GOVT. RANI AVANTI BAI LODHI COLLEGE,GHUMKA,
DISTT.-RAJNANDGAON (C.G.)

Criterion –1: Curricular Aspects

1.1 - Curricular Planning and Implementation

1.1.1 - The Institution ensures effective curriculum delivery through a well planned and documented process

Submitted to National Assessment and Accreditation Council (2023-2024)

उच्च शिक्षा विभाग, छत्तीसगढ़ शासन

शैक्षणिक सत्र 2023–24 का अकादमिक कैलेण्डर

क्र.	विवरण		तिथियाँ
1	प्रवेश प्रक्रिया (महाविद्यालय स्तर पर)		
	(क)	स्नातक प्रथम वर्ष हेतु	16.06.2023 से 31.07.2023 तक
	(ख)	अन्य कक्षाओं हेतु	16.06.2023 से 15.07.2023 या परीक्षा परिणाम घोषित होने के उपरान्त 10 दिन के भीतर
	(ग)	प्रवेश प्रक्रिया विश्वविद्यालय के माध्यम से ऑनलाइन पद्धति से या शासन के निर्देशानुसार	
2	कुलपति की अनुमति से प्रवेश की अंतिम तिथि		14 अगस्त 2023 तक
3	नियमित कक्षायें प्रारंभ		01.07.2023 से
4	वार्षिक परीक्षाओं का आयोजन		मार्च 2024 के प्रथम सप्ताह से
5	सभी वार्षिक परीक्षा परिणामों की घोषणा		15.06.2024 तक
6	पुनर्मूल्यांकन के सभी परिणामों की घोषणा		31.08.2024 तक
7	पूरक परीक्षा का आयोजन		न्यूनतम समय में
8	पूरक परीक्षा के परिणामों की घोषणा		31.10.2024 तक
9	छात्रसंघ गतिविधियाँ		
	(क)	छात्रसंघ गठन प्रक्रिया एवं शपथ ग्रहण	24.08.2023 से 31.08.2023 तक छात्रसंघ गठन हेतु चुनाव/मनोनयन, शासन के निर्देशानुसार
10	खेलकूद एवं सांस्कृतिक, गतिविधियाँ :–		
	(क)	खेलकूद प्रतिस्पर्धा प्रारम्भ (इंडोर आउटडोर)	18.07.2023 से
	(ख)	खेलकूद प्रतिस्पर्धाओं का समापन (इंडोर आउटडोर)	20.12.2023 तक
	(ग)	महाविद्यालय स्तर पर खेलकूद (इंडोर आउटडोर) का वार्षिक आयोजन एवं पुरस्कार वितरण	21, 22 एवं 23 दिसम्बर, 2023 में से कोई दो दिन
11	एन सी.सी. /एन.एस.एस. एवं अन्य गतिविधियाँ :–		
	(क)	वृक्षारोपण कार्यक्रम	जुलाई, 2023 के द्वितीय सप्ताह
	(ख)	महाविद्यालय स्तर पर वार्षिकोत्सव का आयोजन	21, 22 एवं 23 दिसम्बर, 2023 में से कोई एक दिन
	(ग)	एनसीसी/एनएसएस कैम्प का आयोजन	23.12.2023 से 29.12.2023 तक
	(घ)	दीक्षान्त समारोह	जनवरी–फरवरी 2024

क्र.	विवरण		तिथियाँ
12	अवकाश		
	(क)	दशहरा अवकाश (3 दिन)	23.10.2023 से 25.10.2023 तक
	(ख)	दीपावली अवकाश (5 दिन)	10.11.2023 से 14.11.2023 तक
	(ग)	शीतकालीन अवकाश (3 दिन)	25.12.2023 से 27.12.2023 तक
	(घ)	ग्रीष्मकालीन अवकाश (1 माह)	16.05.2024 से 15.06.2024 तक
13	आंतरिक परीक्षाओं का कार्यक्रम		
	1	प्रथम यूनिट परीक्षा	01.09.2023
	2	द्वितीय यूनिट परीक्षा	30.09.2023
	3	तृतीय यूनिट परीक्षा	06.11.2023
	4	प्रथम सत्र/सेमेस्टर परीक्षा	28, 29, 30 नवम्बर 2023
	5	चतुर्थ यूनिट परीक्षा	19.12.2023
	6	द्वितीय सत्र/सेमेस्टर परीक्षा	28, 29, 30 दिसम्बर 2023
	7	प्री– फाइनल परीक्षा	29, 30, 31 जनवरी 2024
14	वार्षिक परीक्षा कार्यक्रम		
	1	वार्षिक प्रायोगिक परीक्षाओं का आयोजन	फरवरी 2024 से
	2	वार्षिक परीक्षाओं का आयोजन	मार्च 2024 प्रथम सप्ताह से

नोटः– अपरिहार्य कारणवश शैक्षणिक कार्य दिवस निर्धारित मानक 180 दिवसों से कम होने की स्थिति में समस्त महाविद्यालयों एवं विश्वविद्यालयों में अपने स्तर पर शैक्षणिक कालखण्डों की अवधि में वृद्धि कर शैक्षणिक दिवसों की पूर्ति की जाए ताकि अकादमिक केलेण्डर का पालन सुनिश्चित हो।

नियमित विद्यार्थी के रूप में वार्षिक परीक्षा में बैठने की पात्रता :–

1. प्रत्येक विषय की कक्षाओं में 75 प्रतिशत उपस्थिति अनिवार्य है।
2. पाठ्यक्रम में निर्धारित निहित प्रावधानों के अन्तर्गत विद्यार्थियों को आन्तरिक परीक्षा में सम्मलित होना अनिवार्य है।
3. एन.सी.सी./एन.एस.एस. कैम्प/खेलकूद/राज्य स्तरीय प्रतिस्पर्धाओं में सम्मिलित हुए छात्रों को उपस्थित माना जाये।
4. कक्षाओं में उपस्थिति की प्रथम गणना 30 नवम्बर तक की जाये।
5. कम उपस्थिति वाले छात्रों को तथा उनके पालकों को सूचना दी जाये।
6. कक्षाओं में उपस्थिति की द्वितीय गणना 28 फरवरी तक की जाये।

02.05.23 02/5/23 02/05/23 02.05.23 02.05.23

GOVT. RANI AVANTI BAI LODHI COLLEGE,GHUMKA,DISTT-RAJNANDGAON

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COLLEGE ACADEMIC CALENDAR 2023-24

	FIRST WEEK	SECONDWEEK	THIRDWEEK	FOURTHWEEK
JUNE	Printing Prospectus World Environment day World environment day	World day against child labor World blood doner day, World elder abuse awareness day,	Admission Committee Meeting International Yoga Day	Sickle cell awareness day,
JULY	Online Application Start Through University Time Table Committee Meeting International plastic bag free day	Plantation IQAC Meeting World population day,	Online Application Start Through University, World youth skills day	Online Application Start Through University
AUGUST	TY Class Admission	Within15 Days SY&TYAdmissionWithin15 Days after result declaration. Independence Day(15August) Celebration of Rani Avanti Bai Jayanti International youth day,	SY & TY Admission Within 15 Days after result declaration. Sweep activity	Within15 Days SY&TYAdmissionWithin15 Days after result declaration. National sports day,
SEPTEMBER	World Population Day Program Induction Program for FY Students Percent's Meet Teacher's Day	Filling up Scholarship &Free Ship Forms Inauguration National Nutrition Week	International Hindi Day ResultDeclaration Suppl y Examination Word Ozo neDay	Hindi Association unit Unit Test Sweep Activity
OCTOBER	Mahatma Gandhi Jayanti Placement Cell Activity Unit Test	Preparation of AQAR 2023-24 , Missile Man APJ Abdul Kalam Jayanti Programme	Dussehra Vacation World Food Day Amrit Mahotsav	Preparation of AQAR Vallabhbhai patel Day Diwali Vacation
NOVEMBER		Term End Exam Sweep Activity	Unit Test NSS Camping	Guest Lectures InternalAssessmentPG1st and3rd Semester)
DECEMBER	Preparation of AQAR Unit Test Word Aids Day	Preparation of AQAR IQAC Meeting Internal Assessment World Human Rights Day, National energy conservation day	Preparation of AQAR Internal Assessment Winter Vacation, National mathematics day, preparation of AISHE	Submission of AQAR Internal Assessment, Annual Function, kishan Divas University Examination)1st and3rd Semester)

Govt. R.A.B.L. College GHUMKA (C.G.)

प्राचार्य
शास. रानी अवंतीबाई लोधी महाविद्यालय
घुमका, जिला–राजनांदगाँव (छ.ग.)

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COLLEGE ACADEMIC CALENDAR 2023-24

	FIRST WEEK	SECONDWEEK	THIRDWEEK	FOURTHWEEK
JANUARY	**University PG Examination Submission of AISHE data Unit Test**	**Celebration of Vivekananda Jayanti University Examination Youth Festival, Wolrd hindi day**	**Unit Test, Indian army day, International education day**	**Republic Day Flag Hoisting(26th Jan Prize Distribution Voter's Day Annual Function**
FEBRUARY	**Stock Verification**	**Practical Examination**	**Practical Examination**	**Practical Examination National Science Day**
MARCH	**Annual Examination**	**Annual Examination World Woman's Day**	**Annual Examination**	**Annual Examination**
APRIL	**Annual Examination**	**Annual Examination**	**Annual Examination**	**Annual Examination**
MAY	**Internal Assessment PG 2nd and 4th Semester)**	Feedback collection	Feedback analysis	**University Examination) 2nd and 4th Semester) Nontobacco Day**
JUNE	**Planning of Committees for next Academic Year**	**Printing of Prospectus ,Admission For ms Submission of Departmental and Committee Reports to Central Documentation Committee (IQAC)**	**Summer Vacation Start**	**Year End Meeting &Distribution of Committee Work &College Assessment of workload for advertisement for new posts University PGE examinations**

Govt. R.A.B.L. College GHUMKA (C.G.)

प्राचार्य
शास. रानी अवंतीबाई लोधी महाविद्यालय
घुमका, जिला–राजनांदगाँव (छ.ग.)

कार्यालय प्राचार्य, शासकीय रानी अवंतीबाई लोधी महाविद्यालय, घुमका जिला–राजनांदगाँव (छ.ग.)

समय सारणी

वाणिज्य संकाय

सत्र 2023–24 (01 अगस्त 2023 से प्रभावशील)

कक्षा	10.30 से 11.10	11.10 से 11.50	11.50 से 12.30	12.30 से 01.10	01.10 से 01.50	01.50 से 02.30	02.30 से 03.10	03.10 से 03.50	03.50 से 04.30	04.30 से 05.10
	1	2	3	4	5	6	7	8	9	10
बी.कॉम प्रथम	बिजनेस मैथमेटिक्स कक्ष क्र.–10	अंग्रेजी भाषा (सो.मं.बु.) कक्ष क्र.–10	फाउनेनशियल एकाउण्टिंग कक्ष क्र.–10	व्या. अर्थशास्त्र कक्ष क्र.–10	बिजनेस नेगू. फ्रेमवर्क कक्ष क्र.–10	बिजनेस कम्यूनिकेशन / इनवायरमेंट कक्ष क्र.–10	हिंदी भाषा (सो.मं.बु.) कक्ष क्र.–10	व्यक्तित्व अध्ययन कक्ष क्र.–10	कम्प्यूटर – T ग्रुप –1 T/S - W ग्रुप –2 T/S - Th ग्रुप –3 T/S - F	खेलकूद एवं सांस्कृतिक कार्यक्रम
बी.कॉम द्वितीय	हिंदी भाषा (गु. शु. श.) कक्ष क्र.–04	बिजनेस स्टेटिस्टिक्स कक्ष क्र.–04	अंग्रेजी भाषा (गु. शु. श.) कक्ष क्र.–04	कॉस्ट एकाउण्टिंग कक्ष क्र.–04	कार्पोरेट एकाउण्टिंग कक्ष क्र.–04	हिंदी भाषा (सो.मं.बु.) कक्ष क्र.–04	कंपनी लॉ (सो.म.बु.) कक्ष क्र.–04 थियोरी ऑफ मैनेजमेंट (गु.शु.श.)	कम्प्यूटर – T ग्रुप –1 T/S - W ग्रुप –2 T/S - Th ग्रुप –3 T/S - F	अंग्रेजी भाषा (सो.म.गु.) कक्ष क्र.–04	खेलकूद एवं सांस्कृतिक कार्यक्रम
बी.कॉम तृतीय	अंग्रेजी भाषा कक्ष क्र.–08	मैनेजमेंट एकाउण्टिंग कक्ष क्र.–08	बैंकटिंग सम्बन्ध कक्ष क्र.–08	इनकम टैक्स कक्ष क्र.–08	ऑडिटिंग कक्ष क्र.–08 (गु.शु.श.)	इनडायरेक्ट टैक्स कक्ष क्र.–08	कम्प्यूटर – T ग्रुप –1 T/S - W ग्रुप –2 T/S - Th ग्रुप –3 T/S - F	हिंदी भाषा (सो.म.गु.) कक्ष क्र.–08	सांस्कृतिक कार्यक्रम	खेलकूद

नोट : T : ट्यूटोरियल कक्षाएं
S : विशेष कोचिंग कक्षाएं

(डॉ. पी. के. देवांगन)
प्राचार्य
शासकीय रानी अवंती बाई लोधी महाविद्यालय
घुमका, जिला–राजनांदगांव (छ.ग.)

कार्यालय प्राचार्य, शासकीय रानी अवंतीबाई लोधी महाविद्यालय, घुमका जिला–राजनांदगाँव (छ.ग.)

समय सारणी

विज्ञान संकाय

सत्र 2023–24 (01 अगस्त 2023 से प्रभावशील)

कक्षा	10.30 से11.10	11.10 से 11.50	11.50 से 12.30	12.30 से 01.10	01.10 से 01.50	01.50 से 02.30	02.30 से 03.10	03.10 से 03.50	03.50 से 04.30	04.30 से 05.10
	1	2	3	4	5	6	7	8	9	10
बी.एस.सी – प्रथम	प्राणीशास्त्र कक्ष क्र.–2	गणित कक्ष क्र.–2	रसायनशास्त्र कक्ष क्र.–2	वनस्पतिशास्त्र कक्ष क्र.–2	भौतिकशास्त्र कक्ष क्र.–2	अंग्रेजी भाषा	पर्यावरण	हिंदी भाषा कक्ष क्र.–2 (गु.शु.श.)	प्रायोगिक (सो.ग.बु.गु) खेलकूद एवं सांस्कृतिक कार्यक्रम (शु.श.)	कम्प्यूटर – W रसायन – T/S - M गणित T/S - T प्राणीशास्त्र T/S - T वनस्पतिशास्त्र T/S – Th भौतिकशास्त्र T/S - F
बी.एस.सी – द्वितीय	वनस्पतिशास्त्र कक्ष क्र.–05	भौतिकशास्त्र कक्ष क्र.–05	प्राणीशास्त्र कक्ष क्र.–05	रसायनशास्त्र कक्ष क्र.–05	अंग्रेजी भाषा कक्ष क्र.–05	गणित कक्ष क्र.–05	कम्प्यूटर – W रसायन – T/S - M गणित T/S - T प्राणीशास्त्र T/S - T वनस्पतिशास्त्र T/S – Th भौतिकशास्त्र T/S - F	हिंदी भाषा कक्ष क्र.–05 (गु.शु.श.)	प्रायोगिक	खेलकूद एवं सांस्कृतिक कार्यक्रम
बी.एस.सी – तृतीय	प्रायोगिक	रसायन शास्त्र कक्ष क्र.–18	भौतिकशास्त्र कक्ष क्र.–18	प्राणीशास्त्र कक्ष क्र.–18	गणित कक्ष क्र.–18	वनस्पतिशास्त्र कक्ष क्र.–18	अंग्रेजी भाषा (गु.शु.श.) कक्ष क्र.–18	हिंदी भाषा कक्ष क्र.–18 (गु.शु.श.)	कम्प्यूटर – W रसायन – T/S - M गणित T/S - T प्राणीशास्त्र T/S - T वनस्पतिशास्त्र T/S – Th भौतिकशास्त्र T/S - F	खेलकूद एवं सांस्कृतिक कार्यक्रम

नोट : T : ट्यूटोरियल कक्षाएं
S : विशेष कोचिंग कक्षाएं

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शासकीय रानी अवंती बाई लोधी महाविद्यालय,
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कार्यालय प्राचार्य, शासकीय रानी अवंतीबाई लोधी महाविद्यालय, घुमका जिला–राजनांदगाँव (छ.ग.)

