applying

Classroom Activities

S. No.	Activity and Topic	Bloom's Taxonomy Level
1	Chart preparation and Teach back session	Understanding and Analysis
2	Debate on ప్రాచీన సాహిత్య అధ్యయనం ఆవసరమా? అనవసరమా?	Applying , Analyzing and Evaluating
3	Clean and Green	Understanding
4	స్టూడెంట్ సెమినార్స్ Students Seminars	Remembering, Understanding and Applying
5	పదాలతో అంత్యాక్షరి Padalato Antyakshari	Understanding, Applying, Analyzing and Evaluating
6	QUIZ	Analyzing and Evaluating
7	Group Discussion	Covering of Lower order and Higher order thinking skills
8.	DEBATE	Covering of Lower order and Higher order thinking skills
9.	DAILOUGE MAKING	Covering of Lower order and Higher order thinking skills
10	WRITING ARTICLES/PAPERS	Covering of Lower order and Higher order thinking skills
11	CREATIVING WRITING	Covering of Lower order and Higher order thinking skills
12	PADABANDALU /WORD PUZZELS	Covering of Lower order and Higher order thinking skills

Mapping of Course Outcomes with program and Program Specific Outcomes (CO, PO & PSO Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1
CO1	3	3	3			3	3	3	3
CO2	3	3	3			3	3	3	3
CO3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3		3			3

CO Attainments (Direct and Indirect)

CO	DIRECT	INDIRECT	Total CO Attainment
CO1	65.49	89.00	67.84
CO2	65.49	90.00	67.94
CO3	65.49	89.00	67.84
CO4	65.49	94.00	68.34
CO5	65.49	95.00	68.44

PO and PSO Attainment (Direct and Indirect)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1
CO1	67.84	67.84	67.84		67.84	67.84	67.84	67.84	67.84
CO2	67.94	67.94	67.94		67.94	67.94	67.94	67.94	67.94
CO3	67.84	67.84	67.84	67.84	67.84	67.84	67.84	67.84	67.84
CO4	68.34	68.34	68.34	67.84	68.34	68.34	68.34	67.84	68.34
CO5	68.34	68.34	68.34	67.84	68.34	68.34	68.34	67.84	68.34
PO Attainment	68.06	68.06	68.06	67.84	68.09	68.06	67.99	67.87	68.06

CO's attainment is good, try to improve it further.

PROGRAMME CO-ORDINATOR

DEPARTMENT OF BOTANY

PROGRAM: BSC **YEAR: I** **SEMESTER: 1**

COURSE: CORE **CREDITS: 4+1** **HOURS: 6**

BOTANY PAPER I - FUNDAMENTALS OF MICROBES AND NON-VASCULAR PLANTS

COURSE OBJECTIVES

CO1: Explain origin of life on the earth, Illustrate diversity among the viruses and prokaryotic organisms and can categorize them. Analyze and ascertain the plant disease symptoms due to viruses, bacteria and fungi.
CO2: Classify fungi, lichens, algae and bryophytes based on their structure, reproduction and life cycles.
CO3: Recall and explain the evolutionary trends among amphibians of plant kingdom for their shift to land habitat.
CO4: Evaluate the ecological and economic value of microbes, thallophytes and bryophytes
CO5: To impart laboratory observation skills and develop scientific attitude, laboratory discipline and interest.

COURSE CONTENTS

CONTENT	CO	HOURS
UNIT I: Origin of life and Viruses: **1. Origin of life, concept of primary Abiogenesis; Miller and Urey experiment. Five kingdom classification of R.H. Whittaker** **2. Discovery of microorganisms, Pasteur experiments, germ theory of diseases.** **3. Shape and symmetry of viruses; structure of TMV and Gemini virus; multiplication of TMV; A brief account of Prions and Viroids.** **4. A general account on symptoms of plant diseases caused by Viruses. Transmission of plant viruses and their control.** **5. Significance of viruses in vaccine production, bio-pesticides and as cloning vectors.**	**1, 4,5**	**12**

UNIT II: Special groups of Bacteria and Eubacteria **1. Brief account of Archaebacteria, Actinomycetes and Cyanobacteria. 2. Cell structure and nutrition of Eubacteria.** **3. Reproduction- Asexual (Binary fission and end oospores) and bacterial recombination (Conjugation, Transformation, Transduction).** **4. Economic importance of Bacteria with reference to their role in Agriculture and industry (fermentation and medicine).** **5. A general account on symptoms of plant diseases caused by Bacteria; Citrus canker.**	**1, 4,5**	**12**
UNIT III: Fungi & Lichens **1. General characteristics of fungi and Ainsworth classification (upto classes).** **2. Structure, reproductionand life history of(a)Rhizopus(Zygomycota)and (b)Puccinia (Basidiomycota).** **3. Economic uses of fungi in food industry, pharmacy and agriculture.** **4. A general account on symptoms of plant diseases caused by Fungi; Blast of Rice.** **5. Lichens- structure and reproduction; ecological and economic importance.**	**2, 4,5**	**12**
UNIT IV: Algae **1. General characteristics of Algae (pigments, flagella and reserve food material);Fritsch classification (upto classes).** **2. Thallus organization and life cycles in Algae.** **3. Occurrence, structure, reproduction and life cycle of (a) Spirogyra (Chlorophyceae) and (b) Polysiphonia(Rhodophyceae).** **4. Economic importance of Algae.**	**2, 4,5**	**12**
UNIT V: Bryophytes **1. General characteristics of Bryophytes; classification upto classes.** **2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life cycle of (a) Marchantia (Hepaticopsida) and (b) Funaria(Bryopsida).** **3. General account on evolution of sporophytes in Bryophyta.**	**2, 3, 4,5**	**12**

PRACTICALS **Knowledge of Microbiology laboratory practices and safety rules. 2. Knowledge of different equipment for Microbiology laboratory (Spirit lamp, Inoculation loop, Hot-air oven, Autoclave/Pressure cooker, Laminar air flow chamber and Incubator) and their working principles. (In case of the non- availability of the laboratory equipment the students can be taken to the local college/clinical lab. with required infrastructural facilities or they can enter a linkage with the college/lab for future developments and it will fetch creditsduring the accreditation by NAAC). 3. Demonstration of Gram's staining technique for Bacteria. 4. Study of Viruses (Corona, Gemini and TMV) using electron micrographs/ models. 5. Study of Archaebacteriaand Actinomycetes using permanent slides/ electron micrographs/diagrams. 6. Study of Anabaena and Oscillatoriausing permanent/temporary slides. 7. Study of different bacteria (Cocci, Bacillus, Vibrio and Spirillum) using permanent or temporary slides/ electron micrographs/ diagrams. 8. Study/ microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/ specimens/ mounts : a. Fungi : Rhizopus,PenicilliumandPuccinia b. Lichens: Crustose, foliose and fruiticose c. Algae :Volvox, Spirogyra, Ectocarpusand Polysiphonia d. Bryophyta : Marchantiaand Funaria 9. Study of specimens of Tobacco mosaic disease, Citrus canker and Blast of Rice.**	**5**	**30**

ASSESSMENT/EVALUATION METHODS

ASSESSMENT TOOL	**WEIGHTAGE (Marks)**
MID I (20 Marks)	**TOTAL 50 Marks** **SCALE DOWN TO 25 Marks**
MID II (15 Marks)	
ASSIGNMENTS (5 Marks)	
CLASSROOM ACTIVITIES (5 Marks)	
CLEAN & GREEN ACTIVITIES (5 Marks)	

FINAL EXAMINATION	75 Marks
TOTAL	100

MID I Questions

Question	Course Objective	Bloom's Taxonomy Level
1. Write an account on symptoms of plant diseases caused by viruses? 2. Write about the general characters of Bryophytes? 3. Give an account of transmission of plant viruses and their control?.	1,4	Remembering and Understanding
4.Structure of TMV 5.Outline of RH Whittaker's Classification 6.Germ Theory of Disease 7.Bio-Pesticides 8.Archegoniate 9. Embryophyta 10.Amphibians of Plant Kingdom	1,4	Remembering and Understanding

11. The fungi which derive their food directly from dead organic matter are known as **a) Predators b) Decomposers c) Parasites d) Mutalists** **12. The fungal disease – the black rust of wheat is caused by** **a) *Melampsora lini* b) *Claviceps purpurea* c) *Puccinia graminis tritici* d) *Albugo candida*** **13. Thread like filaments which form the plant body of fungi are** **a) Rhizoids b) Paraphyses c) Haptera d) Hyphae** **14. The cell wall of most Fungi is made of** **a) Cellulose b) Chitin c) Glucose d) Mannan** **15. The edible fungi are** **a) Rusts b) Moulds c) Mildews d) Mushrooms** **16. Carpogonia is the female sex organ in which algae** **a) Chlorophyceae b) Xanthophyceae c) Chrysophyceae d) Rhodophyceae** **17. Plants which are not differentiated into root, stem and leaves are grouped as** **a) Gymnosperms b) Pteridophytes c) Thallophytes d) Angiosperms** **18. Cyanobacteria are classified under** **a) Monera b) Protista c) Plantae d) Animalia** **19. The classification of Algae is based on** **a) Type of Pigment b) Nature of Cell wall c) Reserve food d) All** **20. Phycology is the study of** **a) Algae b) Fungi c) Lichens d) None**	**1,2,3,4**	**Applying and Analyzing**