समय सारणी

कला संकाय

सत्र 2023–24 (01 अगस्त 2023 से प्रभावशील)

	10.30 से11.10	11.10 से 11.50	11.50 से 12.30	12.30 से 01.10	01.10 से 01.50	01.50 से 02.30	02.30 से 03.10	03.10 से 03.50	03.50 से 04.30	04.30 से 05.10
	1	2	3	4	5	6	7	8	9	10
ए. –	हिन्दी साहित्य कक्ष क्र.–16	राजनीतिशास्त्र कक्ष क्र.–16	अंग्रेजी भाषा कक्ष क्र.–16	इतिहास कक्ष क्र.–16	अर्थशास्त्र कक्ष क्र.–16	समाजशास्त्र कक्ष क्र.–16	हिन्दी भाषा (सो.ग.यु.) कक्ष क्र.–16	पर्यावरण	कम्प्यूटर – (M) हिंदी साहित्य T/S– T समाजशास्त्र T/S – (s) राजनीतिशास्त्र T/S –(Th) अर्थशास्त्र T/S – (I) इतिहास T/S – (h)	खेलकूद एवं सांस्कृतिक कार्यक्रम
ए. –	हिंदी भाषा कक्ष क्र.–17	समाजशास्त्र कक्ष क्र.–17	हिन्दी साहित्य कक्ष क्र.–17	राजनीतिशास्त्र कक्ष क्र.–17	इतिहास कक्ष क्र.–17	अर्थशास्त्र कक्ष क्र.–17	अंग्रेजी भाषा कक्ष क्र.–17	कम्प्यूटर – (M) हिंदी साहित्य T/S– T समाजशास्त्र T/S – (s) राजनीतिशास्त्र T/S –(Th) अर्थशास्त्र T/S – (I) इतिहास T/S – (h)	सांस्कृतिक कार्यक्रम	खेलकूद
ए. –	राजनीतिशास्त्र कक्ष क्र.–01	इतिहास कक्ष क्र.–01	अर्थशास्त्र कक्ष क्र.–01	समाजशास्त्र कक्ष क्र.–01	हिन्दी साहित्य कक्ष क्र.–01	अंग्रेजी भाषा कक्ष क्र.–01	कम्प्यूटर – (M) हिंदी साहित्य T/S– T समाजशास्त्र T/S – (s) राजनीतिशास्त्र T/S –(Th) अर्थशास्त्र T/S – (I) इतिहास T/S – (h)	हिन्दी भाषा कक्ष क्र.–01	सांस्कृतिक कार्यक्रम	खेलकूद

नोट . T . ट्यूटोरियल कक्षाएं

S . विशेष कोचिंग कक्षाएं

(डॉ. वी. के. देवांगन)
प्राचार्य
शासकीय रानी अवंती बाई लोधी महाविद्यालय,
घुमका, जिला–राजनांदगांव (छ.ग.)

कार्यालय प्राचार्य, शासकीय रानी अवंतीबाई लोधी महाविद्यालय, घुमका जिला–राजनांदगाँव (छग.)

समय–सारिणी

सत्र 2023–24 (01 अगस्त 2023 से प्रभावशील)

एम. ए. हिन्दी प्रथम/द्वितीय सेमेस्टर

कक्षा	11.10 से 11.50	11.50 से 12.30	12.30 से 01.10	01.10 से 01.50	01.50 से 02.30 तक
	1	2	3	4	5
एम.ए. हिन्दी प्रथम सेमेस्टर	प्राचीन एवं मध्यकालीन काव्य (द्वितीय)	छायावाद एवं पूर्ववर्ती काव्य (तृतीय)	आदिकाल एवं पूर्व मध्यकाल (प्रथम)	नाटक, एकांकी एवं चरितात्मक कृति (चतुर्थ)	खेलकूद एवं सांस्कृतिक कार्यक्रम
एम.ए. हिन्दी द्वितीय सेमेस्टर	मध्यकालीन काव्य (षष्टम)	प्रयोगवादी एवं प्रगतिवादी काव्य (सप्तम)	उत्तर मध्यकाल एवं आधुनिक काल (पंचम)	उपन्यास, निबंध एवं कहानी (अष्टम)	खेलकूद एवं सांस्कृतिक कार्यक्रम

एम. ए. हिन्दी तृतीय/चतुर्थ सेमेस्टर

कक्षा	11.10 से 11.50	11.50 से 12.30	12.30 से 01.10	01.10 से 1.50	01.50 से 02.30 तक
	1	2	3	4	5
एम.ए. हिन्दी तृतीय सेमेस्टर	भाषा विज्ञान (द्वितीय)	साहित्य के सिद्धांत एवं आलोचना शास्त्र (प्रथम)	भारतीय साहित्य (चतुर्थ)	कामकाजी हिन्दी एवं पत्रकारिता (तृतीय)	खेलकूद एवं सांस्कृतिक कार्यक्रम
एम.ए. हिन्दी चतुर्थ सेमेस्टर	हिन्दी भाषा (षष्ठ)	हिन्दी आलोचना तथा समीक्षा शास्त्र (पंचम)	जनपदीय भाषा और साहित्य (छत्तीसगढ़ी) (अष्टम)	मीडिया लेखन एवं अनुवाद (सप्तम)	खेलकूद एवं सांस्कृतिक कार्यक्रम

प्राचार्य
शासकीय रानी अवंती बाई लोधी महाविद्यालय,
घुमका, जिला- राजनांदगांव (छ.ग.)

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web site- www.rablcollege.com Email : govt.collegeghumka@gmail.com Phone – 07744-296940
college code-1904

DEPARTMENT OF BOTANY

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

This is to certify that I, the undersigned, have completed the following course assigned to me during the academic year 2023-24

S.No.	Name of the Course	Class	Division
1	PAPER- I BACTERIA UNIT (I TO IV)	B.SC-I	
2	PAPER- II BRYOPHYTA ETC. UNIT (I TO IV)	B.SC-I	
3	PAPER- I PLANT TAXO UNIT (I TO IV)	B.SC-II	
4	PAPER- II ECOLOGY ETC. UNIT (I TO IV)	B.SC-II	
5	PAPER- I ANALYICAL ETC. UNIT (I TO IV)	B.SC-III	
6	PAPER- II GENETIC ETC. UNIT (I TO IV)	B.SC-III	
7	PRACTICAL PAPER- III	B.SC-I	
8	PRACTICAL PAPER- III	B.SC-II	
9	PRACTICAL PAPER- III	B.SC-III	

MR. DEWANAND BANDHE
GUEST LECTURER
BOTANY

(DR. B. K. DEWANGAN)
PRINCIPAL
GOVT. RANI AVANTI BAI LODHI COLLEGE,
GHUMKA, DISTT.-RAJNANDGAON (C.G.)

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DEPARTMENT OF BOTANY

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:- MR. DEWANAND BANDHE , GUEST LECTURER BOTANY

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10	B.Sc. -2 Botany Theory Class	B.Sc. -2 Botany Theory Class	B.Sc. -2 Botany Theory Class	B.Sc. -2 Botany Theory Class	B.Sc. -2 Botany Theory Class	B.Sc. -2 Botany Theory Class
11.10 To 11.50						
11.50 To 12.30						
12.30 To 01.10	B.Sc. -1 Botany Theory Class	B.Sc. -1 Botany Theory Class	B.Sc. -1 Botany Theory Class	B.Sc. -1 Botany Theory Class	B.Sc. -1 Botany Theory Class	B.Sc. -1 Botany Theory Class
01.10 To 01.50						
01.50 To 02.30	B.Sc. -3 Botany Theory Class	B.Sc. -3 Botany Theory Class	B.Sc. -3 Botany Theory Class	B.Sc. -3 Botany Theory Class	B.Sc. -3 Botany Theory Class	B.Sc. -3 Botany Theory Class
02.30 To 03.10			B.Sc. -1 Botany & Physics Batch No. – 1, 2 PRACTICAL	B.Sc. -1 Botany & Physics Batch No. – 3, 4 PRACTICAL		
03.10 To 03.50	B.Sc. -3 Botany & Physics Batch No. – 1, 2 PRACTICAL	B.Sc. -3 Botany & Physics Batch No. – 3, 4 PRACTICAL				
03.50 To 04.30					B.Sc. -2 Botany & Physics Batch No. – 1, 2 PRACTICAL	B.Sc. -2 Botany & Physics Batch No. – 3, 4 PRACTICAL
04.30 To 05.10			B.Sc. -1 Remedial Class			B.Sc. -1 Special Coaching Tutorial Class

MR. DEWANAND BANDHE
GEUST LECTURER
BOTANY

(DR. B. K. DEWANGAN)
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DEPARTMENT OF BOTANY

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- MR. DEWANAND BANDHE, Assistant Professor- GUEST LECTURER (BOTANY)

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.SC. I BOTANY	**PAPER –I BACTERIA**	**103**	**6**	
	PAPER –II BRYOPHYTA ETC.			
B.SC. II BOTANY	**PAPER –I PLANT TAXO**	**95**	**6**	
	PAPER –II ECOLOGY ETC.			
B.SC. III BOTANY	**PAPER –I ANALYICAL ETC.**	**75**	**6**	
	PAPER –II GENETIC ETC.			
PRACTICAL PAPER				
B.SC. I BOTANY	**PRACTICAL B.N. 01**	**25**	**1**	
	PRACTICAL B.N. 02	**25**		
	PRACTICAL B.N. 03	**25**	**1**	
	PRACTICAL B.N. 04	**23**		
			1	
B.SC. II BOTANY	**PRACTICAL B.N. 01**	**25**		
	PRACTICAL B.N. 02	**25**	**1**	
	PRACTICAL B.N. 03	**25**		
	PRACTICAL B.N. 04	**21**		
B.SC. III BOTANY	**PRACTICAL B.N. 01**	**20**	**1**	
	PRACTICAL B.N. 02	**20**		
	PRACTICAL B.N. 03	**20**		
	PRACTICAL B.N. 04	**20**	**1**	
Number of Teaching work load per week = 24				

MR. DEWANAND BANDHE
GUEST LECTURER
BOTANY

(DR. B. K. DEWANGAN)
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DEPARTMENT OF CHEMISTRY

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

This is to certify that I, the undersigned, have completed the following course assigned to me during the academic year 2023-24

S.No.	Name of the Course	Class	Division
1	PAPER- I INORGANIC AND PHYSICAL CHEMISTRY	B.SC-I	
2	PAPER- II ORGANIC AND PHYSICAL CHEMISTRY	B.SC-I	
3	PAPER- I INORGANIC CHEMISTRY	B.SC-II	
4	PAPER- II ORGANIC CHEMISTRY	B.SC-II	
5	PAPER- III PHYSICAL CHEMISTRY	B.SC-II	
6	PAPER- I INORGANIC CHEMISTRY	B.SC-III	
7	PAPER- II ORGANIC CHEMISTRY	B.SC-III	
8	PAPER- III PHYSICAL CHEMISTRY	B.SC-III	
9	PRACTICAL PAPER	B.SC-I	
10	PRACTICAL PAPER	B.SC-II	
11	PRACTICAL PAPER	B.SC-III	

Mrs. PRITI KHURSHAIL
ASSISTANT PROFESSOR
CHEMISTRY

(DR. B. K. DEWANGAN)
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DEPARTMENT OF CHEMISTRY

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:- Mrs. PRITI KHURSAIL , ASSISTANT PROFESSOR- CHEMISTRY

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10						
11.10 To 11.50	B.Sc. -3 Chemistry Theory Class	B.Sc. -3 Chemistry Theory Class	B.Sc. -3 Chemistry Theory Class	B.Sc. -3 Chemistry Theory Class	B.Sc. -3 Chemistry Theory Class	B.Sc. -3 Chemistry Theory Class
11.50 To 12.30	B.Sc. -1 Chemistry Theory Class	B.Sc. -1 Chemistry Theory Class	B.Sc. -1 Chemistry Theory Class	B.Sc. -1 Chemistry Theory Class	B.Sc. -1 Chemistry Theory Class	B.Sc. -1 Chemistry Theory Class
12.30 To 01.10	B.Sc. -2 Chemistry Theory Class	B.Sc. -2 Chemistry Theory Class	B.Sc. -2 Chemistry Theory Class	B.Sc. -2 Chemistry Theory Class	B.Sc. -2 Chemistry Theory Class	B.Sc. -2 Chemistry Theory Class
01.10 To 01.50						
01.50 To 02.30						
02.30 To 03.10	B.Sc. -3 PRACTICAL	B.Sc. -3 PRACTICAL	B.Sc. -3 PRACTICAL	B.Sc. -2 TUTORIAL CLASS	B.Sc. -3 PRACTICAL	B.Sc. -3 PRACTICAL
03.10 To 03.50						
03.50 To 04.30	B.Sc. -2 PRACTICAL	B.Sc. -2 PRACTICAL	B.Sc. -2 PRACTICAL	B.Sc. -2 PRACTICAL	B.Sc. -3 TUTORIAL CLASS	B.Sc. -2 PRACTICAL
04.30 To 05.10	B.Sc. -1 PRACTICAL	B.Sc. -1 PRACTICAL	B.Sc. -1 TUTORIAL CLASS	B.Sc. -1 PRACTICAL	B.Sc. -1 PRACTICAL	B.Sc. -1 PRACTICAL

Mrs. PRITI KHURSHAIL
ASSISTANT PROFESSOR
CHEMISTRY

(DR. B. K. DEWANGAN)
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DEPARTMENT OF CHEMISTRY

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- Mrs. PRITI KHURSAIL, ASSISTANT PROFESSOR CHEMISTRY

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.SC. I CHEMISTRY	**PAPER –I INORGANIC CHEMISTRY AND PHYSICAL**	**117**	**6**	
	PAPER-II ORGANIC AND PHYSICAL CHEMISTRY			
B.SC. II CHEMISTRY	**PAPER–I INORGANIC CHEMISTRY**	**115**	**6**	
	PAPER-II ORGANIC CHEMISTRY			
	PAPER –III PHYSICAL CHEMISTRY			
B.SC. III CHEMISTRY	**PAPER –I INORGANIC CHEMISTRY**	**86**	**6**	
	PAPER –II ORGANIC CHEMISTRY			
	PAPER- III PHYSICAL CHEMISTRY			
PRACTICAL PAPER				
B.SC. I CHEMISTRY	**PRACTICAL**		**2**	
	PRACTICAL			
B.SC. II CHEMISTRY	**PRACTICAL**			
	PRACTICAL		**2**	
B.SC. III CHEMISTRY	**PRACTICAL**		**2**	
	PRACTICAL			
Number of Teaching work load per week = 24				

Mrs. PRITI KHURSHAIL
ASSISTANT PROFESSOR
CHEMISTRY

(DR. B. K. DEWANGAN)
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DEPARTMENT OF COMMERCE

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

This is to certify that I, the undersigned, have completed the following course assigned to me during the academic year 2023-24

S.No.	Name of the Course	Class	Division
1	**PAPER-I** **Business communication** **(UNIT I TO V)**	**B.COM. I**	
2	**PAPER-II** **Business environment** **(UNIT I TO V)**	**B.COM. I**	
3	**PAPER-I** **Cost writing** **(UNIT I TO V)**	**B.COM. II**	
4	**PAPER-II** **Principal of management** **(UNIT I TO V)**	**B.COM. II**	
5	**PAPER-I** **Mnagerial accounting** **(UNIT I TO V)**	**B.COM. III**	
6	**PAPER-II** **Indirect tax, G.S.T. Including** **(UNIT I TO V)**	**B.COM. III**	

Mr. VEDRAM DEWANGAN
JANBHAGIDARI TEACHER
COMMERCE

(DR. B. K. DEWANGAN)
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college code-1904

DEPARTMENT OF COMMERCE

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher: Mr. VEDRAM DEWANGAN, JANBHAGIDARI COMMERCE

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10						
11.10 To 11.50	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class
11.50 To 12.30	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class
12.30 To 01.10	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class
01.10 To 01.50	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class
01.50 To 02.30	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class
02.30 To 03.10	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class
03.10 To 03.50						
03.50 To 04.30						
04.30 To 05.10						

Mr. VEDRAM DEWANGAN
JANBHAGIDARI TEACHER
COMMERCE

(DR. B. K. DEWANGAN)
PRINCIPAL
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DEPARTMENT OF COMMERCE

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- Mr. VEDRAM DEWANGAN,JANBHAGIDARI, COMMERCE

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.COM.- I **COMMERCE**	**PAPER-I** **Business communication**	**61**	**6**	
	PAPER-II **Business environment**			
B.COM.- II **COMMERCE**	**PAPER-I** **Cost writing**	**51**	**6**	
	PAPER-II **Principal of management**			
B.COM- III **COMMERCE**	**PAPER-I** **Managerial accounting**	**30**	**6**	
	PAPER-II Indirect tax, G.S.T. Including			
Number of Teaching work load per week = 18				

Mr. VEDRAM DEWANGAN
JANBHAGIDARI TEACHER
COMMERCE

(DR. B. K. DEWANGAN)
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DEPARTMENT OF COMMERCE