MID II Questions

Question	Course Objecti ve	Bloom's Taxonomy Level

Describe the sexual reproduction in Rhizopus ? Write about the Thallus organization in Algae? Give an account of the Post Fertilization changes in Polysiphonia?	1,4	Remembering and Understanding
Amylum stars Phycobilins Spirogyra thallus structure Heterothallism Damping off Rust Zygospore	1,4	Remembering and Understanding

Assignments

S. No.	Topic	Bloom's Taxonomy Level
1	Economic importance of Algae	Understanding
2	Plant Disease caused by Bacteria and notes on Citrus Canker	Understanding and applying
3	Economic uses of Fungi in food industry, pharmacy and agriculture	Remembering and applying
4	Structure of Funaria Sporophyte	Understanding

Classroom Activities

S. No.	Activity and Topic	Bloom's Taxonomy Level

1	Field Visit for Algal Collection	Understanding and Analysis
2	Clean and Green	Understanding
3	Student Seminars	Understanding, Applying, Analyzing and Evaluating
4	Student Study project- Collection and identification of fruiting bodies of Basidiomycetes and Ascomycetes	Understanding, Applying, Analyzing and Evaluating

Mapping of Course Outcomes with program and Program Specific Outcomes (CO, PO & PSO Matrix)

CO/PO/PSO	PO 1	PO 2	PO 3	PSO 1	PSO2
CO 1	3	3	3	3	3
CO 2	3	3	3	3	3
CO 3	3	3	3	3	3
CO 4	3	3	3	3	3
CO 5	3	3	3	3	3

CO Attainments (Direct and Indirect)

CO	DIRECT	INDIRECT	Total CO Attainment
CO1	62.26	83.00	64.33
CO2	62.26	84.00	64.43
CO3	65.54	86.00	67.58
CO4	65.54	81.00	67.08
CO5	63.90	86.00	66.11

PO and PSO Attainment (Direct and Indirect)

	PO1	PO2	PO3	PSO1	PSO2
CO1	64.3	64.3	64.3	64.3	64.3
CO2	64.4	64.4	64.4	64.4	64.4
CO3	67.6	67.6	67.6	67.6	67.6
CO4	67.1	67.1	67.1	67.1	67.1
CO5	66.1	66.1	66.1	66.1	66.1
PO Attainment	65.9	65.9	65.9	65.9	65.9

CO's attainment is good, try to improve it further.

PROGRAMME CO-ORDINATOR

DEPARTMENT OF ZOOLOGY

PROGRAM: BSc **YEAR: I** **SEMESTER: 1**

COURSE: CORE **CREDITS: 4+1** **HOURS: 6**

PAPER I: ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES

COURSE OBJECTIVES

CO1Describe general taxonomic rules on animal classification, Classify Protozoa to Coelenterate with taxonomic keys

CO2Classify Phylum Platy helminthes to Annelida phylum using examples from parasitic adaptation and vermin composting.

CO3Describe Phylum Arthropoda to Mollusca using examples and importance of insects and Molluscs.

CO4 Describe Echinodermata to Hemichordate with suitable examples and larval stages.

CO5To impart laboratory observation skills and to develop scientific attitude, laboratory discipline and interest.

COURSE CONTENTS

CONTENT	CO	HOURS
UNIT I: Principles of Taxonomy – Binomial nomenclature – Rules of nomenclature Whittaker's five kingdom concept and classification of Animal Kingdom. Phylum Protozoa: General Characters and classification of protozoa up to species level with suitable examples Locomotion, nutrition and reproduction in Protozoan's Elphidium(typestudy)	1	10

UNIT II: Phylum Porifera: General characters and classification up to species level with suitable examples Skelton in Sponges Canal system in sponges Phylum Coelenterate: General characters and classification up to species level with suitable examples Mutagenesis in Obelia, Polymorphism in coelenterates, Corals and coral reefs formation Phylum Ctenophore: General Characters and Evolutionary significance (affinities).	**1, 2**	**12**
UNIT III: Phylum Platy helminthes: General characters and classification up to species level with suitable examples Life cycle and pathogen city of Fasciolahepatica Parasitic Adaptations inhelminthes Phylum Nemathelminthes: General characters and classification up to species level with suitable examples Life cycle and pathogen city of Ascaris lumbricoides	**2**	**12**
UNIT IV: Phylum Annelida: General characters and classification up to species level with suitable examples Hirudinaria granulosa- External characters, digestive system, excretory system and reproductive system, Evolution of Coelom and Coelomoducts, Vermiculture - Scope, significance, earthworm species, processing, Vermicompost, economic importance of vermin compost **Phylum Arthropoda :General characters and classification up to species level with suitable examples PrawnExternal characters, appendages, respiratory system and circulatory system Vision and respiration in Arthropoda, Metamorphosis in Insects Peripatus- Structure and affinitiesSocial Life in Bees and Termites**	**2,3**	**14**
UNIT V: Phylum Mollusca: General characters and classification up to species level with suitable examples,Pearl formation in Pelecypoda, Sense organs in Mollusca,Torsion in gastropods Phylum Echinodermata: General characters and classification up to species level with suitable examples, Water vascular system in starfish, Larval forms of Echinodermata Phylum Hemichordate: General characters and classification up to species level with suitable examples, Balanoglossus - Structure and affinities	**3,4**	**12**

Practicals on NonChordates- Lab **Study of museum slides / specimens / models (Classification of animals up to orders), Dissections, Laboratory Record**	**5**	**30**

ASSESSMENT/EVALUATION METHODS

ASSESSMENT TOOL	WEIGHTAGE (Marks)
MID I (20 Marks)	TOTAL 50 Marks SCALE DOWN TO 25 Marks
MID II (15 Marks)	
ASSIGNMENTS (5 Marks)	
CLASSROOM ACTIVITIES (5 Marks)	
CLEAN & GREEN ACTIVITIES (5 Marks)	
FINAL EXAMINATION	75 Marks
TOTAL	100

MID I Questions

Question	Course Objective	Bloom's Taxonomy Level
Describe the life cycle of*Elphidium*	1,2 & 4	Remembering and Understanding
Write about canal system in scycon	1,2 & 4	Remembering and Understanding
Explain polymorphisim in coelenterata	3	Applying and Analyzing
Describe the life cycle of *Fasciolahepatica*	1 & 4	Remembering

MID II Questions

Question	Course Objective	Bloom's Taxonomy Level
Coelomeduct	1 & 4	Remembering and Understanding
Turbellaria	1 & 4	Remembering and Understanding
Polychaetae	1 & 4	Remembering and Understanding
Binominal nomenclature	1	Remembering and Understanding
Flagellar locomotion	1 & 2	Remembering and Understanding
Holozoic nutrition	1 & 2	Remembering and Understanding
Malaria	2	Remembering and Applying
Coral reefs	1	Remembering
Desmosponge	1	Remembering and Applying
Medusa	1	Remembering
Father of Taxonomy a) Linnaeus b) A.P.Decondolle c) Lamarck d) Darwin	1	Remembering
Locomotion in Amoeba a) Filopodia b) Lobopodia c) Axopodia d) Reticulopodia	1	Applying

Binary fission is seen in a) Cockroach b) Euglena c) Honey bee d) All	1	Understanding
Plasmodium causes a) Chagas b) Diarrhoea c) Malaria d) Typhoid	1	Understanding
Canal system is present in a) Sycon b) Euglena c) Amoeba d) All	1	Remembering
Skeleton in sponges a) Spicules b) Choanocytes c) Fibres d) All	1	Understanding
Scyphozoa class includes a) Hydra b) Obelia c) Jelly fishes d) Gorgonia	1	Remembering
Corals are produced by a) Gorgonia b) Corallium c) Pennatula d) Adamsia	1	Applying
Portuguese man of war is a) Physalia b) Aurelia c) Halistemma d) Obelia	1 & 4	Understanding
Ctenophora includes a) 70 species b) 60 species c) 80 species d) 50 species	4	Applying

Mapping of Course Outcomes with program and Program Specific Outcomes (CO, PO & PSO Matrix)

CO/PO/PSO	PO 1	PO 2	PO 3	PSO 1	PSO2
CO 1	3	3	3	3	3
CO 2	3	3	3	3	3
CO 3	3	3	3	3	3
CO 4	3	3	3	3	3
CO 5	3	3	3	3	3

CO Attainments (Direct and Indirect)

CO	DIRECT	INDIRECT	Total CO Attainment
CO1	66.72	83.00	68.35
CO2	66.72	84.00	68.45
CO3	66.72	86.00	68.65
CO4	66.72	81.00	68.15
CO5	66.72	86.00	68.65

PO and PSO Attainment (Direct and Indirect)

	PO1	PO2	PO3	PSO1	PSO2
CO1	69.65	69.65	69.65	69.65	69.65
CO2	68.45	68.45	68.45	68.45	68.45
CO3	67.34	67.34	67.34	67.34	67.34
CO4	66.84	66.84	66.84	66.84	66.84
CO5	67.34	67.34	67.34	67.34	67.34
PO Attainment	67.92	67.92	67.92	67.92	67.92

CO's attainment is good, try to improve it further.

PROGRAMME CO-ORDINATOR

DEPARTMENT OF CHEMISTRY

PROGRAM: B.Sc(BZC) **YEAR: I** **SEMESTER: 1**
COURSE: 1 **CREDITS: 4+1** **HOURS: 4+2**

PAPER I: Inorganic and Physical Chemistry

COURSE OBJECTIVES

CO-1 : Understand the basic concepts of p-block elements

CO-2 : Explain the difference between solid, liquid and gasses in terms of intermolecular interactions.

CO-3 : Apply the concepts of gas equations, pH and electrolytes while studying other chemistry courses.

CO-4 : Understand the basic concepts of qualitative analysis of inorganic mixture .

CO-5 : Use glassware, equipment and chemicals and follow experimental procedures in the laboratory. Apply

the concepts of common ion effect, solubility product and concepts related to qualitative analysis.

COURSE CONTENTS

CONTENT	CO	HOURS
UNIT I: INORGANIC CHEMISTRY :Chemistry of p-block elements Group 13: Preparation & structure of Diborane, Borazine Group 14: Preparation, classification and uses of silicones Group 15: Preparation & structures of Phosphonitrilic halides {(PNCl2)n where n=3, 4 Group 16: Oxides and Oxoacids of Sulphur (structures only) Group 17: Pseudohalogens, Structures of Interhalogen compounds.	1	15
UNIT II: **1. Chemistry of d-block elements:** Characteristics of d-block elements with special reference to electronic configuration, variable valence, magnetic properties, catalytic properties and ability to form complexes. Stability of various oxidation states. **2. Chemistry of f-block elements:** Chemistry of lanthanides - electronic structure, oxidation states, lanthanide contraction, consequences of lanthanide contraction, magnetic properties. Chemistry of actinides - electronic configuration, oxidation states, actinide contraction, comparison of	2	15

lanthanides and actinides. **3. Theories of bonding in metals:** Valence bond theory and Free electron theory, explanation of thermal and electrical conductivity of metals based on these theories, Band theory- formation of bands, explanation of conductors, semiconductors and insulators.		
UNIT III: PHYSICAL CHEMISTRY **Solid state** Symmetry in crystals. Law of constancy of interfacial angles. The law of rationality of indices. The law of symmetry. Miller indices, Definition of lattice point, space lattice, unit cell. Bravais lattices and crystal systems. X-ray diffraction and crystal structure. Bragg's law. Powder method. Defects in crystals. Stoichiometric and non-stoichiometric defects.	**2**	**10**
UNIT IV: **1. Gaseous state** van der Waal's equation of state. Andrew's isotherms of carbon dioxide, continuity of state. Critical phenomena. Relationship between critical constants and vander Waal's constants. Lawof corresponding states. Joule- Thomson effect. Inversion temperature. **2. Liquid state** Liquid crystals, mesomorphic state. Differences between liquid crystal and solid/liquid. Classification of liquid crystals into Smectic and Nematic. Application of liquid crystals as LCD devices.	**2, 3**	**10**
UNIT V:SOLUTIONS, IONIC EQUILIBRIUM & DILUTE SOLUTIONS **1. Solutions** Azeotropes- HCl-H2O system and ethanol-water system. Partially miscible liquids-phenol- water system. Critical solution temperature (CST), Effect of impurity on consulate temperature. Immiscible liquids and steam distillation. Nernst distribution law. Calculation of the partition coefficient. Applications of distribution law. **2. Ionic equilibrium** Ionic product, common ion effect, solubility and solubility product. Calculations based on solubility product. **3. Dilute solutions** Colligative properties- RLVP, Osmotic pressure, Elevation in boing point and depression in freezing point. Experimental methods for the determination of molar mass of a non-volatile solute using osmotic pressure, Elevation in boiling point and depression in freezing point. Abnormal colligative properties. Van't Hoff factor.	**2, 3 & 5**	**10**
Analysis of SALT MIXTURE 50 M Analysis of mixture salt containing two anions and two cations (From two different groups) from the following: **Anions**: Carbonate, Sulphate, Chloride, Bromide, Acetate, Nitrate, Borate, Phosphate. **Cations:** Lead, Copper, Iron, Aluminium, Zinc, Nickel, Manganese, Calcium, Strontium, Barium, Potassium and Ammonium.	**4 & 5**	**30**

ASSESSMENT/EVALUATION METHODS

ASSESSMENT TOOL	WEIGHTAGE (Marks)
MID I (20 Marks)	TOTAL 50 Marks SCALE DOWN TO 25 Marks
MID II (15 Marks)	
ASSIGNMENTS (5 Marks)	
CLASSROOM ACTIVITIES (5 Marks)	
CLEAN & GREEN ACTIVITIES (5 Marks)	
FINAL EXAMINATION	75 Marks
TOTAL	**100**

MID I Questions

Question	Course Objective	Bloom's Taxonomy Level
Write the preparations and Structure of diborane OR Write about interhalogen compounds.	1	Remembering and Understanding
What is lanthanide contraction and explain its consequences.	2	Understanding
Write a short note on Band theory	2	Remembering and Understanding
Write a note on Pseudohalogens	1	Applying and Analyzing

MID II Questions

Question	Course Objective	Bloom's Taxonomy Level
Derive vandewaal's equation	1 & 4	Remembering and Understanding
Explain stoichiometric crystal defects	1 & 4	Remembering and Understanding
Derive Bragg's equation	1 & 4	Remembering and Understanding
Define critical state	1	Remembering and Understanding

Write Joule Thompson effect	1 & 2	Remembering and Understanding
What are liquid crystals and classify them.	1 & 2	Remembering and Understanding
Define space lattice and unit cell	2	Remembering and Applying
Define azeotropic mixtures	1	Remembering
Define CST	1	Remembering and Applying
Define solubility product	1	Remembering
Schottky defect generally appear in a) NaCl b) CsCl c) KCl d) all	1	Remembering
A gas consists of a large number of particles called a) Molecules b) atoms c) ions d) protons	1	Applying
When solid changes to liquid is called a) melting b) boiling c) evaporation d) freeging	1	Understanding
Liquid are east to compress (True/False)	1	Understanding
When a gas changes into a liquid it is called a) condensation b) evaporation c) precipitation d) transpiration	1	Remembering
Plasma is a fourth state of matter (True/False)	1	Understanding
Which is the source of oxides of sulphur a) Thermal power plant b) sulphuric acid plant c) Both d) None of these	1	Remembering
Example for minimum boiling pt azeotrope is . a) Ethanol + Chloroform b) ethanol + water c) benzene + toluene d) benzene + water	1	Applying
Example of upper CST a) Phenol-water system b) triethyl amine- water system c) aniline-water system d) nicotine- water system	1 & 4	Understanding
A binary solution is a mixture of a) one component b) two component c) three component d) none	4	Applying

Assignments

S. No.	Topic	Bloom's Taxonomy Level
1	Explain preparations and structure of diborane and borazole	Understanding and applying
2	Explain about interhalogen compounds and Pseudo halogens	Understanding and applying
3	Write about characteristic properties of d-block elements.	Remembering and applying
4	Explain Lanthanide contraction and its consequences.	Understanding
5	Derive Braggs Equation and explain the method	Understanding and applying
6	Explain Defects in Crystals	Remembering, understanding and evaluation
7	Derive Vanderwaal equation and derive critical constants from vanderwaal equation	Understanding and applying
8	Explain about CST and Azeotropic mixtures	Understanding

Classroom Activities

S. No.	Activity and Topic	Bloom's Taxonomy Level
1	Student seminars	Understanding and Analysis
2	Group Discussion on "Fossil fuels – its impact on environment"	Applying, Analyzing and Evaluating
3	Clean and Green	Understanding
4	Google Quiz	Remembering, Understanding and Applying

Mapping of Course Outcomes with program and Program Specific Outcomes (CO, PO & PSO Matrix)

CO/PO/PSO	PO 1	PO 2	PO 3	PO 5	PO 6	PSO 3	PSO 4
CO 1	3					3	
CO 2		3				3	
CO 3				3	3		3
CO 4			3				3
CO 5						3	3

CO Attainments (Direct and Indirect)

CO	DIRECT	INDIRECT	Total CO Attainment
CO1	57.39	88.00	60.45
CO2	57.15	91.00	60.54
CO3	57.12	90.00	60.41
CO4	56.98	93.00	60.58
CO5	57.55	93.00	61.10

PO and PSO Attainment (Direct and Indirect)

PO1	PO2	PO3	PO5	PSO3	PSO4
60.45				60.45	60.45
	60.54			60.54	60.54
			60.41	60.41	60.41
		60.58		60.58	60.58
			61.1	61.10	61.10
60.45	60.54	60.58	60.75	60.62	60.62

CO's attainment is good, try to improve it further.