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

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S.No.	Name of the Course	Class	Division
1	PAPER-I FINANCIAL ACCOUNTING (UNIT I TO V)	B.COM. I	
2	PAPER-II BUSS. REG. FRAMEWORK (UNIT I TO V)	B.COM. I	
3	PAPER-I CORPORATE ACCOUNTING (UNIT I TO V)	B.COM. II	
4	PAPER-II COMPANY LAW (UNIT I TO V)	B.COM. II	
5	PAPER-I INCOME TAX (UNIT I TO V)	B.COM. III	
06	PAPER-II ACCOUNTING (UNIT I TO V)	B.COM. III	

Dr. SATYADEV TRIPATHI
ASSISTANT PROFESSOR
COMMERCE

(DR. B. K. DEWANGAN)
PRINCIPAL
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DEPARTMENT OF COMMERCE

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher: Dr. SATYADEV TRIPATHI,ASSISTANT PROFESSOR COMMERCE

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10						
11.10 To 11.50						
11.50 To 12.30	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class
12.30 To 01.10	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class
01.10 To 01.50	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class
01.50 To 02.30	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class	B.COM I Theory Class
02.30 To 03.10	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class	B.COM II Theory Class
03.10 To 03.50	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class	B.COM III Theory Class
03.50 To 04.30						
04.30 To 05.10						

Dr. SATYADEV TRIPATHI
ASSISTANT PROFESSOR
COMMERCE

(DR. B. K. DEWANGAN)
PRINCIPAL
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DEPARTMENT OF COMMERCE

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- Dr. SATYADEV TRIPATHI,ASSISTANT PROFESSOR COMMERCE

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.COM.- I COMMERCE	**PAPER-I FINANCIAL ACCOUNTING**	**61**	**6**	
	PAPER-II BUSS. REG. FRAMEWORK			
B.COM.- II COMMERCE	**PAPER-I CORPORATE ACCOUNTING**	**51**	**6**	
	PAPER-II COMPANY LAW			
B.COM- III COMMERCE	**PAPER-I INCOME TAX**	**30**	**6**	
	PAPER-II ACCOUNTING			
Number of Teaching work load per week = 18				

Dr. SATYADEV TRIPATHI
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COMMERCE

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DEPARTMENT OF ECONOMICS

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

This is to certify that I, the undersigned, have completed the following course assigned to me during the academic year 2023-24

S.No.	Name of the Course	Class	Division
1	**PAPER-I** **Micro economics**	**B.A.I**	
2	**PAPER-II** **Indian economics**	**B.A.I**	
3	**PAPER-I** **Micro economics**	**B.A.II**	
4	**PAPER-II** **Money, banking and public finance**	**B.A.II**	
5	**PAPER-I** **Devlopment and environmental economics**	**B.A.III**	
6	**PAPER-II** **Statistical methods**	**B.A. III**	
7	**PAPER-II** **Business economics**	**B.COM I**	
8	**PAPER I** **Business statistics**	**B.COM II**	

Dr. ROHAN PRASHAD
ASSITANCE PROFESSOR
ECONOMICS

(DR. B. K. DEWANGAN)
PRINCIPAL
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DEPARTMENT OF ECONOMICS

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:- -Dr. ROHAN PRASHAD ,ASSISTANT PROFESSOR- ECONOMICS

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10						
11.10 To 11.50	B.COM II Theory class	B.COM II Theory class	B.COM II Theory class	B.COM II Theory class	B.COM II Theory class	B.COM II Theory class
11.50 To 12.30	B.A. III Theory class	B.A. III Theory class	B.A. III Theory class	B.A. III Theory class	B.A. III Theory class	B.A. III Theory class
12.30 To 01.10	B.COM I Theory class	B.COM I Theory class	B.COM I Theory class	B.COM I Theory class	B.COM I Theory class	B.COM I Theory class
01.10 To 01.50	B.A.-1 Theory Class	B.A.-1 Theory Class	B.A.-1 Theory Class	B.A.-1 Theory Class	B.A.-1 Theory Class	B.A.-1 Theory Class
01.50 To 02.30	B.A.-1I Theory Class	B.A.-1I Theory Class	B.A.-1I Theory Class	B.A.-1I Theory Class	B.A.-1I Theory Class	B.A.-1I Theory Class
02.30 To 03.10						
03.10 To 03.50						
03.50 To 04.30						
04.30 To 05.10						

Dr. ROHAN PRASHAD
ASSISTANT PROFESSOR
ECONOMICS

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DEPARTMENT OF HISTORY

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- Dr. ROHAN PRASHAD ,ASSISTANT PROFESSOR- ECONOMICS

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.A.- I **ECONOMICS**	**PAPER-I** **Micro economics**	**06**	**6**	
	PAPER-II **Indian Economics**			
B.A. –II **ECONOMICS**	**PAPER-I** **Micro economics**	**12**	**6**	
	PAPER-II **Money, banking and public finance**			
B.A.- III **ECONOMICS**	**PAPER-I** **Development and environmental economics**	**04**	**6**	
	PAPER-II **Statistical method**			
B.COM. I	**PAPER II** **Business economics**	**61**	**6**	
B.COM II	**PAPER I** **Business statistics**	**51**	**6**	
Number of Teaching work load per week = 30				

Dr. ROHAN PRASHAD
ASSITANCE PROFESSOR
ECONOMICS

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DEPARTMENT OF ENGLISH

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

This is to certify that I, the undersigned, have completed the following course assigned to me during the academic year 2023-24

S.No.	Name of the Course	Class	Division
1	ENGLISH LANGUAGE	B.A.I	
2	ENGLISH LANGUAGE	B.A.III	
3	ENGLISH LANGUAGE	B.Sc.- III	
4	ENGLISH LANGUAGE	B.COM.-I	

MR. BHARTENDU VERMA
ASSISTANT PROFESSOR
ENGLISH

(DR. B. K. DEWANGAN)
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DEPARTMENT OF ENGLISH

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:-Mr. BHARTENDU VERMA, ASSISTANT PROFESSOR,ENGLISH

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10						
11.10 To 11.50	B.COM-I ENGLISH LANGUAGE	B.COM-I ENGLISH LANGUAGE	B.COM-I ENGLISH LANGUAGE	B.COM-I ENGLISH LANGUAGE	B.COM-I ENGLISH LANGUAGE	B.COM-I ENGLISH LANGUAGE
11.50 To 12.30	B.A.-I ENGLISH LANGUAGE	B.A.-I ENGLISH LANGUAGE	B.A.-I ENGLISH LANGUAGE	B.A.-I ENGLISH LANGUAGE	B.A.-I ENGLISH LANGUAGE	B.A.-I ENGLISH LANGUAGE
12.30 To 01.10						
01.10 To 01.50						
01.50 To 02.30	B.A.III ENGLISH LANGUAGE	B.A.III ENGLISH LANGUAGE	B.A.III ENGLISH LANGUAGE	B.A.III ENGLISH LANGUAGE	B.A-III ENGLISH LANGUAGE	B.A.III ENGLISH LANGUAGE
02.30 To 03.10	B.Sc.III ENGLISH LANGUAGE	B.Sc.III ENGLISH LANGUAGE	B.Sc.III ENGLISH LANGUAGE	B.Sc.III ENGLISH LANGUAGE	B.Sc.III ENGLISH LANGUAGE	B.Sc.III ENGLISH LANGUAGE
03.10 To 03.50						
03.50 To 04.30						
04.30 To 05.10						

MR. BHARTENDU VERMA
ASSISTANT PROFESSOR
ENGLISH

(DR. B. K. DEWANGAN)
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DEPARTMENT OF ENGLISH
INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- MR. BHARTENDU VERMA, ASSISTANT PROFESSOR, ENGLISH

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.A-I	**ENGLISH LANGUAGE**	**202**	**6**	
B.A.III	**ENGLISH LANGUAGE**	**142**	**6**	
B.Sc.-III	**ENGLISH LANGUAGE**	**86**	**6**	
B.Com.-I	**ENGLISH LANGUAGE**	**61**	**6**	
Number of Teaching work load per week =24				

MR. BHARTENDU VERMA
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ENGLISH

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DEPARTMENT OF ENGLISH

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

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S.No.	Name of the Course	Class	Division
1	ENGLISH LANGUAGE	B.A.II	
2	ENGLISH LANGUAGE	B.Sc.-I	
3	ENGLISH LANGUAGE	B.Sc.- II	
4	ENGLISH LANGUAGE	B.COM.-II	
5	ENGLISH LANGUAGE	B.COM.-III	

MR. DEVSHARAN VERMA
JANBHAGIDARI TEACHER
ENGLISH

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DEPARTMENT OF ENGLISH

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:-DEVSHARAN VERMA , JABHAGIDARI TEACHER ENGLISH

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10						
11.10 To 11.50	B.COM.-II ENGLISH LANGUAGE	B.COM.-II ENGLISH LANGUAGE	B.COM.-II ENGLISH LANGUAGE	B.COM.-II ENGLISH LANGUAGE	B.COM.-II ENGLISH LANGUAGE	B.COM.II ENGLISH LANGUAGE
11.50 To 12.30	B.COM.-III ENGLISH LANGUAGE	B.COM.-III ENGLISH LANGUAGE	B.COM.-III ENGLISH LANGUAGE	B.COM.-III ENGLISH LANGUAGE	B.COM.-III ENGLISH LANGUAGE	B.COM.-III ENGLISH LANGUAGE
12.30 To 01.10						
01.10 To 01.50	B.Sc.-II ENGLISH LANGUAGE	B.Sc.-II ENGLISH LANGUAGE	B.Sc.-II ENGLISH LANGUAGE	B.Sc.-II ENGLISH LANGUAGE	B.Sc.-II ENGLISH LANGUAGE	B.Sc.-II ENGLISH LANGUAGE
01.50 To 02.30	B.Sc.-I ENGLISH LANGUAGE	B.Sc.-I ENGLISH LANGUAGE	B.Sc.-I ENGLISH LANGUAGE	B.Sc.-I ENGLISH LANGUAGE	B.Sc.-I ENGLISH LANGUAGE	B.Sc.-I ENGLISH LANGUAGE
02.30 To 03.10						
03.10 To 03.50						
03.50 To 04.30						
04.30 To 05.10						

MR. DEVSHARAN VERMA
JANBHAGIDHARI TEACHER
ENGLISH

(DR. B. K. DEWANGAN)
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DEPARTMENT OF ENGLISH
INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- MR. DEVSHARAN VERMA, JANBHAGIDARI TEACHER ENGLISH

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.A-II	**ENGLISH LANGUAGE**	**188**	**6**	
B.Sc.-I	**ENGLISH LANGUAGE**	**112**	**6**	
B.Sc.-II	**ENGLISH LANGUAGE**	**115**	**6**	
B.Com.-II	**ENGLISH LANGUAGE**	**51**	**6**	
B.Com.-III	**ENGLISH LANGUAGE**	**30**	**6**	
Number of Teaching work load per week =30				

MR. DEVSHARAN VERMA
JANBHAGIDARI TEACHER
ENGLISH

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DEPARTMENT OF HINDI

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

This is to certify that I, the undersigned, have completed the following course assigned to me during the academic year 2023-24

S.No.	Name of the Course	Class	Division
1	HINDI LITERATURE (UNIT – I TO V) PAPER-I PRACHIN HINDI KAVYA PAPER- II HINDI KATHA SAHITYA	B.A.I	
3	AADHUNIK HINDI KAVYA- I	M.A.I Sem	
4	AADHUNIK HINDI KAVYA- II	M.A.II Sem	
5	KAMKAYI HINDI AVM PATRAKARITA	M.A.III Sem	
6	MEDIA LEKHAN	M.A.IV Sem	
7	HINDI LANGUAGE (UNIT – I TO V)	B.COM. I	
8	HINDI LANGUAGE (UNIT – I TO V)	B.SC.-I	

MR. VINOD VERMA
JANBHAGIDHARI TEACHER
HINDI

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DEPARTMENT OF HINDI

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:- VINOD VERMA, JANBHAGIDARI TEACHER HINDI

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10	B.A.-1 Theory Class	B.A. -1 Theory Class	B.A. -1 Theory Class	B.A.-1 Theory Class	B.A.-1 Theory Class	B.A.-1 Theory Class
11.10 To 11.50						
11.50 To 12.30	M.A. HINDI-1 SEM	M.A. HINDI-1 SEM	M.A. HINDI-1 SEM	M.A. HINDI-1 SEM	M.A. HINDI-1 SEM	M.A. HINDI-1 SEM
12.30 To 01.10						
01.10 To 01.50	M.A.-3 HINDI SEM	M.A.-3 HINDI SEM	M.A.-3 HINDI SEM	M.A.-3 HINDI SEM	M.A.-3 HINDI SEM	M.A.-3 HINDI SEM
01.50 To 02.30						
02.30 To 03.10	B.A.-1 HINDI LANGUAGE Theory Class	B.A.-1 HINDI LANGUAGE Theory Class	B.A.-1 HINDI LANGUAGE Theory Class	B.COM.-1 HINDI LANGUAGE Theory Class	B.COM.-1 HINDI LANGUAGE Theory Class	B.COM.-1 HINDI LANGUAGE Theory Class
03.10 To 03.50				B.SC.-1 HINDI LANGUAGE	B.SC.-1 HINDI LANGUAGE	B.SC.-1 HINDI LANGUAGE
03.50 To 04.30		B.A.I T&S				
04.30 To 05.10						

MR. VINOD VERMA
JANBHAGIDHARI TEACHER
HINDI

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DEPARTMENT HINDI
INDIVIDUAL WORKLOAD
YEAR 2022-23

Name of the Teacher:- MR VINOD VERMA, - JANBHAGIDARI TEACHER HINDI

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.A. -I HINDI LITERATURE AND HINDI LANGUAGE	**PAPER- I PRACHIN HINDI KAVYA**	**183**	**6**	
	PAPER- II HINDI GADHY SAHITYA			
	PAPER- I PRACHIN HINDI LANGUAGE	**200**		
M.A. HINDI -1 SEM AND 3 SEM	**PAPER-III AADHUNIK HINDI KAVYA**	**20**	**6**	
	PAPER-III KAMKAJI AND PATRAKARITA	**34**		
B.COM-2 AND B.SC.-2	**PAPER-I HINDI LANGUAGE**	**51**	**6**	
	PAPER-I HINDI LANGUAGE	**115**		
PRACTICAL PAPER				

MR. VINOD VERMA
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HINDI

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DEPARTMENT OF HINDI

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

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S.No.	Name of the Course	Class	Division
1	**PAPER-I** आर्वाचीन हिंदी काव्य	**B.A.II**	
2	**PAPER-II** हिंदी निबंध तथा विधाएं अन्य गद्य	**B.A.II**	
3	**PAPER-I** आदिकाल एवं पूर्व मध्यकाल	**M.A.I Sem**	
4	**PAPER-IV** भारतीय साहित्य	**M.A.III Sem**	
5	आधार पाठ्यक्रम हिंदी भाषा	**B.A.II**	
6	आधार पाठ्यक्रम हिंदी भाषा	**B.SC. II**	
7	आधार पाठ्यक्रम हिंदी भाषा	**B.COM. III**	

MR. JAY VERMA
JANBHAGIDARI TEACHER
HINDI

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DEPARTMENT OF HINDI

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:- JAYPRAKASH VERMA , JABHAGIDARI TEACHER HINDI

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10	B.A.-2 Theory Class	B.A. -2 Theory Class	B.A. -2 Theory Class			
11.10 To 11.50	M.A. HINDI-3 SEM	M.A. HINDI-3 SEM	M.A. HINDI-3 SEM	M.A. HINDI-3 SEM	M.A. HINDI-3 SEM	M.A. HINDI-3 SEM
11.50 To 12.30	B.A.-2 HINDI LITERATURE Theory Class	B.A.-2 HINDI LITERATURE Theory Class	B.A.-2 HINDI LITERATURE Theory Class	B.A.-2 HINDI LITERATURE Theory Class	B.A.-2 HINDI LITERATURE Theory Class	B.A.-2 HINDI LITERATURE Theory Class
12.30 To 01.10	M.A.-1 HINDI SEM	M.A.-1 HINDI SEM	M.A.-1 HINDI SEM	M.A.-1 HINDI SEM	M.A.-1 HINDI SEM	M.A.-1 HINDI SEM
01.10 To 01.50						
01.50 To 02.30	B.COM- 2 HINDI	B.COM- 2 HINDI	B.COM- 2 HINDI			
02.30 To 03.10						
03.10 To 03.50						
03.50 To 04.30						
04.30 To 05.10						

MR. JAY VERMA
JANBHAGIDHARI TEACHER
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DEPARTMENT HINDI
INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- MR JAY PRAKASH VERMA, JANBHAGIDARI TEACHER HINDI

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
M.A. HINDI -1 AND 3 SEM	आदिकाल एवं पूर्व मध्यकाल	**20**	**6**	
	भारतीय साहित्य	**34**		
B.A. -2 HINDI LITERATURE AND HINDI LANGUAGE	**PAPER-I** पद्य खण्ड	**168**	**6**	
	PAPER-II गद्य खण्ड			
	आधार पाठ्यक्रम हिंदी भाषा	**188**	**3**	
B.COM-2 AND B.SC.-2	हिंदी भाषा	**51**	**3**	
	हिंदी भाषा	**115**	**3**	
PRACTICAL PAPER				
Number of Teaching work load per week =21				