PROGRAMME CO-ORDINATOR

DEPARTMENT OF ENGLISH

PROGRAM: BZC **YEAR: I** **SEMESTER: 2**

COURSE: ENGLISH **CREDITS: 3** **HOURS: 4**

ENGLISH PAPER II - A Course In Reading & Writing Skills

COURSE OBJECTIVES

CO1 To comprehend different texts while reading
CO2 To build up a repository of vocabulary
CO3 To use writing skills in future needs for any purpose.

COURSE CONTENTS

CONTENT	CO	HOURS
UNIT I: Prose:1. How to Avoid Foolish Opinions Bertrand Russell Skills: 2. Vocabulary: Conversion of Words 3. One Word Substitutes : 4. Collocations	1,2 &3	10
UNIT II: Prose: 1. The Doll's House Katherine Mansfield Poetry: 2. Ode to the West Wind P B Shelley Non-Detailed Text : 3. Florence Nightingale Abrar Mohsin Skills : 4. Skimming and Scanning.	1, 2	15
UNIT III: Prose:1. The Night Train at Deoli Ruskin Bond Poetry: 2. Upagupta Rabindranath Tagore Skills : 3. Reading Comprehension : 4. Note Making/Taking	1,2& 3	15
UNIT IV: Poetry: 1. Coromandel Fishers Sarojini Naidu Skills:2. Expansion of Ideas: 3. Notices, Agendas and Minutes	1,2& 3	10
UNIT V: Non-Detailed Text:1. An Astrologer's Day R K Narayan Skills: 2. Curriculum Vitae and Resume: 3. Letters: 4. E-Correspondence	1,2& 3	10

ASSESSMENT/EVALUATION METHODS

ASSESSMENT TOOL	WEIGHTAGE (Marks)
MID I (20 Marks)	TOTAL 50 Marks SCALE DOWN TO 25 Marks
MID II (15 Marks)	
ASSIGNMENTS (5 Marks)	
CLASSROOM ACTIVITIES (5 Marks)	
CLEAN & GREEN ACTIVITIES (5 Marks)	
FINAL EXAMINATION	75 Marks
TOTAL	**100**

MID I Questions

Question	Course Objective	Bloom's Taxonomy Level
How to Avoid Foolish Opinions.	2	Remembering and Understanding
The Doll's House	3	Analyzing and Evaluating
One Word Substitutes	3	Remembering and applying
Fill in the blanks with the given words	1, 2	Understanding and Applying

MID II Questions

Question	Course Objective	Bloom's Taxonomy Level
.fill in the blanks with the given words	12 & 3	Understanding and applying

Read the passage and answer the questions	1 &3	Understanding and analyzing

Assignments

S. No.	Topic	Bloom's Taxonomy Level
1	How to Avoid Foolish Opinions.	Remembering and understanding
2	Write about 'The Doll's House'	Remembering and understanding
3	Upagupta	Remembering and understanding
4	Night Train at Deoli	Remembering and understanding
5	Make a note of the following	Understanding and applying
6	Resume writing	Understanding and Evaluating

Classroom Activities

S. No.	Activity and Topic	Bloom's Taxonomy Level
1	Group Discussion on 'Measures to Avoid Covid-19'	Understanding, Analyzing and thinking Skills
2	Online Quiz on 'How to Avoid Foolish Opinions'.	Understanding and Evaluating

3	Online Quiz on 'Upagupta'	Understanding and Evaluating
4	Online Quiz on 'Night Train at Deoli'	Understanding and Evaluating
5	Online Quiz on 'The Doll's House'	Understanding and Evaluating
	Online Quiz on 'Coromandel Fishers'	Understanding and Evaluating
	Online Quiz on 'Ode to West Wind'	Understanding and Evaluating
	Online Quiz on 'An Astrologer's Day'	Understanding and Evaluating

Mapping of Course Outcomes with program and Program Specific Outcomes (CO, PO & PSO Matrix)

CO/PO/PSO	PO 1	PO 2	PO 3	PO 5	PO 6	PO 7	PSO 1
CO 1	3	3	3			3	3
CO 2		3	3			3	3
CO 3			3	3	3	3	3
CO 4	3		3				3

CO Attainments (Direct and Indirect)

CO	Direct	Indirect	Total CO Attainment
CO 1	56.38	86.54	59.40
CO 2	56.10	88.46	59.33
CO 3	55.58	90.38	59.06
CO 4	55.92	90.38	59.37

PO and PSO Attainment (Direct and Indirect)

	PO 1	PO 2	PO 3	PO 5	PO 6	PO 7	PSO 1
	3	3	3	3	3	3	3
CO 1	59.40	59.40	59.40			59.40	59.40
CO 2		59.33	59.33			59.33	59.33
CO 3			59.06	59.06	59.06	59.06	59.06
CO 4	59.37		59.37				59.37
PO Attainment	59.38	59.37	59.29	59.06	59.06	59.26	59.29

CO's attainment is nearer to benchmark, try to improve it further.

PROGRAMME CO-ORDINATOR

DEPARTMENT OF TELUGU

PROGRAM: B.SC BZC **YEAR: I** **SEMESTER: 2**
COURSE: CORE **CREDITS: 4** **HOURS: 5**

Telugu PAPER II – Adhunika Telugu Sahityam (ఆధునిక తెలుగు సాహిత్యం)

COURSE OBJECTIVE

CO 1. ఆంగ్లభాష ప్రభావం కారణంగా తెలుగులో వచ్చిన ఆధునిక సాహిత్యాన్ని , దాని విశిష్టతను గుర్తిస్తారు .

CO 2. సమకాలీన ఆధునిక సాహిత్య ప్రక్రియలైన " వచన కవిత్వం , కథ , నవల , నాటకం , విమర్శ " లపై అవగాహన పొందుతారు .

CO 3. భావకవిత , అభ్యుదయ కవితాలక్ష్యాలను గూర్చిన జ్ఞానాన్ని పొందుతారు . అస్తిత్వవాద ఉద్యమాలపుట్టుకను , ఆవశ్యకతను గుర్తిస్తారు .

CO 4. కథాసాహిత్యం ద్వారా సామాజిక చైతన్యాన్ని పొందుతారు . సిద్ధాంతాల ద్వారా కాకుండా , వాస్తవ పరిస్థితులను తెలుసుకోవడం ద్వారా సిద్ధాంతాన్ని సమీక్షించగలరు .

CO 5. ఆధునిక తెలుగు కల్పనాసాహిత్యం ద్వారా సామాజిక , సాంస్కృతిక , రాజకీయ చైతన్యాన్ని పొందుతారు .

COURSE CONTENTS

CONTENT	CO	HOURS
యూనిట్-I : ఆధునిక కవిత్వం 1.ఆధునిక కవిత్వం- పరిచయం 2.కొండవీడు-దువ్వూరి రామిరెడ్డి(కవి కోకిల గ్రంథావళి-ఖండకావ్యాలు-నక్షత్రమాలసంపుటి నుండి) 3.మాతృ సంగీతం-అనిసెట్టిసుబ్బారావు(అగ్నివీణ కవితా సంపుటి నుండి) 4.తాతకోనూలు పోగు-బండారు ప్రసాద మూర్తి (కలనేత కవితా సంపుటి నుండి)	1,2,3 & 4	12
యూనిట్ – II : కథానిక 5.తెలుగు కథానిక- పరిచయం 6.భయం(కథ)-కాళీపట్నం రామారావు 7.స్వేదం ఖరీదు...?- రెంటాల నాగేశ్వరరావు	1, 2, 3 & 4	12

యూనిట్ – III : నవల 8.తెలుగు నవల- పరిచయం 9.రథచక్రాలు(నవల)– మహీధరరామ్మోహనరావు (సంక్షిప్త ఇతివృత్తం మాత్రం) 10.రథచక్రాలు - సమీక్ష(వ్యాసం)- -డా॥యల్లాప్రగడ మల్లికార్జునరావు	1, 2, 3 & 4	12
యూనిట్-IV : నాటకం 11.తెలుగు నాటకం- పరిచయం 12.యక్షగానము(నాటిక)–ఎం. వి. ఎస్. హరనాథరావు 13.అపురూప కళారూపాల విధ్వంస దృశ్యం'యక్షగానం'- డా॥కందిమళ్ళ సాంబశివరావు	1, 2, 3 & 4	12
యూనిట్- V : విమర్శ - డా॥నాగభైరవ ఆదినారాయణ 14.తెలుగు సాహిత్య విమర్శ - పరిచయం 15.విమర్శ - స్వరూప స్వభావాలు ; ఉత్తమ విమర్శకుడు - లక్షణాలు ; విమర్శ - భేదాలు	1, 2, 3 & 4	12

ASSESSMENT/EVALUATION METHODS

ASSESSMENT TOOL	WEIGHTAGE (Marks)
MID I (20 Marks)	TOTAL 50 Marks SCALE DOWN TO 25 Marks
MID II (15 Marks)	
ASSIGNMENTS (5 Marks)	
CLASSROOM ACTIVITIES (5 Marks)	
CLEAN & GREEN ACTIVITIES (5 Marks)	
FINAL EXAMINATION	75 Marks
TOTAL	100

MID I Questions

Question	Course Objective	Bloom's Taxonomy Level
1.ఆధునిక కవిత్వ ఆరంభ వికాసాల్ని తెలపండి?	2 & 4	Remembering and Understanding
2. 'తాతకో నూలుపోగు' పాఠ్యభాగ సారాంశమును గురించి రాయండి?	3 & 4	Analyzing and Evaluating
3.కథానిక ఆవిర్భావ వికాసాల్ని వివరించండి?	3&4	Analyzing&Evaluating
1. ఆధునిక కవిత్వ లక్షణాల్ని రాయండి ?	1, 2 & 4	Understanding
2. దువ్వూరి రామిరెడ్డి'ని గురించి రాయండి ?	1 & 4	Remembering
3. అనిశెట్టి సుబ్బారావును పరిచయం చేయండి?	1 & 4	Remembering
4. బండారు ప్రసాదమూర్తిని గురించి తెలపండి?	3 & 4	Understanding and analyzing
5. తెలుగు కథానికను పరిచయం చేయండి	3 & 4	Understanding and analyzing
6. తెలుగు కథానిక లక్షణాల్ని తెలపండి?	3 & 4	Applying
7. కాళీపట్నం రామారావు ని పరిచయం చేయండి?	3 & 4	Remembering
1.కొండవీడు పాఠ్య భాగము ఎందులోనుండి తీసుకున్నారు?	1	Remembering
2.అనిశెట్టి సుబ్బారావు రాసిన పాఠ్యాంశం పేరు?	1	Remembering

3.తాతకో నూలుపోగు ఏ కవితా సంపుటి నుండి తీసుకున్నారు?	2	Applying
4.దువ్వూరి రామిరెడ్డి బిరుదు ?	2	Applying
5.అభ్యుదయ కవితకు పునాది ?	2	Understanding
6.స్వేదం ఖరీదు పాఠం రచయిత ?	1 & 2	Remembering
7.కాళీపట్నం రామారావు రాసిన కథ పేరేమి ?	1 & 4	Remembering and applying
8.కథ లక్షణం ఒకటి?	1	Remembering
9.కవిత లక్షణం ఒకటి?	1	Remembering
10.బండారు ప్రసాదమూర్తి ఏ ఊరు?	1	Remembering

MID II Questions

Question	Course Objective	Bloom's Taxonomy Level
థచక్రాలు నవలలోని ముఖ్య పాత్ర * a.నిత్యానందం b.సత్యానందం c.ఆత్మానందం d.సత్య వేదం అరిస్టాటిల్ నాటకానికి ఎన్ని లక్షణాలు చెప్పాడు ?*	1	Remembering and Understanding
ఆచార్య SV రామారావు రాసిన పుస్తకం పేరేమి?* a.సాహిత్య దర్శనం b.ఆంధ్ర సాహిత్య విమర్శ ఆంగ్ల ప్రభావం c.తెలుగులో సాహిత్య విమర్శ d.ఆంధ్ర కవుల చరిత్ర	1	Remembering

"అపురూప కళా రూపాల విధ్వంస దృశ్యం యక్షగానం" పాఠం రాసిందెవరు?* a.హరనాథరావు b.యల్లాప్రగడ మల్లికార్జున రావు c.కందిమల్ల సాంబశివరావు d.ఎవరు కాదు	1 & 2	Remembering and Understanding
విశ్వం ఎవరి కొడుకు * a.సత్యానందం b.భద్ర c.జానకి d.దీవాన్	1 & 2	Remembering and Understanding
ఈకింది వానిలో ఏది ఉత్తమ విమర్శకుని లక్షణం కాదు ? a.పక్షపాతం b. సహృదయత c.సత్య ప్రకటన d.సమదర్శనం	1 & 2	Remembering and Understanding
ఆలంకారిక విమర్శకున్న మరొక పేరు?* a.మనస్తత్వ విమర్శ b.లాక్షణిక విమర్శ c.నైతిక విమర్శ d. స్వతంత్ర విమర్శ	1 & 2	Remembering and Understanding
శంభూక వధ నాటక రచయిత * 1.త్రిపురనేని 2.అక్కినేని 3.భీమినేని 4.కేశినేని	1	Remembering
యం.వి.యస్.హరనాథ రావు రాసిన పాఠం పేరేమి ?* a.యక్షగానం b.నవల c.నాటకం d.కథానిక	2	Remembering and Understanding
సమకాలీన జీవితానికి దర్పణం* aకవిత్వం bవిమర్శ cకథానిక d నవల	1	Remembering
యక్షగానంలోని హాస్య పాత్ర పేరు * a.భట్టు b.కేతిగాడు c.యక్షుడు d.ప్రహ్లాదుడు	3	Applying

కప్పి చెబితే కవిత్వం విప్పి చెబితే విమర్శ అన్నదెవరు ?* sv రామారావు b.దివాకర్ల వేంకటావధాని c.పింగళి లక్ష్మీకాంతం d.సింగిరెడ్డి నారాయణరెడ్డీ	1	Remembering
రథ చక్రాలు నవలా రచయిత * a.బుచ్చిబాబు b.గోపిచంద్ c.మహీధర రామ్మోహన రావు d.చలం	4	Applying
విమర్శని ఆంగ్లంలో ఏమంటారు ?* a. Criticism d.Romanticism c.Patriotism d.Marxism	3	
కన్యాశుల్కం నాటక రచయిత * a.గురజాడ b.శ్రీశ్రీ c.చలం d.కృష్ణశాస్త్రి	4	

Assignments

S. No.	Topic	Bloom's Taxonomy Level
1	ఆధునిక కవిత్వ ఆవిర్భావ వికాసాలను వివరించండి?	Understanding
2	'కొండవీడు'లోదువ్వూరిరామిరెడ్డిసందేశాన్నివివరించండి?	Remembering and understanding
3	అనిశెట్టిసుబ్బారావు మాత్య సంగీతాన్ని తెలపండి.?	Understanding and analyzing
4	తాతకో నులుపోగు ద్వారా బండారు ప్రసాద్ మూర్తి నేతగాని స్థితిని ఎలా వర్ణించారు?	Remembering
5	తెలుగుకథానికనుపరిచయంచేసికథానికాలక్షణాలనుతెలపండి	Remembering

	?	
6	భయం"కథలోని రచయిత సందేశాన్ని రాయండి(లేదా)"భయం" కథ ద్వారా రచయిత సమాజానికిచ్చిన సందేశం ఏమిటి?	Understanding and evaluation
7	"స్వేదంఖరీదు"ఇతివృత్తాన్నితెలుపండి(లేదా)" స్వేదంఖరీదు"కథా అంశాన్నితెలియజేయండి	Remembering
8	నవల ఆవిర్భావ వికాసాలను తెలపండి ?	Remembering
9	తెలుగునాటకంలో అభ్యుదయ తెలుగు నాటక లక్షణాలు	Remembering and evaluation
10	యక్షగానం నాటికపై సమీక్ష వ్యాసం రాయండి.	Remembering

Classroom Activities

S. No.	Activity and Topic	Bloom's Taxonomy Level
1	Chart preparation and Teach back session	Understanding and Analysis
2	Debate on ఆధునిక సాహిత్య అధ్యయనం ఆవసరమా? అనవసరమా?	Covering Lower and Higher order thinking skills
3	Clean and Green	Covering Lower and Higher order thinking skills
4	స్టూడెంట్ సెమినార్స్ Students Seminars	Covering Lower and Higher order thinking skills
5	పదాలతో అంత్యాక్షరి Padalato Antyakshari	Covering Lower and Higher order thinking skills
6	ONLINE QUIZ	

Mapping of Course Outcomes with program and Program Specific Outcomes (CO, PO & PSO Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1
CO1	3	3	3			3	3	3	3
CO2	3	3	3		3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3		3	3

CO Attainments (Direct and Indirect)

CO	DIRECT	INDIRECT	Total CO Attainment
CO1	76.18	93.75	77.93
CO2	76.18	95.00	78.06
CO3	76.18	93.75	77.93
CO4	76.18	93.75	77.93
CO5	76.18	95.00	78.06

PO and PSO Attainment (Direct and Indirect)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1
CO1	77.93	77.93	77.93		77.93	77.93	77.93	77.93	77.93
CO2	78.06	78.06	78.06		78.06	78.06	78.06	78.06	78.06
CO3	77.93	77.93	77.93	77.93	77.93	77.93	77.93	77.93	77.93
CO4	77.93	77.93	77.93	77.93	77.93	77.93	77.93	77.93	77.93
CO5	77.93	77.93	77.93	77.93	77.93	77.93	77.93	77.93	77.93
PO Attainment	77.96	77.96	77.96	77.93	77.97	77.96	77.97	77.96	77.96

CO's attainment is good, try to improve it further.