MR. JAY VERMA
JANBHAGIDARI TEACHER
HINDI

(DR. B. K. DEWANGAN)
PRINCIPAL
GOVT. RANI AVANTI BAI LODHI COLLEGE,
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college code-1904

DEPARTMENT OF HISTROY

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

This is to certify that I, the undersigned, have completed the following course assigned to me during the academic year 2023-24

S.No.	Name of the Course	Class	Division
1	PAPER-I HISTORY OF INDIA (UNIT I TO V)	B.A.I	
2	PAPER-II HISTORY OF WORLD (UNIT I TO V)	B.A.I	
3	PAPER-I HISTORY OF INDIA (UNIT I TO V)	B.A.II	
4	PAPER-II HISTORY OF WORLD (UNIT I TO V)	B.A.II	
5	PAPER-I HISTORY OF INDIA (UNIT I TO V)	B.A.III	
6	PAPER-II HISTORY OF WORLD (UNIT I TO V)	B.A. III	

MR. DEEPAK VERMA
ASSITANCE PROFESSOR
HISTORY

(DR. B. K. DEWANGAN)
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DEPARTMENT OF HISTORY

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:- -MR. DEEPAK VERMA ,ASSISTANT PROFESSOR- HISTORY

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10						
11.10 To 11.50	B.A.-3 HISTORY Theory Class	B.A.-3 HISTORY Theory Class	B.A.-3 HISTORY Theory Class	B.A.-3 HISTORY Theory Class	B.A.-3 HISTORY Theory Class	B.A.-3 HISTORY Theory Class
11.50 To 12.30						
12.30 To 01.10	B.A.-1 HISTORY Theory Class	B.A.-1 HISTORY Theory Class	B.A.-1 HISTORY Theory Class	B.A.-1 HISTORY Theory Class	B.A.-1 HISTORY Theory Class	B.A.-1 HISTORY Theory Class
01.10 To 01.50	B.A.-1I HISTORY Theory Class	B.A.-1I HISTORY Theory Class	B.A.-1I HISTORY Theory Class	B.A.-1I HISTORY Theory Class	B.A.-1I HISTORY Theory Class	B.A.-1I HISTORY Theory Class
01.50 To 02.30						
02.30 To 03.10						
03.10 To 03.50	B.A.-1 Tutorial					
03.50 To 04.30		B.A.-2 Tutorial	B.A.-3 Tutorial	B.A.-1 Tutorial	B.A.-2 Tutorial	B.A.-3 Tutorial
04.30 To 05.10						

MR. DEEPAK VERMA
ASSITANCE PROFESSOR
HISTORY

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DEPARTMENT OF HISTORY

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- MR. DEEPAK VERMA ,ASSISTANT PROFESSOR- HISTORY

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.A.- I **HISTORY**	**PAPER-I** **HISTORY OF INDIA**	**57**	**6+2**	
	PAPER-II **HISTORY OF WORLD**			
B.A. –II **HISTORY**	**PAPER-I** **HISTORY OF INDIA**	**36**	**6+2**	
	PAPER-II **HISTORY OF WORLD**			
B.A.- III **HISTORY**	**PAPER-I** **HISTORY OF INDIA**	**18**	**6+2**	
	PAPER-II **HISTORY OF WORLD**			
PRACTICAL PAPER				
Number of Teaching work load per week = 24				

MR. DEEPAK VERMA
ASSITANCE PROFESSOR
HISTORY

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DEPARTMENT OF MATHEMATICS

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

This is to certify that I, the undersigned, have completed the following course assigned to me during the academic year 2023-24

S.No.	Name of the Course	Class	Division
1	**Paper – I** **CALCULUS**	**B.Sc.I**	
2	**Paper – II** **ALGEBRA**	**B.Sc.I**	
3	**Paper – I** **ADVANCED CALCULUS**	**B.Sc.II**	
4	**Paper – II** **DIFFERENTIAL EQUATION**	**B.Sc.II**	
5	**Paper – III** **MECHANICS**	**B.Sc.II**	
6	**Paper –I** **ANALYSIS**	**B.Sc.III**	
7	**Paper –II** **ABSTRACT ALGEBRA**	**B.Sc.III**	
8	**Paper –III** **DISCRETE MATHEMATICS**	**B.Sc.III**	
9	**BUSINESS MATHEMATICS**	**B.Com.I**	
10	**PROJECT WORK**	**B.Sc I**	

SMT. VARSHA SAHU
GEUST LECTURER
MATHEMATICS

(DR. B. K. DEWANGAN)
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DEPARTMENT OF MATHEMATICS

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:- SMT. VARSHA SAHU, Assistant Professor- GUEST LECTURER

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10	**B.COM-I Theory Class**	**B.COM-I Theory Class**	**B.COM-I Theory Class**	**B.COM-I Theory Class**	**B.COM-I Theory Class**	**B.COM-I Theory Class**
11.10 To 11.50	**B.SC.-I**	**B.SC.-I**	**B.SC.-I**	**B.SC.-I**	**B.SC.-I**	**B.SC.-I**
01.10 To 01.50	**B.SC.-III**	**B.SC.-III**	**B.SC.-III**	**B.SC.-III**	**B.SC.-III**	**B.SC.-III**
01.50 To 02.30	**B.SC.-II**	**B.SC.-II**	**B.SC.-II**	**B.SC.-II**	**B.SC.-II**	**B.SC.-II**

SMT. VARSHA SAHU
GEUST LECTURER
MATHEMATICS

(DR. B. K. DEWANGAN)
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DEPARTMENT OF MATHEMATICS

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- SMT. VARSHA SAHU ,Assistant Professor- GEUST LECTURER

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.SC.- I	**PAPER- I**	**06**	**6**	
	PAPER- II			
B.SC.- II	**PAPER-I**	**19**	**6**	
	PAPER-II			
	PAPER-III			
B.SC.- III	**PAPER-I**	**11**	**6**	
	PAPER-II			
	PAPER- III			
B.COM.- I	**BUSINESS MATHEMATICS**	**55**	**6**	
PROJECT WORK				
B.SC.- I			**6**	
	HISTORY OF MATHEMATICIAN	**6**		

SMT. VARSHA SAHU
GEST LECTURER
MATHEMATICS

(DR. B. K. DEWANGAN)
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DEPARTMENT OF PHYSICS

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

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S.No.	Name of the Course	Class	Division
1	PAPER-I MECHANICS, OSCILLATIONS AND PROPERTIES OF MATTER	B.SC. I	
2	PAPER-II ELECTRICITY, MAGNETISM, ELECTROMAGNETIC THEORY	B.SC. I	
3	PAPER-I THERMODYNAMICS, KINETIC THEORY AND STATISTICAL	B.SC. II	
4	PAPER-II WAVES, ACOUSTIC, OPTICS	B.SC. II	
5	PAPER-I RELATIVITY, QUANTUM, MECHANICS, ATOMIC, NUCLEAR	B.SC. III	
6	PAPER-II SOLID STATE PHYSICS, SOLID STATE DEVICS	B.SC. III	
7	PRACTICAL PAPER-III	B.SC. I	
8	PRACTICAL PAPER-III	B.SC. II	
9	PRACTICAL PAPER-III	B.SC. III	

POOJA SAHU
GUEST LECTURER
PHYSICS

(DR. B. K. DEWANGAN)
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DEPARTMENT OF PHYSICS

INDIVIDUAL WORKLOAD/TIME TABLE YEAR 2023-24

Name of the Teacher:- POOJA SAHU, Assistant Professor - PHYSICS GUEST LECTURER

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10						
11.10 To 11.50	B.Sc. -2 Physics Theory Class	B.Sc. -2 Physics Theory Class	B.Sc. -2 Physics Theory Class	B.Sc. -2 Physics Theory Class	B.Sc. -2 Physics Theory Class	B.Sc. -2 Physics Theory Class
11.50 To 12.30	B.Sc. -3 Physics Theory Class	B.Sc. -3 physics Theory Class	B.Sc. -3 Physics Theory Class	B.Sc. -3 Physics Theory Class	B.Sc. -3 Physics Theory Class	B.Sc. -3 Physics Theory Class
12.30 To 01.10						
01.10 To 01.50	B.Sc. -1 physics Theory Class	B.Sc. -1 physics Theory Class	B.Sc. -1 Physics Theory Class	B.Sc. -1 physics Theory Class	B.Sc. -1 physics Theory Class	B.Sc. -1 physics Theory Class
01.50 To 02.30						
02.30 To 03.10			B.Sc. -1 Botany & Physics Batch No. – 1, 2 PRACTICAL	B.Sc. -1 Botany & Physics Batch No. – 3, 4 PRACTICAL		
03.10 To 03.50	B.Sc. -3 Botany & Physics Batch No. – 1, 2 PRACTICAL	B.Sc. -3 Botany & Physics Batch No. – 3, 4 PRACTICAL				
03.50 To 04.30					B.Sc. -2 Botany & Physics Batch No. – 1, 2 PRACTICAL	B.Sc. -2 Botany & Physics Batch No. – 3, 4 PRACTICAL
04.30 To 05.10			B.Sc. -1 Remedial Class			B.Sc. -1 Special Coaching Tutorial ClasS

POOJA SAHU
GUEST LECTURER
PHYSICS

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DEPARTMENT OF PHYSICS

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- POOJA SAHU ,Assistant Professor- PHYSICS GUEST LECTURER

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.SC. I PHYSICS	**PAPER-I MECHANICS, OSCILLATIONS**	**09**	**6**	
	PAPER-II ELECTRICITY, MAGNETISM,			
B.SC. II PHYSICS	**PAPER-I THERMODYNAMICS, KINETIC THEORY**	**20**	**6**	
	PAPER-II WAVES, ACOUSTIC, OPTICS			
B.SC. III PHYSICS	**PAPER-I RELATIVITY, QUANTUM, MECHANICS, ATOMIC**	**11**	**6**	
	PAPER-II SOLIDSTATE PHYSICS,SOLID STATE DEVICS			
PRACTICAL PAPER				
B.SC. I PHYSICS	**PRACTICAL B.N. 01**		**1**	
	PRACTICAL B.N. 02		**1**	
			1	
B.SC. II PHYSICS	**PRACTICAL B.N. 01**		**1**	
	PRACTICAL B.N. 02			
B.SC. III PHYSICS				
	PRACTICAL B.N. 01		**1**	
	PRACTICAL B.N. 02		**1**	
Number of Teaching work load per week = 24				

POOJA SAHU
GUEST LECTURER
PHYSICS

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DEPARTMENT OF POLITICAL SCIENCE

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

This is to certify that I, the undersigned, have completed the following course assigned to me during the academic year 2023-24

S.No.	Name of the Course	Class	Division
1	PAPER-I POLITICAL THEORY	B.A.I	
2	PAPER-II INDIAN GOVT. AND POLITICS	B.A.I	
3	PAPER-I POLITICAL THOUGHT	B.A.II	
4	PAPER-II COMPURATIVE GOVT. POLITICS	B.A.II	
5	PAPER-I PUBLIC ADMINISTRATION	B.A.III	
6	PAPER-II INTERNATIONAL POLITICS FOREIGN POLICY OF INDIA	B.A. III	

SMT. YOGITA BANJARE
GUEST LECTURER
POLITICAL

(DR. B. K. DEWANGAN)
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DEPARTMENT OF POLITICAL SCIENCE

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:- -SMT. YOGITA BANJARE, GEUST LECTURER POLITICAL

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10	B.A.-3 POLI. SCI. Theory Class	B.A.-3 POLI. SCI. Theory Class	B.A.-3 POLI. SCI. Theory Class	B.A.-3 POLI. SCI. Theory Class	B.A.-3 POLI. SCI. Theory Class	B.A.-3 POLI. SCI. Theory Class
11.10 To 11.50	B.A.-1 POLI. SCI. Theory Class	B.A.-1 POLI. SCI. Theory Class	B.A.-1 POLI. SCI. Theory Class	B.A.-1 POLI. SCI. Theory Class	B.A.-1 POLI. SCI. Theory Class	B.A.-1 POLI. SCI. Theory Class
11.50 To 12.30						
12.30 To 01.10	B.A.-2 POLI. SCI. Theory Class	B.A.-2 POLI. SCI. Theory Class	B.A.-2 POLI. SCI. Theory Class	B.A.-2 POLI. SCI. Theory Class	B.A.-2 POLI. SCI. Theory Class	B.A.-2 POLI. SCI. Theory Class
01.10 To 01.50						
01.50 To 02.30						
02.30 To 03.10						
03.10 To 03.50	B.A.-1 EVS. Theory Class	B.A.-1 EVS. Theory Class	B.A.-1 EVS. Theory Class	B.A.-1 EVS. Theory Class	B.A.-1 EVS. Theory Class	B.A.-1 EVS. Theory Class
03.50 To 04.30						
04.30 To 05.10						

SMT. YOGITA BANJARE
GUEST LECTURER
POLITICAL

(DR. B. K. DEWANGAN)
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DEPARTMENT OF POLITICAL SCIENCE

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- SMT. YOGITA BANJARE , GEUST LECTURER POLITICAL

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.A.- I	**PAPER-I POLITICAL THEORY**	**196**	**6**	
	PAPER-II INDIAN GOVT. AND POLITICS			
B.A. -II	**PAPER-I POLITICAL THOUGHT**	**182**	**6**	
	PAPER-II COMPURATIVE GOVT. POLITICS			
B.A.-III	**PAPER-I INTERNATIONAL POLITICS FOREIGN POLICY OF INDIA**	**138**	**6**	
	PAPER-II PUBLIC ADMINISTRATION			
PROJECT WORK				
B.A.-I				
	ENVIRONMENT STUDY	**200**	**6**	
Number of Teaching work load per week = 24				

SMT. YOGITA BANJARE
GUEST LECTURER
POLITICAL

(DR. B. K. DEWANGAN)
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DEPARTMENT OF SOCIOLOGY

0COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

This is to certify that I, the undersigned, have completed the following course assigned to me during the academic year 2023-24

S.No.	Name of the Course	Class	Division
1	PAPER-I INTRODUCATION OF SOCIOLOGY (UNIT I TO V)	B.A.I	
2	PAPER-II CONTEMPORARY INDIAN SOCIETY (UNIT I TO V)	B.A.I	
3	PAPER-I SOCIOLOGY OF TRIBAL SOCIETY (UNIT I TO V)	B.A.II	
4	PAPER-II CRIME AND SOCIETY (UNIT I TO V)	B.A.II	
5	PAPER-I BASICS OF SOCIAL THINKERS	B.A.III	
6	PAPER-II SOCIAL RESEARCH METHODOLOGY	B.A. III	

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DEPARTMENT OF SOCIOLOGY

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:- -DR. B. K. DEWANGAN ,ASSISTANT PROFESSOR- SOCIOLOGY

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10						
11.10 To 11.50	B.A.-2 SOCIOLOGY Theory Class	B.A.-2 SOCIOLOGY Theory Class	B.A.-2 SOCIOLOGY Theory Class	B.A.-2 SOCIOLOGY Theory Class	B.A.-2 SOCIOLOGY Theory Class	B.A.-2 SOCIOLOGY Theory Class
11.50 To 12.30						
12.30 To 01.10	B.A.-3 SOCIOLOGY Theory Class	B.A.-3 SOCIOLOGY Theory Class	B.A.-3 SOCIOLOGY Theory Class	B.A.-3 SOCIOLOGY Theory Class	B.A.-3 SOCIOLOGY Theory Class	B.A.-3 SOCIOLOGY Theory Class
01.10 To 01.50						
01.50 To 02.30	B.A.-1 SOCIOLOGY Theory Class	B.A.-1 SOCIOLOGY Theory Class	B.A.-1 SOCIOLOGY Theory Class	B.A.-1 SOCIOLOGY Theory Class	B.A.-1 SOCIOLOGY Theory Class	B.A.-1 SOCIOLOGY Theory Class
02.30 To 03.10						
03.10 To 03.50						
03.50 To 04.30						
04.30 To 05.10						

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DEPARTMENT SOCIOLOGY

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- DR. B. K. DEWANGAN ,ASSISTANT PROFESSOR- SOCIOLOGY

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.A.- I	**PAPER-I**	**163**	**6**	
	PAPER-II			
B.A. -II	**PAPER-I**			
	PAPER-II	**161**	**6**	
B.A.-III	**PAPER-I**			
	PAPER-II	**128**	**6**	
PRACTICAL PAPER				
Number of Teaching work load per week = 18				