PROGRAMME CO-ORDINATOR

DEPARTMENT OF BOTANY

PROGRAM: BSC | **YEAR: I** | **SEMESTER: 2**
COURSE: CORE | **CREDITS: 4+1** | **HOURS: 6**

BOTANY PAPER II - BASICS OF VASCULAR PLANTS AND PHYTOGEOGRAPHY

COURSE OBJECTIVES

CO1 Classify and compare Pteridophytes and Gymnosperms based on their morphology, anatomy, reproduction and life cycles. Justify evolutionary trends in tracheophytes to adapt for land habitat. Explain the process of fossilization and compare the characteristics of extinct and extant plants.
CO2 Critically understand various taxonomical aids for identification of Angiosperms.
CO3 Analyze the morphology of the most common Angiosperm plants of their localities and recognize their families. Evaluate the ecological, ethnic and economic value of different tracheophytes and summarize their goods and services for human welfare.
CO4 Locate different phytogeographical regions of the world and India and can analyze their floristic wealth.
CO5 To impart laboratory observation skills and develop scientific attitude, laboratory discipline and interest.

COURSE CONTENTS

CONTENT	CO	HOURS
UNIT I: Pteridophytes 1. General characteristics of Pteridophyta; classification of Smith (1955)up to divisions. 2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life historyof (a) Lycopodium (Lycopsida) and (b) Marsilea (Filicopsida). 3. Stelar evolution in Pteridophytes; 4. Heterospory and seed habit.	1,5	12

UNIT II: Gymnosperms 1. General characteristics of Gymnosperms; Sporne classification up to classes. 2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life history of (a) Cycas(Cycadopsida) and (b) Gnetum (Gnetopsida). 3. Outlines of geological time scale. 4. A brief account on Cycadeoidea..	1,5	14
UNIT III: Basic aspects of Taxonomy 1. Aim and scope of taxonomy; Species concept: Taxonomic hierarchy, species, genus and family. 2. Plant nomenclature: Binomial system, ICBN- rules for nomenclature. 3. Herbarium and its techniques, BSI herbarium and Kew herbarium; concept of digital herbaria. 4. Bentham and Hooker system of classification; 5. Systematic description and economic importance of the following families: (a) Annonaceae (b) Curcurbitaceae	2,3,5	13
UNIT IV: Systematic Taxonomy 1. Systematic description and economic importance of the following families: (a) Asteraceae (b) Asclepiadaceae (c)Amaranthaceae (d) Euphorbiaceae (e) Arecaceae and (f) Poaceae 2. Outlines of Angiosperm Phylogeny Group (APG IV).	2,3,5	13
UNIT V: Phytogeography 1. Principles of Phytogeography, Distribution (wides, endemic, discontinuous species) 2. Endemism – types and causes. 3. Phytogeographic regions of World. 4. Phytogeographic regions of India. 5. Vegetation types in Andhra Pradesh.	4,5	8

PRACTICALS **Study/ microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/ specimens/ mounts : a. Pteridophyta : Lycopodium and Marselia b. Gymnosperms : Cycasand Gnetum 2. Study of fossil specimens of Cycadeoidea and Pentoxylon(photographs /diagrams can be shown if specimens are not available). 3. Demonstration of herbarium techniques. 4. Systematic / taxonomicstudy of locally available plants belonging to the families prescribed in theory syllabus. (Submission of 30 number of Herbarium sheets of wild plants with the standard system is mandatory). 5. Mapping of phytogeographical regions of the globe and India.**	**5**	**30**

ASSESSMENT/EVALUATION METHODS

ASSESSMENT TOOL	**WEIGHTAGE (Marks)**
MID I (20 Marks)	**TOTAL 50 Marks** **SCALE DOWN TO 25 Marks**
MID II (15 Marks)	
ASSIGNMENTS (5 Marks)	
CLASSROOM ACTIVITIES (5 Marks)	
CLEAN & GREEN ACTIVITIES (5 Marks)	
FINAL EXAMINATION	**75 Marks**
TOTAL	**100**

MID I Questions

Question	Course Objective	Bloom's Taxonomy Level
11. Amphiphloic siphonostele is present in **a) Rhynia b) lycopodium c)Equisetum d)Marselia**	**1,2,3,4**	**Applying and**

12. Pteridophytes are also known as a) Cryptogams b) vascular cryptogams c) phanerogams d)all of the above 13. Which of the following is correct with respect to Pteridophytes a) They are first land plants b) possess vascular system c) do not produce any seeds d) all of the above 14. When a single initial cell develops into sporangium, the development is known as a) leptosporangiate b)Eusporangiate c)both d) none 15. The most primitive type of stele is a) Protostele b) Siphonostele c) Solenostele d) Eustele 16. Lycopodium is commonly known as a) ground pine b) club moss c) both a and b d) neither a nor b 17. In Marseilles spores are produced in a specialized organ called a) cremocarp b)sporocarp c) cystocarp d) gametocarp 18. Which of the following is considered important in the development of seed habit a) dependent sporophyte b) Heterospory c) Haplontic life cycle d) Free living Gametophyte 19. Heterospory is a) production of similar kind of spores b) production of two different kind of spores c) both d) none 20. According to Smiths classification which division of Pteridophytes have fossils a) Lycophyta b) Pterophyta c) Psilophyta d) Sphenophyta		Analyzing

MID II Questions

Question	Course Objective	Bloom's Taxonomy Level
1. Write an essay on Sporne classification of Gymnosperms upto classes? 2. Give a brief account on Cycadeoidea? 3. Write an essay on Bentham and Hooker system of classification and add a note on its merits and demerits. 4. Define Herbarium. Write a note on BSI herbarium and digital herbarium? 5. Write a detailed account of ICBN- rules for nomenclature? 6. Write about the male and female inflorescence in Gnetum?	1	Remembering and Understanding

Assignments

S. No.	Topic	Bloom's Taxonomy Level
1	Morphology of root and stem	Understanding
2	Heterospory and seed habit	Remembering and understanding
3	Geological time scale	Understanding and analyzing
4	Angiosperm phylogeny group	Remembering
5	Phytogeographic regions in India	Remembering

Classroom Activities

S. No.	Activity and Topic	Bloom's Taxonomy Level
1	Field Visit for Algal Collection	Understanding and Analysis

2	Clean and Green	Understanding
3	Student Seminars	Understanding, Applying, Analyzing and Evaluating
4	Student Study project- Identification of Scientific names of plant products used in daily life (for a week)	Understanding, Applying, Analyzing and Evaluating

Mapping of Course Outcomes with program and Program Specific Outcomes (CO, PO & PSO Matrix)

CO/PO/PSO	PO 1	PO 2	PO 3	PSO1	PSO 2
CO 1	3	3	3	3	3
CO 2	3	3	3	3	3
CO 3	3	3	3	3	3
CO 4	3	3	3	3	3

CO Attainments (Direct and Indirect)

CO	DIRECT	INDIRECT	Total CO Attainment
CO1	67.34	82.50	68.86
CO2	67.34	83.75	68.98
CO3	64.99	86.25	67.12
CO4	64.99	82.50	66.74
CO5	66.17	87.50	68.30

PO and PSO Attainment (Direct and Indirect)

	PO1	PO2	PO3	PSO1	PSO2
CO1	68.9	68.9	68.9	68.9	68.9
CO2	69.0	69.0	69.0	69.0	69.0
CO3	67.1	67.1	67.1	67.1	67.1
CO4	66.7	66.7	66.7	66.7	66.7
CO5	68.3	68.3	68.3	68.3	68.3
PO Attainment	68.0	68.0	68.0	68.0	68.0

CO's attainment is good, try to improve it further.

PROGRAMME CO-ORDINATOR

DEPARTMENT OF ZOOLOGY

PROGRAM: BSc | YEAR: I | SEMESTER: 2

COURSE: CORE | CREDITS: 4+1 | HOURS: 6

PAPER II -Animal Diversity- Biology of Chordates

COURSE OBJECTIVES

CO1Describe general taxonomic rules on animal classification of chordates.Understand the origin and evolutionary relationship of different phyla from Prochordata to mammalian.
CO2Classify Protochordata to Mammalian with taxonomic keys.
CO3Understand Mammals with specific structural adaptations.
CO4 Understand the significance of dentition and evolutionary significance.
CO5To impart laboratory observation skills and to develop scientific attitude, laboratory discipline and interest.