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DEPARTMENT OF - ZOOLOGY

COURSE COMPLETION REPORT

ACADEMIC YEAR 2023-24

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S.No.	Name of the Course	Class	Division
1	**Paper – I** **ANIMAL DIVERSITY**	**B.Sc.I**	
2	**Paper – II** **CELL BIOLOGY, COMPARATIVE, ANATOMY & PHYSIOLOGY OF CHORDATES**	**B.Sc.I**	
3	**Paper – I** **COMPRATIVE ANATOMY**	**B.Sc.II**	
4	**Paper – II** **BONES AND GLANDS**	**B.Sc.II**	
5	**Paper – I** **ECOLOGY,ENVIRONMENTAL BIOLOGY**	**B.Sc.III**	
6	**Paper – II** **COMPRATIVE ANATOMY OF VERTEBRATE**	**B.Sc.III**	
7	**Practical Paper -III**	**B.Sc.III**	
8	**Practical Paper -III**	**B.Sc.I**	
9	**Practical Paper -III**	**B.Sc.III**	

MR. S.N. KAMDI
ASSISTANCE PROFESSOR
ZOOLOGY

(DR. B. K. DEWANGAN)
PRINCIPAL
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DEPARTMENT OF ZOOLOGY

INDIVIDUAL WORKLOAD/TIME TABLE
YEAR 2023-24

Name of the Teacher:-YUVRANI , Assistant Professor ZOOLOGY GUEST LECTURER

Lecture Timing	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.30 To 11.10	B.Sc. -1 Zoology Theory Class	B.Sc. -1 Zoology Theory Class	B.Sc. -1 Zoology Theory Class	B.Sc. -1 Zoology Theory Class	B.Sc. -1 Zoology Theory Class	B.Sc. -1 Zoology Theory Class
11.10 To 11.50						
11.50 To 12.30	B.Sc. -2 Zoology Theory Class	B.Sc. -2 Zoology Theory Class	B.Sc. -2 Zoology Theory Class	B.Sc. -2 Zoology Theory Class	B.Sc. -2 Zoology Theory Class	B.Sc. -2 Zoology Theory Class
12.30 To 01.10	B.Sc. -3 Zoology Theory Class	B.Sc. -3 Zoology Theory Class	B.Sc. -3 Zoology Theory Class	B.Sc. -3 Zoology Theory Class	B.Sc. -3 Zoology Theory Class	B.Sc. -3 Zoology Theory Class
01.10 To 01.50						
01.50 To 02.30						
02.30 To 03.10					B.Sc. -1 Zoology Batch No. – 1, 2 PRACTICAL	B.Sc. -1 Zoology Batch No. – 3, 4 PRACTICAL
03.10 To 03.50			B.Sc. -3 Zoology Batch No. – 1, 2 PRACTICAL	B.Sc. -3 Zoology Batch No. – 3, 4 PRACTICAL		
03.50 To 04.30	B.Sc. -2 Zoology Batch No. – 1, 2 PRACTICAL	B.Sc. -2 Zoology Batch No. – 3, 4 PRACTICAL				

YUVRANI SAHU
GUEST LECTURER
ZOOLOGY

(DR. B. K. DEWANGAN)
PRINCIPAL
GOVT. RANI AVANTI BAI LODHI COLLEGE,
GHUMKA, DISTT.-RAJNANDGAON (C.G.)

GOVT. RANI AVANTI BAI LODHI COLLEGE, GHUMKA, DISTT.-RAJNANDGAON (C.G.)

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college code-1904

DEPARTMENT OF -ZOOLOGY

INDIVIDUAL WORKLOAD
YEAR 2023-24

Name of the Teacher:- YUVRANI SAHU ,Assistant Professor-ZOOLOGY GUEST LECTURER

Class	Subject/Paper	No. of Students	No. of Lectures	Remarks
THEORY CLASS				
B.SC. I ZOOLOGY	**PAPER- I**	**80**	**6**	
	PAPER- II			
B.SC. II ZOOLOGY	**PAPER- I**	**79**	**6**	
	PAPER- II			
B.SC. III ZOOLOGY	**PAPER- I**	**75**	**6**	
	PAPER- II			
PRACTICAL PAPER				
B.SC. I ZOOLOGY	**PRACTICAL 01**	**20**	**1**	
	PRACTICAL 01	**20**		
	PRACTICAL 02	**20**	**1**	
	PRACTICAL 03	**20**		
	PRACTICAL 04	**20**	**1**	
B.SC. II ZOOLOGY	**PRACTICAL 01**	**20**		
	PRACTICAL 02	**20**	**1**	
	PRACTICAL 03	**20**		
	PRACTICAL 04	**19**		
B.SC. III ZOOLOGY	**PRACTICAL 01**	**20**	**1**	
	PRACTICAL 02	**20**		
	PRACTICAL 03	**20**		
	PRACTICAL 04	**15**	**1**	
Number of Teaching work load per week = ----------				

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हेमचंद यादव विश्वविद्यालय, दुर्ग (छ.ग.)

(पूर्व नाम- दुर्ग विश्वविद्यालय, दुर्ग)
रायपुर नाका, दुर्ग (छ.ग.)-491001
ई मेल : academic@durguniversity.ac.inवेब साइट : www.durguniversity.ac.in दूरभाष : 0788-2359400

क्र. 477 /अका./2023 दुर्ग, दिनांक : 23/06/2023

प्राचार्य,
समस्त संबद्ध महाविद्यालय,
हेमचंद यादव विश्वविद्यालय,
दुर्ग (छ.ग.)

विषयः– स्नातक स्तर के नवीन पाठ्यक्रम के भाग–एक को सत्र 2023–24 से विश्वविद्यालय में लागू करने विषयक।
संदर्भः– अपर संचालक, उच्च शिक्षा संचालनालय, नवा रायपुर, अटल नगर का पत्र क्र. 3985/237/आउशि/2023, दिनांक 13.06.2023।

———oc———

विषयांतर्गत लेख है कि संदर्भित पत्र के माध्यम से प्राप्त स्नातक स्तर भाग–एक के निम्नलिखित कक्षा/विषयों के परिवर्तित/संशोधित पाठ्यक्रम शिक्षा सत्र 2023–24 से लागू किये जाते हैः–

1.	बी.ए.	–	आधार पाठ्यक्रम–हिन्दी भाषा, अंग्रेजी भाषा, हिन्दी साहित्य, अंग्रेजी साहित्य, राजनीतिशास्त्र, अर्थशास्त्र, नृत्य, दर्शनशास्त्र, समाजशास्त्र, इतिहास, संस्कृत, मानवविज्ञान, भूगोल, मनोविज्ञान, सांख्यिकी, कम्प्यूटर।
2.	बी.एस–सी.	–	आधार पाठ्यक्रम–हिन्दी भाषा, अंग्रेजी भाषा, जीव विज्ञान, मानवविज्ञान, गणित, बायोटेक्नोलॉजी, कम्प्यूटर साईंस, भौतिकी, प्राणीशास्त्र, भूविज्ञान, आई.टी., सूक्ष्मजीवविज्ञान, वनस्पतिशास्त्र, इलेक्ट्रॉनिक्स, रसायन शास्त्र, सांख्यिकी, भूगोल।
3.	बी.एस–सी. (गृह विज्ञान)	–	आधार पाठ्यक्रम – हिन्दी भाषा, अंग्रेजी भाषा एवं गृह विज्ञान।
4.	बी.कॉम.	–	आधार पाठ्यक्रम – हिन्दी भाषा, अंग्रेजी भाषा एवं वाणिज्य।
5.	विधि	–	एल.एल.बी., बी.ए.एल.एल.बी
6.	प्रबंध	–	बी.बी.ए.
7.	कम्प्यूटर	–	बी.सी.ए.
8.	शिक्षा	–	बी.एड.
9.	लाईब्रेरी साईंस	–	बी. लिब.

उपरोक्त विषयों को शिक्षा सत्र 2023–24 से संशोधित रूप में स्नातक स्तर भाग–एक के लिए लागू किया जाता है स्नातक स्तर भाग दो एवं तीन के पाठ्यक्रम यथावत रहेंगे।

अतः आपसे अनुरोध है कि पाठ्यक्रम परिवर्तन/संशोधन से महाविद्यालय के शिक्षकों एवं छात्र–छात्राओं को अवगत कराने का कष्ट करेंगे।

टीप :– परिवर्तित/संशोधित पाठ्यक्रम विश्वविद्यालय की वेबसाईट पर उपलब्ध है।

संलग्न : उपरोक्तानुसार।

कुलसचिव

क्र. 478 /अका./2023 दुर्ग, दिनांक 23/06/2023

प्रतिलिपि:–

1. अपर संचालक, उच्च शिक्षा संचालनालय, नवा रायपुर, अटल नगर का पत्र क्र. 3985/237/आउशि/2023, दिनांक 13.06.2023 के परिपेक्ष्य में सूचनार्थ।
2. कुलपति के निज सहायक एवं कुलसचिव के निज सहायक, हेमचंद यादव विश्वविद्यालय, दुर्ग।
3. उपकुलसचिव, परीक्षा विभाग एवं उपकुलसचिव, गोपनीय विभाग हेमचंद यादव विश्वविद्यालय, दुर्ग।

सहा. कुलसचिव (अका.)

Part A: Introduction				
Program: **Certificate Course**		Class: **B.Sc.**	Year: **First**	Session: **2022-2023**
1	Course Code	**PHY – 1T**		
2	Course Title	**MECHANICS**		
3	Course Type	**Theory**		
4	Pre-requisite (if any)	No		
5	Course Learning Outcomes (CLO)	**After completion of the course students will be able to:** • Get knowledge about the vectors and differential equations used in physics. • Get an idea of different types of motions and conservation laws. • Get an idea about rotational motion and various properties of matter like elasticity and viscosity. • Understand various types of oscillatory motion and GPS system. • Get an idea about Frame of reference and special theory of relativity. • Solve numerical problems based on entire syllabus.		
6	**Credit Value**	**Theory : 4**		
7	**Total Marks**	**Max. Marks: 50**	**Min Passing Marks : 17**	

Part B: Content of the Course		
Total Periods: 60		
Unit	**Topic**	**Number of Periods**
I	**Vectors**: Vector algebra, Derivatives of a vector with respect to a parameter, Scalar and vector products of two, three and four vectors, Gradient, divergence and curl of vectors fields, Polar and Axial vectors. **Ordinary Differential Equations:** 1st order homogeneous differential equations, exact and non-exact differential equations, 2nd order homogeneous and nonhomogeneous differential equations with constant coefficients (Operator Method Only).	12
II	**Laws of Motion:** Review of Newton's Laws of motion. Dynamics of a system of particles, Concept of Centre of Mass, determination of center of mass for discrete and continuous systems having cylindrical and spherical symmetry. **Work and Energy:** Motion of rocket, Work-Energy theorem for conservative forces, Force as a gradient of Potential Energy, Conservation of momentum	12

	and energy, Elastic and in-elastic Collisions.	
III	**Rotational Dynamics:** Angular velocity, Angular momentum, Torque, Conservation of angular momentum, Moment of Inertia, Theorem of parallel and perpendicular axes (statements only), Calculation of Moment of Inertia of discrete and continuous objects (rod, disc, cylinder, solid sphere). **Elasticity:** Hooke's Law – Stress – strain diagram – Elastic moduli – Relation between elastic constants – Poisson's Ratio – Expression for Poisson's Ratio in terms of Elastic Constants – Work done in stretching and work done in twisting a wire – Twisting couple on a cylinder – Determination of Rigidity modules, Elementary idea of Surface tension and Viscosity, flow of fluids, coefficient of viscosity, Stoke's law, expression for terminal velocity, wetting.	12
IV	**Gravitation:** Newton's Law of Gravitation, Motion of a particle in a central force field (motion is in a plane, angular momentum is conserved, areal velocity is constant), Kepler's Laws (statements only), Satellite in circular orbit and applications, Geosynchronous orbits. **Oscillations:** Simple harmonic motion, Differential equation of SHM and its solutions, Kinetic and Potential Energy, Total Energy and their time averages, Compound pendulum, Differential equations of damped oscillations and forced oscillations (Conceptual only).	12
V	**Special Theory of Relativity:** Frame of reference, Galilean Transformations, Inertial and Non-inertial frames, Outcomes of Michelson Morley's Experiment, Postulates of Special Theory of Relativity, Length contraction, Time dilation, Relativistic transformation of velocity, Relativistic variation of mass, Mass-energy equivalence, Transformation of Energy and Momentum.	12

Part C - Learning Resource

Text Books, Reference Books, Other Resources

Reference Books:

1. University Physics. FW Sears, MW Zemansky & HD Young 13/e, 1986.Addison Wesley
2. Mechanics Berkeley Physics course, v.1:Charles Kittel, et.al. 2007, Tata McGrawHill
3. Physics – Resnick, Halliday & Walker 9/e, 2010, Wiley
4. Engineering Mechanics, Basudeb Bhattacharya, 2nd edn., 2015, Oxford University Press
5. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.

Link for e-Books for Physics:

1. *All e-books of physics* https://www.e-booksdirectory.com/listing.php?category=2
2. *Free physics text book in PDF* https://www.motionmountain.net/?gclid=CjwKCAjwmq3kBRB_EiwAjkNDp5v8Yy6xK1s0

Part A: Introduction				
Program: **Certificate Course**		Class: **B.Sc.**	Year: **First**	Session: **2022-2023**
1	Course Code	**PHY – 2T**		
2	Course Title	**ELECTRICITY AND MAGNETISM**		
3	Course Type	**Theory**		
4	Pre-requisite (if any)	No		
5	Course Learning Outcomes (CLO)	**After completion of the course students will be able to –** • Get knowledge about the vectors analysis and able to apply in electrostatic and Magnetostatics. • Get idea about electric fields, force and potential. • Get idea about Dielectric and Electric currents and also the application in AC circuits. • Get idea about Magnetic properties of material. • To get idea about Electromagnetic Induction and Maxwell's equation and Electromagnetic wave propagation. • Solve numerical problems based on entire syllabus.		
6	**Credit Value**	**Theory : 4**		
7	**Total Marks**	**Max. Marks: 50**	**Min Passing Marks : 17**	

Part B: Content of the Course		
Total Periods: 60		
Unit	Topic	Number of Periods
I	**Vector Analysis**: Vector Integration, Line, surface and volume integrals of Vector fields, Gauss-divergence theorem and Stoke's theorem of vectors and its application in electrostatics and magnetostatics.	12
II	**Electrostatics:** Electrostatic Field, electric flux, Gauss's theorem of electrostatics, Applications of Gauss theorem- Electric field due to point charge, infinite line of charge, uniformly charged spherical shell and solid sphere, plane charged sheet, charged conductor. Electric potential as line integral of electric field, potential due to a point charge, electric dipole, uniformly charged spherical shell and solid sphere, Calculation of electric field from potential, Capacitance of an isolated spherical conductor, Parallel plate, spherical and cylindrical condenser, Energy per unit volume in electrostatic field.	12

III	**Dielectric & Electric Currents:** Dielectric medium, Polarisation, Displacement vector, Gauss's theorem in dielectrics, Parallel plate capacitor completely filled with dielectric. Steady current, current density J, non – steady current an ontinuity equation, Kirchoff's law (statement only), Ideal constant – voltage and constant – current sources, Thevenin theorem, Norton theorem, Superposition theorem, Reciprocity theorem and maximum power transfer theorem, Rise and decay of current in LR, CR, LCR circuits.	12
IV	**Magnetism:** Magnetostatics: Biot-Savart's law and its applications- straight conductor, circular coil, solenoid carrying current, Divergence and curl of magnetic field, Magnetic vector potential, Ampere's circuital law. Magnetic properties of materials: Magnetic intensity, magnetic induction, permeability, magnetic susceptibility, Brief introduction of dia, para and ferro-magnetic materials.	12
V	**Electromagnetic Induction:** Faraday's laws of electromagnetic induction, Lenz's law, self and mutual inductance, L of single coil, M of two coils, Energy stored in magnetic field. **Maxwell's equations and Electromagnetic wave propagation:** Equation of continuity of current, Displacement current, Maxwell's equations, Wave equation in free space.	12

Part C - Learning Resource

Text Books, Reference Books, Other Resources

Reference Books:

1. Vector analysis – Schaum's Outline, M.R. Spiegel, S. Lipschutz, D. Spellman, 2nd Edn., 2009, McGraw- Hill Education.
2. Electricity and Magnetism, Edward M. Purcell, 1986, McGraw-Hill Education.
3. Electricity & Magnetism, J.H. Fewkes & J.Yarwood. Vol. I, 1991, Oxford Univ. Press
4. Electricity and Magnetism, D C Tayal, 1988, Himalaya Publishing House.
5. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
6. D.J.Griffiths, Introduction to Electrodynamics, 3rd Edn, 1998, Benjamin Cummings.

Link for e-Books for Physics:

1. *All e-books of physics* https://www.e-booksdirectory.com/listing.php?category=2
2. *Free physics text book in PDF* https://www.motionmountain.net/?gclid=CjwKCAjwmq3kBRB_EiwAjkNDp5v8Yy6xK1s0Kma0VR0AWGlichRwFfCC0-vpZK1jrPoEOAnBq8fcqRoCILsQAvD_BwE
3. *Cambridge University Books for Physics* https://www.cambridgeindia.org/
4. *Books for solving physics problems* https://bookboon.com/en/physics-ebooks

Part A: Introduction				
Program: **Certificate Course**		Class: **B.Sc. I Year**	Year: **2022**	Session:**2022-23**
1.	Course Code	CHEM-IT		
2.	Course Title	Inorganic and Physical Chemistry		
3.	Course Type	Theory		
4.	Pre-requisite (if any)	To Study this course our students must have had the subject chemistry in class +2 or equivalent		
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to learn the following aspects of Chemistry • To learn basic concept of atomic structure and the periodic properties of elements • To understand chemical bonding in ionic and covalent compounds • To study group trends for *s* and *p*-block elements in the periodic table • learn properties and bonding of compounds of the noble gases • Understand the metallurgical extraction of metals. • Basic concepts of Mathematics and Computer for Chemists. • Basics and mechanism of chemical kinetics and catalysis.		
6.	Credit Value	Theory: **4**		
7.	Total Marks	**Max. Marks: 50**	**Min. Passing Marks: 17**	

Part B: Content of the Course		
Total No. of Lecturers: **90**		
Unit	**Topics**	**No. of Lectures**
I	**Atomic structure :** Bohr's theory and its limitation, General idea of de-Broglie matter-waves, Heisenberg uncertainty principle, Schrödinger wave equation, significance of Ψ and Ψ^2, radial & angular wave functions and probability distribution curves, quantum numbers, Atomicorbital and shapes of *s*, *p*, *d* orbitals, Aufbau and Pauli exclusion principles, Hund's Multiplicity rule, electronic configuration of the elements. **Periodic properties:** Detailed discussion of the following periodic properties of the elements, with reference to *s*- and *p*- block. Trends in periodic table and applications in predicting and explaining the chemical behavior. a. Atomic and ionic radii, b. Ionization enthalpy, c. Electron gain enthalpy, d. Electronegativity, Pauling's, Mulliken's, Allred Rochow's scales, Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table.	**15**
II	**Chemical bonding- I: Ionic bond:** Ionic Solids - Ionic structures, radius ratio & co-ordination number, limitation of radius ratio rule, lattice defects, semiconductors, lattice energy Born-Haber cycle, Solvation energy and solubility of ionic solids, polarizing power & polarizability of ions, Fajan's rule, Ionic character in covalent compounds: Bond moment and dipole	**15**

	moment, Percentage ionic character from dipole moment and electronegativity difference. Metallic bond-free electron and band theories.	
III	**Chemical bonding-II: Covalent bond**: Valence bond theory and its limitations, Concept of hybridization, equivalent and non-equivalent hybrid orbitals. Valence shell electron pair repulsion theory (VSEPR), shapes of the following simple molecules and ions containing lone pairs and bond pairs of electrons: H_2O, NH_3, PCl_3, H_3O^+, SF_4, ClF_3, ICl_2^- XeF_2, XeF_4, XeF_6, $XeOF_2$, $XeOF_4$. Molecular orbital theory. Bond order and bond strength, Molecular orbital diagrams of diatomic and simple heteroatomic molecules N_2, O_2, F_2, CO, NO.	15
IV	**Chemistry of s- & p- block elements:** General concepts on group relationships and gradation properties, Comparative study, salient features of hydrides, solvation & complexation tendencies, General concepts on group relationships and gradation properties. Halides, hydrides, oxides and oxyacids of Boron, Aluminum, Nitrogen and Phosphorus. Boranes, borazines, fullerenes, graphene and silicates, interhalogens and pseudohalogens. Chemical properties of the noble gases. **Metallurgical extraction of Fe, Al and Cu :** Principle of extraction of metal, The occurrence, extraction & isolation of Fe, Al, and Cu	15
V	**Mathematical concepts for chemist**: Basic Mathematical Concepts: Logarithmic relations, curve sketching, linear graphs, Properties of straight line, slope and intercept, Functions, Differentiation of functions, maxima and minima; integrals; ordinary differential equations; vectors and matrices; determinants; Permutation and combination and probability theory, Significant figures and their applications. **Computer for chemists:** Introduction to computer, introduction to operating systems like DOS, Windows, Linux **Use of computer programs:** Running up standard programs & packages such as MS –Word, MS- Excel, Power Point. Execution of linear regression x-y plot, use of software for drawing structures and molecular formulae	15
VI	**Chemical kinetics :** Rate of reaction, Factors influencing rate of reaction, rate law, rate constant, Order and molecularity of reactions, rate determining step, Zero, First and Second order reactions, Rate and Rate Law, methods of determining order of reaction, Chain reactions. Temperature dependence of reaction rate, Arrhenius theory, Physical significance of Activation energy, collision theory, demerits of collision theory, non-mathematical concept of transition state theory. **Catalysis:** Homogeneous and Heterogeneous Catalysis, types of catalyst, characteristics of catalyst, Enzyme catalyzed reactions, Micellar catalyzed reactions, Industrial applications of catalysis.	15
Keywords: Atomic structure, Periodic properties, ionic bonding, covalent bonding, diagonal relationship, metallurgy, computer, memory, chemical kinetics, catalysis		

Part C : Learning Resources
Text Books, Reference Books, Other Resources
Suggested Readings : 1. Lee, J. D. Concise Inorganic Chemistry, Wiley, 5th Edition, 2008. 2. Douglas, B.; McDaniel, D. and Alexander J. Concepts & Models of Inorganic 3. Chemistry, Wiley, 3rd Edition, 2006 4. Atkins, P.W. & Paula, J. Physical Chemistry, 10th Ed., Oxford University Press, 2014. 5. Puri, B. R., Sharma, L. R. and Kalia, K. C., Principles of Inorganic Chemistry, Milestone Publishers/ Vishal Publishing Co.; 33rd Edition 2016 6. Madan, R. D. Modern Inorganic Chemistry, S Chand Publishing, 1987.

Part A: Introduction				
Program: **Certificate Course**		Class: **B.Sc. I Year**	Year: **2022**	Session:**2022-23**
1.	Course Code	CHEM-2T		
2.	Course Title	Organic and Physical Chemistry		
3.	Course Type	Theory		
4.	Pre-requisite (if any)	To Study this course our students must have had the subject chemistry in class +2 or equivalent		
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to learn the following aspects of Chemistry • Understand the fundamentals of physical organic chemistry • Stereochemistry of carbon compounds • Chemistry of Alkenes and Alkynes • Chemistry of Alicyclic and aromatic Hydrocarbons • Understanding kinetic model of gases and its properties, Behavior of real gases, its derivation from ideal behavior, equation of state, isotherms and Law of corresponding states and molecular velocities. • Fundamental concepts of liquid state and colloids & surface chemistry. • Solids, Lattice parameters – its calculation, application of symmetry, solid characteristics of simple salts.		
6.	Credit Value	Theory: **4**		
7.	Total Marks	**Max. Marks: 50**	**Min. Passing Marks: 17**	

Part B: Content of the Course		
Total No. of Lecturers: **90**		
Unit	**Topics**	**No. of Lectures**
I	**Basics of organic chemistry**: Influence of hybridization on bond properties (as applicable to ethane, ethene, and ethyne). Application of inductive effect (a) Basicity of amines (b) Acidity of carboxylic acids (c) Stability of carbocations. Resonance or Mesomeric effect, application to (a) acidity of phenol, and (b) acidity of carboxylic acids. Hyper conjugation and its application to stability of carbocations, Free radicals and alkenes. Reactive intermediates: carbanions, carbenes, Nitrene, Basic concept of S_N1, S_N2, E1, E2, E1cb reactions and Neighboring group Participation (NGP). Electrophiles and Nucleophiles; Nucleophilicity and basicity.	15
II	**Introduction to stereochemistry:** Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with two or more chiral-centres, Diastereoisomers, meso compounds, Relative and absolute configuration: Fischer, Newman and Sawhorse Projection formulae and their interconversions; Erythrose and threose, D/L, d/l system of nomenclature, Cahn-Ingold-Prelog system of nomenclature (C.I.P rules),	15

	R/S nomenclature. Geometrical isomerism: cis-trans, syn-anti and E/Z notations. Stereospecific and stereoselective synthesis. Asymmetric synthesis.	
III	**Acyclic hydrocarbons:** Alkenes - Preparation of alkenes. Properties: Addition of hydrogen - heat of hydrogenation and stability of alkenes. Addition of halogen and its mechanism. Addition of HX, Markonikov's rule, addition of H_2O, (Oxymercuration-reduction and hydroboration -oxidation), HOX, H_2SO_4 with mechanism and addition of HBr in the presence of peroxide (anti - Markonikov's addition). Dienes - Types of dienes, reactions of conjugated dienes - 1,2 and 1,4 addition of HBr to 1,3 - butadiene and Diel's - Alder reaction. Alkynes: Preparation by dehydrohalogenation of dihalides, dehalogenation of tetrahalides. Properties; Acidity of acetylenic hydrogen (formation of Metal acetylides). Preparation of higher acetylenes, Metal ammonia reductions, Physical properties. Chemical reactivity - electrophilic addition of X_2, HX, H_2O (Tautomerism), Oxidation with $KMnO_4$, OsO_4, reduction and Polymerization, reaction of acetylene.	15
IV	**Alicyclic hydrocarbons (cycloalkanes):** Nomenclature, Preparation by Freunds method, Wislicenus method. Properties - reactivity of cyclopropane and cyclobutane by comparing with alkanes, Stability of cycloalkanes - Baeyer's strain theory, Sachse and Mohr predictions and Pitzer's strain theory. Conformational structures of cyclobutane, cyclopentane, cyclohexane. Confirmers: in substituted cyclohexane, decalins. **Aromatic hydrocarbons:** Aromaticity: Hückel's rule, aromatic character of arenes, cyclic carbocations/ carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft's alkylation/acylation with their mechanism. Directive effects of the groups.	15
V	**Gaseous state chemistry**: Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation; collision frequency; collision diameter; mean free path; Maxwell distribution and its use in evaluating molecular velocities (average, root mean square and most probable) and average kinetic energy, law of equipartition of energy, degrees of freedom and molecular basis of heat capacities. Joule Thomson effect, Liquification of Gases. **Behavior of real gases:** Deviations from ideal gas behavior, compressibility factor (Z), and its variation with pressure and temperature for different gases. Causes of deviation from ideal behavior. Vander Waals equation of state, its derivation and application in explaining real gas behavior, calculation of Boyle temperature. Isotherms of real gases and their comparison with Vander Waals isotherms, continuity of states, critical state, relation between critical constants and Vander Waals constants, law of corresponding states.	15
VI	**Liquid state chemistry**: Intermolecular forces, magnitude of intermolecular force, structure of liquids, Properties of liquids, viscosity and surface tension. **Colloids and surface chemistry:** Classification, Optical, Kinetic and Electrical Properties of colloids, Coagulation, Hardy Schulze law, flocculation value, Protection, Gold number, Emulsion, micelles and types, Gel, Syneresis and thixotropy, Application of colloids. Physical adsorption, chemisorption, adsorption isotherms (Langmuir and Freundlich). Qualitative	15

Amod
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	discussion of BET. **Solid state chemistry:** Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method. Crystal defects.	

Keywords: Electronic effect, Reactive intermediates, Stereochemistry, Alkenes, Alkynes, Cycloalkanes, Aromaticity, Gas, Liquid, Colloidal state and Solid

Part C: Learning Resource

Text Books, Reference Books, Other Resources

Suggested Readings :

1. Morrison, R. N. & Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd.(Pearson Education).
2. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Finar, I. L. Organic Chemistry (Volume 2: Stereochemistry and the Chemistry of Natural Products), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
4. Eliel, E. L. &Wilen, S. H. Stereochemistry of Organic Compounds, Wiley: London, 1994.
5. Kalsi, P. S. Stereochemistry Conformation and Mechanism, New Age International, 2005.
6. McMurry, J.E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning India Edition, 2013.
7. Bruice, P. Y. Organic Chemistry, 2nd Edition, Prentice-Hall, International Edition (1998).
8. Atkins' Physical Chemistry, 10th Edition, Oxford University Press, 2014
9. Barrow, G.M., Physical Chemistry Tata McGraw-Hill, 2007
10. Ball, D.W., Physical Chemistry, Thomson Press, India, 2007
11. Castellan, G.W., Physical Chemistry, 4th Edition, Narosa, 2004
12. Mortimer, R.G., Physical Chemistry, 3rd Edition, Elsevier, Noida, UP, 2009
13. Levine, I.N., Physical Chemistry, 6th Edition, Tata McGraw-Hill, 2010
14. Metz, C.R., 2000 Solved Problems in Chemistry, Sahaun Series, 2006
15. Negi, A.S. & Anand, S.C., A Text Book of Physical Chemistry, 3rd Edition, New Age International Publication
16. Bajpai, D.N., Advanced Physical Chemistry, S. Chand, 2019
17. Bahal & Tuli, Essential of Physical Chemistry, 2020

E- Learning Resources:

1. http://heecontent.upsdc.gov.in/Home.aspx
2. https://nptel.ac.in/courses/104/106/104106096/
3. http://heecontent.upsdc.gov.in/Home.aspx
4. https://nptel.ac.in/courses/104/106/104106096/
5. https://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/intro1.htm
6. https://nptel.ac.in/courses/104/103/104103071/#

Fundamental Chemistry related topics on SWAYAM platform and E-pathshala

Part D: Assessment and Evaluation

Maximum Marks: 50

DECLARATION

This is to certify that the syllabus is framed by the Central Board of Studies (Chemistry) as per the

Part A: Introduction				
Program: **Certificate Course**		Class: **B.Sc. I Year**	Year: **2022**	Session:**2022-23**
1.	Course Code	CHEM-1P		
2.	Course Title	Lab. 1		
3.	Course Type	Practical		
4.	Pre-requisite (if any)	To Study this course our students must have had the subject chemistry in class +2 or equivalent		
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to learn the following aspects of Chemistry • To analyse the given mixture for anions (acid radicals) and cations (basic radicals). • Titrations • Qualitative Analysis • Surface tension measurements. • Viscosity measurement • Chemical Kinetics		
6.	Credit Value	Practical: **2**		
7.	Total Marks	**Max. Marks: 50**	**Min Passing Marks: 17**	

Part B: Content of the Course		
Total No. of Lecturers: **30**		
LABATORY COURSE		**No. of Lectures**
Tentative list of Practical	**A. Inorganic chemistry** Semi-micro qualitative analysis (using H_2S or other methods) of mixtures - not more than four ionic species (two anions and two cations, excluding interfering, insoluble salts) out of the following: **Cations :** NH_4^+, Pb^{2+}, Bi^{3+}, Cu^{2+}, Cd^{2+}, Fe^{3+}, Al^{3+}, Co^{2+}, Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Na^+ **Anions :** CO_3^{2-}, S^{2-}, SO_3^{2-}, NO_2^-, CH_3COO^-, Cl^-, Br^-, I^-, NO_3^-, SO_4^{2-} (Spot tests may be carried out wherever feasible) **B. Acid-Base Titrations** • Standardization of sodium hydroxide by oxalic acid solution. • Determination of strength of HCl solution using sodium hydroxide as intermediate. • Estimation of carbonate and hydroxide present together in mixture. • Estimation of carbonate and bicarbonate present together in a mixture. • Estimation of free alkali present in different soaps/detergents	**10**

	C. Redox Titrations • Standardization of $KMnO_4$ by oxalic acid solution. • Estimation of Fe(II) using standardized $KMnO_4$ solution. • Estimation of oxalic acid and sodium oxalate in a given mixture. •Estimation of Fe(II) with $K_2Cr_2O_7$ using internal (diphenylamine, anthranilic acid) and external indicator.	
	Organic chemistry 1. Demonstration of laboratory Glassware's and Equipments. 2. Calibration of the thermometer. 80° –82° (Naphthalene), 113.5° – 114° (Acetanilide), 132.5° -133° (Urea), 100° (Distilled Water).) 3. Purification of organic compounds by crystallization using different solvents. Phthalic acid from hot water (using fluted filter paper and stemless funnel). Acetanilide from boiling water. Naphthalene from ethanol. Benzoic acid from water. 4. Determination of the melting points of organic compounds. Naphthalene 80° –82° , Benzoic acid 121.5° –122° , Urea 132.5° –133° Succinic acid 184.5° – 185° , Cinnamic acid 132.5° –133° , Salicylic acid 157.5° –158°, Acetanilide 113.5° –114° , m-Dinitrobenzene 90° , p-Dichlorobenzene 52° , Aspirin 135° . 5. Effect of impurities on the melting point – mixed melting point of two unknown organic compounds. Urea–Cinnamic acid mixture of various compositions (1:4, 1:1, 4:1). 6. Determination of boiling point of liquid compounds. (boiling point lower than and more than 100°C by distillation and capillary method). Ethanol 78°, Cyclohexane 81.4°, Toluene 110.6°, Benzene 80°. i. Distillation (Demonstration) Simple distillation of ethanol-water mixture using water condenser. Distillation of nitrobenzene and aniline using air condenser. ii. Sublimation Camphor, Naphthalene, Phthalic acid and Succinic acid. iii. Decolorisation and crystallization using charcoal. Decolorisation of brown sugar with animal charcoal using gravity filtrations crystallization and decolorisation of impure naphthalene (100 g of naphthalene mixed with 0.3 g of Congo red using 1 g of decolorizing carbon) from ethanol. 7. Qualitative Analysis Detection of elements (N, S and halogens) and functional groups (Phenolic, Carboxylic, Carbonyl, Esters, Carbohydrates, Amines, Amides, Nitro and Anilide) in simple organic compounds. 8. Preparation and characterization of biodiesel from vegetable oil. 9. Preparation of soap.	**10**
	Physical chemistry 1. Surface tension measurements. Determine the surface tension by (i) drop number (ii) drop weight method. • Surface tension composition curve for a binary liquid mixture. 2. Viscosity measurement using Ostwald's viscometer. Determination of viscosity of aqueous solutions of (i) sugar (ii) ethanol at room temperature. Study of the variation of viscosity of sucrose solution with the concentration of solute. Viscosity Composition curve for a binary liquid mixture.	**10**

	3. Chemical Kinetics To determine the specific rate of hydrolysis of methyl/ethyl acetate catalysed by hydrogen ions at room temperature. To study the effect of acid strength on the hydrolysis of an ester. To compare the strengths of HCl & H_2SO_4 by studying the kinetics of hydrolysis of ethyl acetate. 4. Colloids To prepare colloidal solution of silver nanoparticles (reduction method) and other metal nanoparticles using capping agents.	