COURSE CONTENTS

CONTENT	CO	HOURS
UNIT I: General characters and classification of Chordata upto species level Protochordata- Salient features of Cephalochordate, Structure of Branchiostoma Affinities of Cephalochordate. Salient features of Urochordata Structure and life history of Herdmania Retrogressive metamorphosis –Process and Significance.	1,2,3 & 4	12
UNIT II: Cyclostomata, General characters, Comparison of Petromyzon and Myxine Pisces: General characters and classification of Fishes upto species level Scoliodon: External features, Digestive system, Respiratory system, Structure and function of Heart, Structure and functions of the Brain. Migration in Fishes Types of Scales Dipnoi.	1, 2, 3 & 4	12

UNIT III:General characters of Amphibian Classification of Amphibian upto species level with examples. Ranahexadactyla: External features, Digestive system, Respiratory system, Structure and function of Heart, structure and functions of the Brain Reptilia: General characters of Reptilia, Classification of Reptilia upto species level with examples Calotes: External features, Digestive system, Respiratory system, Structure and function of Heart, structure and function of Brain Identification of Poisonous and non-poisonous snakes and Skull in reptiles.	1, 2, 3 & 4	14
UNIT IV:Aves: General characters ad classification of Aves upto species level Columbalivia: External features, Digestive system, Respiratory system, Structuren and function of Heart, structure and function of Brain Migration in Birds Flight adaptation in birds.	1, 2, 3 & 4	12
UNIT V:General characters of Mammalian Classification of Mammalian upto species level with examples Comparison of Prototherians, Metatherians and Eutherians Dentition in mammals.	1,2,3& 4	10
Practicals on Chordates- Lab Observation of the Following Slides / Spotters / Models. Dissections1. Scoliodon IX and X, Cranial nerves 2. Scoliodon Brain 3. Mounting of fish scales	5	30

ASSESSMENT/EVALUATION METHODS

ASSESSMENT TOOL	WEIGHTAGE (Marks)
MID I (20 Marks)	TOTAL 50 Marks SCALE DOWN TO 25 Marks
MID II (15 Marks)	
ASSIGNMENTS (5 Marks)	
CLASSROOM ACTIVITIES (5 Marks)	

CLEAN & GREEN ACTIVITIES (5 Marks)	
FINAL EXAMINATION	75 Marks
TOTAL	100

MID I Questions

Question	Course Objective	Bloom's Taxonomy Level
Describe the retrogressive metamorphisis in herdmania	2 & 4	Remembering and Understanding
Explain digestive system in scoliodon	3 & 4	Analyzing and Evaluating
Herdmania	3	Analyzing
Cyclostomata	1, 2 & 4	Understanding
Cephalochordata	1 & 4	Remembering
Tadpole larva	1 & 4	Remembering
Characters of chordata	3 & 4	Understanding and analyzing

Urochordata	**1**	**Remembering**
Scoliodon **In which of the following jaws are found** **a) Herdmania b) Fish c) Petromyzon d) Amphioxus**	**1**	**Remembering**
The animal who possess notochord throughout life is **a) Fish b) Amphioxus c) Bird d) Snake**	**1**	**Remembering**
Branchiostomata belongs to **a) Urochordata b) Hemichordata c) Cephalochordata d) Protochordata**	**1**	**Remembering**
Agnatha includes **a) Hag fishes b) Fishes c) Jelly fishes d) Flying fishes**	**1**	**Remembering**
Notochodata is restricted to tail region only in **a) Hemichordata b) Cephalochordata c) Tunicata d) None**	**2**	**Applying**
Retrogressive metamorphosis is found in **a) Balanoglossus b) Branchiostomata c) Herdmania d) All**	**2**	**Applying**
Which of the following animal belongs to class cyclostomata **a) Herdmania b) Petromyzon c) Amphioxus d) Balanoglossus**	**2**	**Understanding**

Lampreys are a) Jawless fishes b) Jawless primitive vertebrates c) Jawed fishes d) None	1 & 2	Rememberi ng
Ancestors of cyclostomes are a) Myxinoides b) Arthropods c) Ostracoderms d) Urochordates	1 & 4	Rememberi ng and applying
In Urochordata notochord is found in a) Head of adult b) Tail of adult c) Tail of larva d) Test of adult	1	Rememberi ng and applying

MID II Questions

Question	Course Objective	Bloom's Taxonomy Level
Members of which group of the followings, have three ossicles in their internal ear. A) Amphibia B) Reptilia C) Aves D) Mammalia	1	Remembering and Understanding
Egg laying mammals are grouped as A) Eutheria B) Prototheria C) Rodentia D) Metatheria	1	Remembering
Marsupials are A) Oviparous B) Viviparous C) Ovoviviparous D) Omnivorous	1 & 2	Remembering and Understanding
12 pairs of cranial nerves are present in A) Reptilia B) Birds C) Mammals D)All	1 & 2	Remembering and Understanding

Which of the following mammals has scrotal testis A) Prototherians B) All placental mammals C) Elephant D)Man	1 & 2	Remembering and Understanding
Two vagina is found in A) Metatheria B) Prototheria C) Eutheria D)All	1 & 2	Remembering and Understanding
Sceintific name of Lion A) Hippopotamus B) Equus C) Panthera leo D) Panthera tigris	1	Remembering
When teeth are embedded in the jaw bone A) Diphyodont B) Thecodont C) Heterodont D) All	2	Remembering and Understanding
Which of the following cells secrete dentine A) Chondroblast B) Osteoblast C) Odontoblast D) Elaioblast	1	Remembering
Human teeth are A) Diphyodont B) Thecodont C) Heterodont D) All	3	Applying

Assignments

S. No.	Topic	Bloom's Taxonomy Level
1	Structure and life history of Herdmania	Understanding
2	Retrogressive metamorphosis	Remembering and understanding
3	General characters of Chordates	Understanding and analyzing

4	Write about digestive system in fish	Remembering
5	Structure and function of Scoliodon heart	Remembering
6	Types of scales	Understanding and evaluation
7	Respiratory system in frog	Remembering
8	Structure and function of calotes heart	Remembering
9	Identification of poisonous and non poisonous snakes	Remembering and evaluation
10	Dentition in Mammals	Remembering

Classroom Activities

S. No.	Activity and Topic	Bloom's Taxonomy Level
1	Poster Presentation on National Income	Understanding and Analysis
2	Online Quiz on I Module	Covering Lower and Higher order thinking skills
3	Online Quiz on II Module	Covering Lower and Higher order thinking skills
4	Online Quiz on III Module	Covering Lower and Higher order thinking skills
5	Online Quiz on V Module	Covering Lower and Higher order thinking skills

Mapping of Course Outcomes with program and Program Specific Outcomes (CO, PO & PSO Matrix)

CO/PO/PSO	PO 1	PO 2	PO 3	PO 5	PO 6	PO 7	PSO 1	PSO2
CO 1	3	3	3				3	3
CO 2	3	3	3				3	3
CO 3	3	3	3				3	3
CO 4	3	3	3				3	3
CO 5	3	3	3				3	3

CO Attainments (Direct and Indirect)

CO	Direct	Indirect	Total CO Attainment
CO 1	64.31	82.50	66.13
CO 2	64.31	83.75	66.26
CO 3	64.31	86.25	66.51
CO 4	64.31	82.50	66.13
CO 5	64.31	87.5	66.63

PO and PSO Attainment (Direct and Indirect)

	PO1	PO2	PO3	PSO1	PSO2
	3	3	3	3	3
CO1	66.1	66.1	66.1	66.1	66.1
CO2	66.3	66.3	66.3	66.3	66.3
CO3	66.5	66.5	66.5	66.5	66.5
CO4	66.1	66.1	66.1	66.1	66.1
CO5	66.6	66.6	66.6	66.6	66.6
PO Attainment	66.33	66.33	66.33	66.33	66.33

CO's attainment is good, try to improve it further.

PROGRAMME CO-ORDINATOR

DEPARTMENT OF CHEMISTRY

PROGRAM: B.Sc(BZC) **YEAR: I** **SEMESTER: 2**
COURSE: II **CREDITS: 4 + 1** **HOURS: 4+2**

PAPER II: Organic & General Chemistry

COURSE OBJECTIVES

CO1 Formulate the mechanism of organic reactions by recalling and correlating the fundamental properties of the reactants involved

CO2 Learn and identify many organic reaction mechanisms.

CO3 Learn and identify many organic reaction mechanisms including Free Radical Substitution, Electrophonic

Addition and Electrophonic Aromatic Substitution.