Keywords: Semi-micro qualitative analysis, Qualitative analysis, Titrations, Chemical Kinetics, Colloids, Viscosity, Surface tension, Decolorization and crystallization, Distillation, Sublimation, Soap, biodiesel.

Part C: Learning Resource

Text Books, Reference Books, Other Resources

Suggested Readings :

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson, 2009.
2. Ahluwalia, V. K., Dhingra, S. and Gulati, A. College practical Chemistry, University Press.
3. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009).
4. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
5. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
6. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).
7. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York (2003).

Sidhwani, I.T., Saini, G., Chowdhury, S., Garg, D., Malovika, Garg, N. Wealth from waste: 8.A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated "A Social Awareness Project", Delhi University Journal of Undergraduate Research and Innovation.

9.Carpenter, William Lant; Leask, Henry (1895). A treatise on the manufacture of soap and candles, lubricants and glycerin. Free ebook at Google Books.

E- Learning Resources:

1. http://heecontent.upsdc.gov.in/Home.aspx
2. https://nptel.ac.in/courses/104/106/104106096/
3. http://heecontent.upsdc.gov.in/Home.aspx
4. https://nptel.ac.in/courses/104/106/104106096/
5. https://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/intro1.htm
6. https://nptel.ac.in/courses/104/103/104103071/#

Fundamental Chemistry related topics on SWAYAM platform and E-pathshala

Part D: Assessment and Evaluation

Maximum Marks: 50

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Part A: Introduction				
Program: Certificate Course		Class: B. A. / B.Sc. Part I	Year: 2022	Session:2022-2023
1	Course Code	Paper – MATH- 1T		
2	Course Title	Calculus		
3	Course Type	Theory		
4	Pre-requisite (if any)	No		
5	Course Learning Outcome (CLO)	**This Course will enable the students to:** • Calculate the limit and examine the continuity and understand the geometrical interpretation of differentiability. • Understand the consequences of various mean value theorems. • Draw curves in cartesian and polar coordinate systems. • Understand conceptual variations while advancing from one variable to severalvariables in calculus. • Inter-relationship amongst the line integral, double and triple integral formulations. • Realize importance of Green, Gauss and Stokes' theorems in other branches ofmathematics.		
6	Credit Value	4		
7	Total Marks	Maximum Marks : 50	Minimum Passing Marks :	

Part B: Content of the Course Total Periods: 60		
Unit	Topics	No. of Periods
I	**Sequences, Continuity and Differentiability:** Notion of convergence of sequences and series of real numbers, ϵ-δ definition of limit and continuity of a real valued function; Differentiability and its geometrical interpretation; Rolle's theorem, Lagrange's mean value theorem, Cauchy's mean value theorem and their geometrical interpretations, Darboux's theorem.	12
II	**Expansion of Functions:** Successive differentiation and Leibnitz theorem, Maclaurin's and Taylor's theorems for expansion of a function, Taylor's theorem in finite form with Lagrange, Cauchy and Roche–Schlömilch forms of remainder.	12
III	**Curvature, Asymptotes and Curve Tracing:** Curvature; Asymptotes of general algebraic curves, parallel asymptotes, Asymptotes parallel to axes; symmetry, concavity and convexity, points of inflexion, Tangents at origin, Multiple points, Position and nature of double points; Tracing of	12

	cartesian, polar and parametric curves; Envelopes and Evolutes.	
IV	**Functions of Several Variables:** Limit, continuity and first order partial derivatives, Higher order partial derivatives, Change of variables, Euler's theorem for homogeneous functions, Taylor's theorem, Total differentiation and Jacobians.	12
V	**Double and Triple Integrals:** Double integration over rectangular and non-rectangular regions, Double integrals in polar co-ordinates, Triple integral over a parallelepiped and solid regions, Volume by triple integrals, Line integrals, Green's theorem, Area as a line integral, Surface integrals, Stokes' theorem, The Gauss divergence theorem.	12

Part C - Learning Resource

Text Books and Reference Books:

1. Howard Anton, I. Bivens & Stephan Davis. Calculus (10th edition). Wiley India. 2016
2. Gabriel Klambauer. Aspects of Calculus. Springer-Verlag. 1986
3. Wieslaw Krawcewicz & Bindhyachal Rai. Calculus with Maple Labs. Narosa. 2003
4. Gorakh Prasad Differential Calculus (19th edition). Pothishala Pvt. Ltd. 2016
5. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir. Thomas' Calculus (14th edition). Pearson Education 2018
6. Jerrold Marsden, Anthony J. Tromba & Alan Weinstein. Basic Multivariable Calculus, Springer India Pvt. Limited.2009
7. James Stewart. Multivariable Calculus (7th edition). Brooks/Cole. Cengage 2012.
8. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith. Calculus (3rd edition). Pearson Education. Dorling Kindersley (India) Pvt. Ltd. 2011

E- Resources :

1. Suggested Equivalent **online courses:** Web link NPTEL/ SWAYAM/ MOOCs
2. https://www.youtube.com/watch?v=tfFrrtzUhmw&list=PL7oBzLzHZ1wXBSiJEgqz_iwVoLiY8qhbv
3. https://www.youtube.com/watch?v=XzaeYnZdK5o&list=PLtKWB-wrvn4nA2h8TFxzWL2zy8O9th_fy
4. https://www.youtube.com/watch?v=zxbHsPB8m-M&list=PLBCEh9iawVM75FaeqS-z7olBKTSLfAC4A

Part D: Assessment and Evaluation	
Suggested Continuous Evaluation Methods: Maximum Marks:	50 Marks

Declaration

This is to certify that the syllabus is framed by the Central Board of Studies (Mathematics) as per the guidelines (TOR) of the Department of Higher Education, Raipur Chhattisgarh.

1. Dr. Premlata Verma
   Asst. Prof.
   Govt. Bilasa Girls PG College, Bilaspur - Chairman
2. Prof. R.R. Sahu
   Asst. Prof.
   Govt. MMR PG College, Champa - Member
3. Mr. Yetendra Upadhyay
   Asst. Prof.
   Govt. N.K. College, Kota - Member
4. Ram Lakhan Pandey
   Asst. Prof.
   Dr. B.R. Ambedkar Govt. College, Baloda - Member
5. Dr. Arun Kumar Mishra
   Professor
   Govt. DT PG College, Utai - Member
6. Dr. Shabnam Khan
   Professor
   Govt. Digvijay PG College, Rajnandgaon - Member
7. Dr. Padmavati
   Professor
   Govt. VYT PG Auto. College, Durg - Member
8. Dr. Anjali Chandravanshi
   Asst. Prof.
   Govt. J.Y. Chhattisgarh College, Raipur - Member
9. Manisha Gupta
   Asst. Prof.
   GNA Govt. PG College, Bhatapara, Raipur - Member
10. Mrs. Sangeeta Pandey
    Asst. Prof.
    R.G. Govt. PG College, Ambikapur - Member
11. Dr. S.K. Bohre
    Asst. Prof.
    I.G. Govt. PG College, Vaishalinagar, Bhilai - Member
12. Dr. Samir Dashputre

Part A: Introduction				
Program: Certificate Course		Class: B. A. / B.Sc. Part I	Year: 2022	Session:2022-2023
1	Course Code	Paper – MATH-2T		
2	Course Title	Algebra		
3	Course Type	Theory		
4	Pre-requisite (if any)	No		
5	Course Learning Outcome (CLO)	**This Course will enable the students to:** • Employ De Moivre's theorem in a number of applications to solve numerical problems. • Learn about the fundamental concepts of groups, subgroups, normal subgroups, isomorphism theorems, cyclic and permutation groups. • Recognize consistent and inconsistent systems of linear equations by the row echelon form of the augmented matrix, using rank. • Find eigen values and corresponding eigen vectors for a square matrix. • Understand real vector spaces, subspaces, basis, dimension and their properties.		
6	Credit Value	4		
7	Total Marks	Maximum Marks : 50	Minimum Passing Marks :	

Part B: Content of the Course Total Periods: 60		
Unit	Topics	No. of Periods
I	**Set Theory and Theory of Equations:** Sets, Relations, Equivalence relations, Equivalence classes; Finite, countable and uncountable sets; The division algorithm, Divisibility and the Euclidean algorithm, Modular arithmetic and basic properties of congruence's; Elementary theorems on the roots of polynomial equations, Imaginary roots, The fundamental theorem of algebra (statement only); The n^{th} roots of unity, De Moivre's theorem for integer and rational indices and its applications.	12
II	**Groups, Subgroups, Normal Subgroups and Isomorphism Theorems :** Definition and properties of a group, Abelian groups, Examples of groups including D_n (dihedral groups), Q_8	12

	(quarternian group), $GL(n, \mathbb{R})$ (general linear groups) and $SL(n, \mathbb{R})$ (special linear groups); Subgroups and examples, Cosets and their properties, Lagrange's theorem and its applications, Normal subgroups and their properties, Simple groups, Factors groups; Group homomorphisms and isomorphisms with properties; First, second and third isomorphism theorems for groups.	
III	**Cyclic and Permutation Groups:** Cyclic groups and properties, Classifications of subgroup of cyclic groups, Cauchy theorem for finite abelian groups; Centralizer, Normalizer, Center of a group, Product of two subgroups, Permutation group and properties, Even and odd permutations, Cayley's theorem.	12
IV	**Row Echelon Form of Matrices and Applications:** Systems of linear equations, Row reduction and echelon forms, The rank of a matrix and its applications in solving system of linear equations; Matrix operations, Symmetric, skew- symmetric, self-adjoint, orthogonal, Hermition, skew-Hermition and unitary matrices; Determinant of a square matrix, The inverse of a square matrix, Eigen vectors and eigen values, The characteristic equation and the Cayley□Hamilton theorem, Applications of matrices to computer graphics and search engines.	12
V	**Vector Spaces and Linear Transformations:** Definitions of field and vector space with examples, Subspaces, Linear span, Quotient space and direct sum, Linearly independent and dependent sets, Bases and dimension, Linear transformation and matrix of a linear transformation, Change of coordinates, Rank and nullity of linear transformation, Rank-nullity theorem.	12

Part C - Learning Resource

Text Books and Reference Books

1. Michael Artin *Algebra* (2nd edition). Pearson 2014.
2. John B. Fraleigh. *A First Course in Abstract Algebra* (7th edition). Pearson 2007.
3. Stephen H. Friedberg, Arnold J.Insel& Lawrence E. Spence. *Linear Algebra* (4thedition). Prentice-Hall of India Pvt. Ltd. 2003
4. Joseph A. Gallian. *Contemporary Abstract Algebra* (9th edition). Cengage. 2017
5. Kenneth Hoffman & Ray Kunze. *Linear Algebra* (2nd edition). Prentice-Hall. 2015

6. I. N. Herstein. *Topics in Algebra* (2nd edition). Wiley India. 2006
7. Nathan Jacobson. *Basic Algebra* I (2nd edition). Dover Publications. 2009
8. Ramji Lal. *Algebra 1: Groups, Rings, Fields and Arithmetic*. Springer. 2017
9. I.S. Luthar & I.B.S. Passi. *Algebra: Volume 1: Groups*. Narosa. 2013

E- Resources

1. Suggested Equivalent **online courses:** Web link NPTEL/ SWAYAM/ MOOCs
2. Linear Algebra
   https://www.youtube.com/watch?v=9h_Q-R6sXbM&list=PL7oBzLzHZ1wXQvQ938Wg1-soq09GywgOw
3. Group theory
   https://www.youtube.com/watch?v=pMzcLG6s3z0&list=PLEAYkSg4uSQ1Yhxu2U-BxtRjZElrfVVcO

Part D: Assessment and Evaluation	
Suggested Continuous Evaluation Methods: Maximum Marks:	50 Marks

Declaration

This is to certify that the syllabus is framed by the Central Board of Studies (Mathematics) as per the guidelines (TOR) of the Department of Higher Education, Raipur Chhattisgarh.

1. Dr. Premlata Verma - Chairman
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   Govt. N.K. College, Kota
4. Ram Lakhan Pandey - Member
   Asst. Prof.
   Dr. B.R. Ambedkar Govt. College, Baloda
5. Dr. Arun Kumar Mishra - Member
   Professor
   Govt, DT PG College, Utai
6. Dr. Shabnam Khan - Member

Month September

Session 2023-2024

Proposed Syllabus	Date	Class	Work Done	Administrative / Academic / Research / Other work	Remark
1	2	3	4	5	6
	01.09.23	B.Sc	Unit - II - Redox potential, electrochemical Series and its application involved in extraction of		
	02.09.23		coordination Compounds. Werner's Theory and its experimental verification IUPAC NOMENCLATURE.		
	03.09.23	—	SUNDAY —		
	04.09.23		Isomerism in coordination Complex. Stereochemistry of Complexes with 4 and 6 coordination number,		
	05.09.23		chelates, polynuclear complexes		
	06.09.23		Alcohols Nomenclature, preparation, properties and relative reactivity of 1°, 2°, 3° alcohols; Bouveault-Blanc Reduction		
	07.09.23	—	Krishna Janmashtami Holiday —	—	
	08.09.23		Dihydric alcohols methods of formation chemical reaction of vicinal glycol, oxidative Cleavage [Pb(OAc)$_4$ & HIO_4] and Pinacol-Pinacolone rearrangement.		
	09.09.23				
	10.09.23	—	SUNDAY —		
	11.09.23		Phenols:- Structure and bonding in phenols, physical properties, and acidic character, Comparative acidic strength of alcohols and		
	12.09.23		phenols, acylation and carboxylation		
	13.09.23		& Mechanism of Fries rearrangement, Claisen rearrangement, Gatterman synthesis		
	14.09.23		Houben-Hoesch Reaction, Lederer-Manasse Reaction and Reimer-Tiemann Reaction.		

Signature of Teacher

Signature of Principal

Month _____ Session _____

Proposed Syllabus	Date	Class	Work Done	Administrative / Academic / Research / Other work	Remark
1	2	3	4	5	6
	15.09.23		Thermodynamics I - Second law of Thermodynamics: Spontaneous process, Second law - Statements.		
	16.09.23		Carnot cycle and efficiency of Heat Engine.		
	17.09.23		SUNDAY		
	18.09.23		Carnot's Theorem, Thermodynamic		
	19.09.23		Joy Festival Holiday		
	20.09.23		Thermodynamic State of temperature		
	21.09.23		Concept of entropy: Entropy change in a reversible and irreversible		
	22.09.23		Expansion of an ideal gas, entropy change.		
	23.09.23		entropy change in isothermal		
	24.09.23		mixing of Ideal gases, physical significance of entropy, Molecular and		
	25.09.23		Statistical Interpretation of entropy.		
	26.09.23		Sunday		
	27.09.23		B: Gibbs and Helmholtz free energy, variation of G and A with pressure, V&T Gibbs - Helmholtz equation.		
			Maxwell Relations, Elementary idea of third law of Thermodynamics.		

Signature of Teacher | Signature of Principal

Month September

Session 2023-2024

Proposed Syllabus	Date	Class
	2	3
	29.03.23	
	29.03.23	
	30.03.23	

Work Done	Administrative / Academic / Research / Other work	Remark
4	5	6
Id-e-Milad		
A recent Chaturdashi Holiday		
Concept of residual entropy		
Calculation of absolute entropy		
of molecule.		

Signature of Teacher

Signature of Principal

Govt. Rani Avanti Bai Lodhi College
Ghumka, Rajnandgaon (C.G.)