CO4 Correlate and describe the stereochemical properties of organic compounds and reactions.

CO5 Learn and identify the concepts of a standard solutions, primary and secondary standards. Facilitate the

learner to make solutions of various molar concentrations.

COURSE CONTENTS

CONTENT	CO	HOURS
UNIT I: ORGANIC CHEMISTRY: Recapitulation of Basics of Organic Chemistry Carbon-Carbon sigma bonds (Alkanes and Cycloalkanes) General methods of preparation of alkanes- Wurtz and Wurtz-Fittig reaction, Corey House synthesis, physical and chemical properties of alkanes, Isomerism and its effect on properties, Free radical substitutions; Halogenations, concept of relative reactivity v/s selectivity. Conformational analysis of alkanes (Conformations, relative stability and energy diagrams of Ethane, Propane and butane) General molecular formulae of cycloalkanes and relative stability, Baeyer strain theory, Cyclohexane conformations with energy diagram, Conformations of monosubstituted cyclohexane.	1,2,3	12
UNIT II: Carbon-Carbon pi Bonds(Alkenes and Alkynes) General methods of preparation, physical and chemical properties. Mechanism of E1, E2, E1 cb reactions, Saytzeff and Hofmann eliminations, Electrophilic Additions ,mechanism (Markovnikov/Anti Markovnikov addition) with suitable examples,, syn and anti-addition;	1, 2, 3	12

additionofH2,X2, HX. Oxymercuration, demercuration, hydroboration-oxidation, ozonolysis, hydroxylation, Diels Alderreaction,1,2- and1,4-addition reactions in conjugated dienes. Reactions of alkynes; acidity, electrophilic and nucleophilic additions, hydration to form carbonyl compounds, Alkylation of terminal alkynes.		
UNIT III: Benzene and its reactivity Concept of aromaticity, Huckel's rule - application to Benzenoid (Benzene, Naphthalene) and Non - Benzenoid compounds (cyclopropenyl cation, cyclopentadienyl anion and tropylium cation) Reactions - General mechanism of electrophilic aromatic substitution, mechanism of nitration, Friedel- Craft's alkylation and acylation. Orientation of aromatic substitution - ortho, para and meta directing groups. Ring activating and deactivating groups with examples (Electronic interpretation of various groups like NO2 and Phenolic). Orientation of i. Amino, methoxy and methyl groups ii. Carboxy, nitro, nitrile, carbonyl and sulfonic acid groups iii. Halogens (Explanation by taking minimum of one example from each type)	**1, 2, 3**	**12**
UNIT IV: GENERAL CHEMISTRY 1. Surface chemistry and chemical bonding Surface chemistry Colloids- Coagulation of colloids- Hardy-Schulze rule. Stability of colloids, Protection of Colloids, Gold number. Adsorption-Physical and chemical adsorption, Langmuir adsorption isotherm, applications of adsorption. 2. Chemical Bonding Valence bond theory, hybridization, VB theory as applied to ClF3,Ni(CO)4, Molecular orbital theory -LCAO method, construction of M.O. diagrams for homo-nuclear and hetero-nuclear diatomic molecules(N2,O2,CO and NO). 3. HSAB Pearson's concept, HSAB principle & its importance, bonding in Hard-Hard and Soft-Soft combinations.	**1,4**	**12**
UNIT V: Stereochemistry of carbon compounds Molecular representations-Wedge, Fischer, Newman and Saw-Horse formulae. Optical isomerism: Optical activity- wave nature of light, plane polarised light, optical rotation and specific rotation. Chiral molecules- definition and criteria (Symmetry elements)-Definition of enantiomers and diastereomers – Explanation of optical isomerism with examples- Glyceraldehyde, Lactic acid, Alanine, Tartaric acid, 2,3-dibromopentane. D,L, R,S and E,Z- configuration with examples. Definition of Racemic mixture – Resolution of racemic mixtures (any 3 techniques)	**1, 4**	**12**
Volumetric Analysis Lab Use glassware, equipment and chemicals and follow experimental procedures in the laboratory • Understand and explain the volumetric analysis based on fundamental concepts learnt in ionic equilibria • Learn and identify the concepts of a standard solutions, primary and secondary standards • Facilitate the learner to make solutions of various molar concentrations. • This may include: The concept of the mole; Converting moles to grams; Converting grams to moles; Defining concentration; Dilution of Solutions; Making different molar concentrations.	**5**	**30**

ASSESSMENT/EVALUATION METHODS

ASSESSMENT TOOL	WEIGHTAGE (Marks)
MID I (20 Marks)	TOTAL 50 Marks SCALE DOWN TO 25 Marks
MID II (15 Marks)	
ASSIGNMENTS (5 Marks)	
CLASSROOM ACTIVITIES (5 Marks)	
CLEAN & GREEN ACTIVITIES (5 Marks)	
FINAL EXAMINATION	75 Marks
TOTAL	**100**

MID I Questions

Question	Course Objective	Bloom's Taxonomy Level
Explain Bayer's strain theory OR Write the preparation of alkanes	1,2& 3	Remembering and Understanding
Write the Diels alder reaction with examples	3 & 4	Analyzing and Evaluating
Explain the conformations of butane and write its stability order	1&3	Analyzing
Explain Saytzev's rule with example	1, 2 & 3	Understanding
Write Markonikov's rule with eg	1 & 3	Remembering
Write the reaction of ozonolysis	1 & 3	Remembering
Write the free radical substitution in alkanes	3	Understanding and analyzing
Explain Anti Markonikov's rule	1&2	Remembering
How many carbon atoms are in butane	1&2	Remembering

A. 4 B. 6 C. 8 D.10		
What is suffix for hydrocarbon with single bond A. Yne B. ene C ane D. one	1&2	Remembering
What is the first step of halogenation of alkanes A. homolytic cleavage B. heterolytic cleavage C. propagation D termination	1&2	Remembering
Identify the addition reaction which is not underdone by alkenes A. mercurization B. oxy mercurization C. Hydroboration D. Halogenation	1&2	Remembering
Chemical formula of ethane A. C3H8 B. C4H10 C. C2H6 D.CH4	2	Applying
Both alkanes and alkenes are A. saturated B. unsaturated C. HC D. Inorganic compounds	2	Applying
Write the structure of ethene	2	Understanding
CH2 = CH2 + H2 --→	1 & 2	Remembering
Alkanes are also called as	1 & 3	Remembering and applying
Which is the alkane that is used as fuel for cigarette lighter A. Ethane B. Methane C Butane D Pentane	1&2	Remembering and applying

MID II Questions

Question	**Course Objective**	**Bloom's Taxonomy Level**
Explain langmuir adsorption isotherm	4	Remembering and Understanding
What is LCAO and draw MO diagram for O2,CO	1 .2	Remembering
Write about D,L configuration	4	Understanding and apply
Explain R,S configuration	4	Understanding and apply
Write about resolution method	4	Understanding and apply

Assignments

S. No.	Topic	Bloom's Taxonomy Level
1	Explain Bayers strain theory Explain the mechanism of halogenation	Understanding
2	Exlain about markownikovs and anti markonikovs rule.	Remembering and understanding
3	Explain aromaticity of benzene Explain AES reaction in benzene with mechanism	Understanding and analyzing
4	What is LCAO and draw MO diagram for O2.N2,CO,NO	Remembering
5	Write about D,L configuration Explain R,S configuration	Remembering
6	Explain E,Z configuration with eg Write about resolution method	Understanding and evaluation

Classroom Activities

S. No.	Activity and Topic	Bloom's Taxonomy Level
1	Student seminars	Understanding and Analysis
2	Cross word puzzle	Applying, Analyzing and Evaluating
3	Clean and Green	Understanding
4	Google Quiz	Remembering, Understanding and Applying
5	Student seminars	Understanding and Analysis

Mapping of Course Outcomes with program and Program Specific Outcomes (CO, PO & PSO Matrix)

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 5	PO 6	PSO 3	PSO 4
CO 1	3					3	
CO 2		3				3	
CO 3				3	3		3

CO 4			3				3
CO 5						3	3

CO Attainments (Direct and Indirect)

CO	DIRECT	INDIRECT	Total CO Attainment
CO1	62.53	90.00	65.28
CO2	62.85	92.50	65.82
CO3	62.91	90.00	65.62
CO4	62.55	92.50	65.55
CO5	62.56	95.00	65.81

PO and PSO Attainment (Direct and Indirect)

	PO1	PO2	PO3	PO5	PO6	PSO3	PSO4
CO1	65.28					65.28	
CO2		65.82				65.82	
CO3				65.62	65.62	65.62	
CO4			65.55	65.55	65.55	65.55	65.55
CO5				65.81	65.81	65.81	65.81
CO6							
PO Attainment	65.28	65.82	65.55	65.66	65.66	65.61	65.68

CO's attainment is good, try to improve it further.

PROGRAMME CO-ORDINATOR