ATTENDANCE

REGISTER ....August....2023

B.A. III Bio

(1) Serial No	(2) Name	(3) Post	DANCES 1	2	3	4	5	6	7	8	(4) ATTEN.
1	Ku. Chandrika Sahu		P	P	P	A	P		P	P	
2	" Manika		A	P	P	P	P		P	P	
3	" Tejas		P	P	P	A	P		P	P	
4	" Dileshwari Verma		P	A	P	P	P		P	P	
5	" Gyarsi		P	A	P	A	P		P	P	
6	" Kirti Sahu		P	P	P	A	P		P	P	
7	" Kiran		P	A	P	P	P		P	P	
8	" Radhika		P	A	P	P	A		P	P	
9	" Bhagyeshwari Verma		A	P	P	P	A		P	P	
10	" Afsanisha		P	P	P	P	P		P	P	
11	" Alka Bhuarya		P	A	P	P	P		P	P	
12	" Kanini		P	P	P	P	P		P	P	
13	" Sheetal		P	P	P	P	P		P	P	
14	Palendra Kumar Sahu		P	P	P	P	P		P	P	
15	Chandrapal Verma		P	P	A	P	P		P	P	
16	Ku Laxmi Nishad		P	A	P	A	P		A	P	
17	Kiran Kumar		P	P	P	P	A		P	A	
18	Ku Nikita Sahu		A	P	A	P	P		A	P	
19	Tilkeshwar Patel		P	A	P	P	P		P	A	
20	Ku Bhawna Kosare		P	P	A	P	P		P	P	
21	" Lalita		A	P	P	A	P		P	P	
22	Sanju Kumar Thakur		P	P	P	P	P		P	P	
23	Tulsendra Kumar		P	P	P	P	P		P	A	
24	Ku. Meera Yadu		P	P	P	P	P		P	P	
25	" Kalpana		P	P	P	P	P		P	P	
26	" Ruchi		P	P	A	P	P		P	P	
27	" Hemlata Verma		P	P	P	P	P		A	P	
28	" Jyoti Verma		P	A	P	P	P		P	P	
29	" Rashmi Sahu		P	P	P	A	P		P	P	

(5) Remarks

Signature of Principal

Govt. Rani Avanti Bai Lodhi College

Ghumka, Rajnandgaon (C.G.)

BSc III (Maths)

ATTENDANCE REGISTER ..... August ... 2023

(1) Serial No	(2) Name	(3) Post	DANCES 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	(5) Remarks
30	Ku Jhasna		A	P	A	PP			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	/	P	P	
31	Rahul Kumar		A	P	P	A	P		P	P	P	P	P	P	P	P	A	P	P	P	P	P	A	P	P	A	P	P	P	P	P	P	P	
32	Ku Neha Bhoba Gade		P	A	P	P	A		P	P	P	P	P	P	P	P	A	P	P	P	A	P	P	A	P	P	A	P	P	P	P	P	P	
33	" Dali Shankar		P	A	P	P	P		P	P	P	P	P	P	P	P	A	P	P	P	A	P	P	A	P	P	A	P	P	P	P	P	P	
34	Sagar Sinha		A	P	P	P	P		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
35	Ku Shubhranjali		P	P	A	P	P		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
36	" Geeta Verma		P	P	P	A	P		A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
37	" Manisha		A	P	P	P	P		A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
38	" Tejeshwari		P	P	A	P	P		A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
39	" Manika Sahu		P	A	P	P	A		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
40	" Pramlata Patel		A	P	P	P	P		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
41	" Soniya D/o Rameshkumar		P	A	P	P	P		A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
42	Subhash Kumar		A	P	P	P	P		P	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
43	" Dipti		P	A	P	P	P		A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
44	" Sheetal		P	A	P	A	P		A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
45	" Soniya / D/o Jalkaran		P	A	P	P	A		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
46	" Maheshwari		P	P	A	P	P		P	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
47	" Nandana		P	P	P	A	P		A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
48	" Neeru		P	P	A	P	P		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
49	" Homeshwari		A	P	P	A	P		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
50	" Dikeswari		P	P	P	P	P		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
51	" Lokeshwari Kumari		A	P	P	P	P		A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
52	Ku Damin		P	P	A	P	P		A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
53	" Meghajani Verma		P	P	P	P	A		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
54	" Jamini		P	A	P	P	A		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
55	" Babita Yadav		P	P	P	P	A		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
56	" Khemin Sahu		P	P	A	P	P		A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
57	" Digeshwari Thakur		P	P	P	A	P		P	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
58	" Akanksha Devangan		P	P	P	P	P		P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

Signature of Principal

Govt. Rani Avanti Bai Lodhi College
Ghumka, Rajnandgaon (C.G.)

ATTENDANCE

REGISTER ..... August 2025

(1) Serial No	(2) Name	(3) Post	DANCES 1	2	3	4	5	6	7	8	(4) ATTEN.	(5) Remarks
59	Kailash Mahilkar		P	P	A	P	P		P	D		
60	Chandrashekhar Sahu		A	P	A	P	P		P	A		
61	Ku. Devika		D	D	P	P	A		P	A		
62	" Damani		P	P	P	P	A		P	P		
63	Lalit kumar		A	P	P	A	P		P	P		
64	Ku. Dali Thakur		P	P	P	A	P		P	P		
65	Sheetal kumari S/O Bhartalal		A	P	P	P	A		P	D		
66	Ku. Deepali		A	P	P	P	P		P	P		
67	Manish kumar		P	A	A	P	P		P	P		
68	Ku. Omeshwari		P	P	P	P	A		P	P		
69	" Deepikar		P	P	A	P	P		P	P		
70	Ku. Sheetal D/O Mahesh Sahu		P	A	P	P	A		P	P		
71	Vinay Sahu		P	A	P	P	P		A	P		
			P	P	P	D	P		P	P		
			P	P	P	P	P		P	P		
	B.Sc. III (Maths)		P	P	P	P	P		P	P		
1	Jayant		P	A	P	A	P		P	A		
2	Gurupreet Yadav		P	A	P	P	A		A	A		
3	Ku Nikita Verma		P	P	A	P	A		P	A		
4	Surendra Kumar		A	P	P	A	P		P	A		
5	Khomesh Kumar Verma		P	P	P	A	P		A	P		
6	Mukesh kumar		P	A	P	A	P		P	P		
7	Ku Dekesha Verma		P	A	P	A	P		P	P		
8	" Bhumika Nishad		P	A	P	P	P		A	P		
9	Narayan		P	P	P	P	P		P	P		
10	Ku. Madhu Verma		A	P	P	P	P		A	P		

(1) Serial No	(2) Name	(3) Post	DANCES 9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	(5) Remarks
59	Kailash Mahilkar		P	P	P		P			P	P	P	P		P	P	P	P	P	P		P	P		P	
60	Chandrashekhar Sahu		P	P	A		P			P	P	P	P		P	P	P	P	P	P		P	P		D	
61	Ku. Devika		P	P	P		P			P	P	P	P		P	P	P	P	P	P		A	P		A	
62	" Damani		P	P	P		P			P	P	P	P		P	P	P	P	P	P		P	P		A	
63	Lalit kumar		P	P	A		P			P	P	P	P		P	P	P	P	P	P		P	P		P	
64	Ku. Dali Thakur		P	P	P		P			P	P	P	P		P	P	P	P	P	P		P	P		P	
65	Sheetal kumari S/O Bhartalal		P	A	P		P			A	P	P	P		P	P	P	P	P	P		P	P		P	
66	Ku. Deepali		P	P	P		P			P	P	P	P		P	P	P	P	P	P		P	P		P	
67	Manish kumar		P	A	A		A			A	A	P	P		A	A	P	P	A	A		P	P		P	
68	Ku. Omeshwari		P	P	P		P			P	P	P	A		P	P	P	P	P	P		P	P		P	
69	" Deepikar		P	P	A		P			A	A	P	P	P	A	A	P	P	P	P		A	P		A	
70	Ku. Sheetal D/O Mahesh Sahu		P	A	P		P			A	P	P	P		P	P	P	P	P	P		P	P		P	
71	Vinay Sahu		A	P	P		P			A	P	A	P		P	P	P	P	P	P		P	P		P	
			P	P	P		P			P	P	P	P		P	P	P	P	P	P		P	P		P	
			A	P	P		P			P	P	P	P		P	P	P	P	P	P		P	P		P	
	B.Sc. III (Maths)		P	P	P		P			P	P	P	A		P	P	P	P	P	P		P	P		P	
1	Jayant		P	P	P		P			P	P	A	A		A	P	P	P	P	P		A	P		P	
2	Gurupreet Yadav		P	P	P		P			P	P	A	A		A	P	P	P	P	P		A	A		P	
3	Ku Nikita Verma		A	P	P		A			P	P	P	P		P	P	P	P	P	P		A	P		P	
4	Surendra Kumar		A	P	P		A			P	A	P	P		P	P	P	P	P	P		A	P		D	
5	Khomesh Kumar Verma		P	A	A		A			A	P	P	P		A	P	P	A	P	P		P	A		B	
6	Mukesh kumar		P	A	A		A			A	P	A	P		A	P	P	A	P	P		A	P		A	
7	Ku Dekesha Verma		P	A	P		A			P	A	P	D		P	P	P	A	P	P		P	D		P	
8	" Bhumika Nishad		P	A	A		A			A	A	P	P		A	P	P	A	A	P		P	A		A	
9	Narayan		P	A	D		P			P	P	A	P		A	P	P	P	A	P		A	P		A	
10	Ku. Madhu Verma		P	A	A		A			A	A	A	A		A	A	A	A	A	A		A	P		P	

Signature of Principal

Govt. Rani Avanti Bai Lodhi College Ghumka, Rajnandgaon (C.G.)

ATTENDANCE REGISTER September 2020

(1) Serial No	(2) Name	(3) Post	1	2	③	4	5	6	⑦	8	9	⑩	11	12	13	14	15	16	⑰	⑱	⑲	20	21	22	23	㉔	25	26	27	㉘	29	30	㉛	(5) Remarks
59			P	P		P	P	P		A	P		P	P	P	P	P	A				P	P	P	P		P	P	A		P	P	P	
60			P	P		P	P	P		P	P		P	P	P	P	A	P				P	P	A	P		P	P	A		P	P		
61			P	P		P	P	P		P	P		A	P	P	A	P	P				P	P	P	P		P	P	P		P	P		
62			P	P		P	P	P		P	P		P	P	P	P	P	P				P	P	P	P		A	P	P		A	P		
63			P	P		A	P	P		P	P		P	P	P	A	P	P				P	P	P	P		A	P	P		P	P		
64			P	P		A	P	P		P	P		P	P	P	P	P	P				P	P	P	P		P	P	P		P	P		
65			P	P		A	P	P		A	P		P	P	P	P	P	P				P	P	P	P		A	A	P		P	P		
66			P	P		P	P	P		A	A		P	P	P	P	P	A				A	A	P	P		P	P	A		P	P	A	
67			P	P		P	P	P		P	A		P	P	P	P	P	A				P	P	P	P		P	P	P		P	P	P	
68			P	P		P	A	P		P	P		P	P	P	P	A	P				P	P	A	P		P	P	P		P	P		
69			P	P		P	P	P		A	A		P	P	P	P	P	A				P	P	P	P		P	P	P		A	P	P	
70			P	P	A	A	P	P		P	P		P	P	P	P	A	P				P	P	P	P		A	P	P		P	P		
71			P	P		P	P	P		P	P		P	P	P	P	A	P				P	P	P	P		A	P	P		P	P		
72			A	P		P	P	P		P	P		P	A	P	P	P	A				P	P	P	P		A	P	P		P	A		
73			A	P		A	P	P		A	A		A	P	P	P	A	P				P	P	P	A		P	P	P		A	P		
74	B.Sc III (maths)		A	P	P	P	P	P		P	P		P	P	P	A	P	P				P	P	P	P		P	P	A		P	P		
1			P	P		P	P	P		P	P		A	P	P	P	A	P		A	A	A	P	P	P		P	P	P		A	A	A	
2			P	P		P	P	P		P	P		A	P	P	P	A	P				P	P	P	P		P	P	P		A	P	A	
3			P	A		P	P	P		P	P		P	P	A	P	P	P				P	P	P	P		P	P	A		P	P		
4			P	P		P	P	P		P	P		P	P	P	P	P	P				P	P	P	P		P	P	P		A	A	P	
5			P	P		P	P	P		A	P		P	P	P	P	P	A				P	P	P	P		P	P	A		A	A	P	
6			P	P		P	P	P		P	P		P	P	P	P	P	P				P	P	P	P		P	A	A		A	A	P	
7			A	P		A	A	A		A	P		P	P	A	A	A	A				A	P	P	A		A	A	A		A	A	A	
8			P	P		P	P	P		A	P		P	P	P	P	P	A				P	P	P	A		P	A	P		P	A	A	
9			P	P		P	P	P		A	P		P	P	P	P	P	A				P	P	P	A		P	P	P		A	A	A	
10			A	A		A	P	P		A	A		A	A	A	A	A	A				P	P	A	A		A	A	A		A	P	A	

Principal

Signature of Principal

Govt. Rani Avanti Bai Lodhi College Ghumka Dist. Rajnandgaon (C.G.)

GOVT. RANI AVANTI BAI LODHI COLLEGE, GHUMKA, DISTT. - RAJNANDGAON (C.G)

LECTURE PLAN SAMPLE DOCUMENTS

OFFICE OF THE PRINCIPAL

GOVT. RANI AVANTI BAI LODHI COLLEGE, GHUMKA, DISTT.-RAJNANDGAON (C.G.)

Email – govt.collegeghumka@gmail.com Website - http://rablcollege.ac.in. , Phone Number- 07744-296940

LECTURE/TEACHING PLAN

B.Sc. – I YEAR YEAR 2023-24

Name of the teacher : **Mrs. PRITI KHURSHAIL**

Department : **CHEMISTRY**

Subject/Paper : INORGANIC CHEMISTRY (PAPER:I)
ORGANIC CHEMISTRY(PAPER: II)
PHYSICAL CHEMISTRY(PAPER: III)

Month/Year	Teaching day Available	Topic/Subject to the taught	Lectures Required
August 2022	**21**	A. **ATOMIC STRUCTURE** Bohr's theory, its limitation and atomic spectrum of hydrogen atom. General idea of de-Broglie matter-waves, Heisenberg uncertainty principle, Schrödinger wave equation, significance of Ψ and Ψ 2 , radial & angular wave functions and probability distribution curves, quantum numbers, Atomic orbital and shapes of s, p, d orbitals, Aufbau and Pauli exclusion principles, Hund's Multiplicity rule, electronic configuration of the elements. B. **PERIODIC PROPERTIES** Detailed discussion of the following periodic properties of the elements, with reference to s and pblock. Trends in periodic table and applications in predicting and explaining the chemical behavior. a) Atomic and ionic radii, b) Ionization enthalpy, c) Electron gain enthalpy, d) Electronegativity, Pauling's, Mulliken's, Allred Rochow's scales. e) Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table.	**7** **7**
		BASICS OF ORGANIC CHEMISTRY Hybridization, Shapes of molecules, Influence of hybridization on bond properties. Electronic Displacements: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment. Electrophiles and Nucleophiles; Nucleophilicity and basicity; Homolytic and Heterolytic cleavage, Generation, shape and relative stability of Carbocations, Carbanions, Free radicals, Carbenes and Nitrenes. Introduction to types of organic reactions: Addition, Elimination and Substitution reactions.	**7**

September 2022	**25**	**MATHEMATICAL CONCEPTS FOR CHEMIST** Basic Mathematical Concepts: Logarithmic relations, curve sketching, linear graphs, Properties of straight line, slope and intercept, Functions, Differentiation of functions, maxima and minima; integrals; ordinary differential equations; vectors and matrices; determinants; Permutation and combination and probability theory, Significant figures and their applications.	**7**
		CHEMICAL BONDING I **Ionic bond:** Ionic Solids - Ionic structures, radius ratio & co-ordination number, limitation of radius ratio rule, lattice defects, semiconductors, lattice energy Born- Haber cycle, Solvation energy and solubility of ionic solids, polarising power & polarisabilitry of ions, Fajans rule, Ionic character in covalent compounds: Bond moment and dipole moment, Percentage ionic character from dipole moment and electronegatiity difference, Metallic bond-free electron, Valence bond & band theories.	**9**
		Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with two or more chiral-centres, Diastereoisomers, meso compounds, Relative and absolute configuration: Fischer, Newmann and Sawhorse Projection formulae and their interconversions; Erythrose and threose, D/L, d/l system of nomenclature, Cahn-Ingold-Prelog system of nomenclature (C.I.P rules), R/S nomenclature. Geometrical isomerism: cis–trans, synanti and E/Z notations.	
		GASEOUS STATE CHEMISTRY Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation; collision frequency; collision diameter; mean free path; Maxwell distribution and its use in evaluating molecular velocities (average, root mean square and most probable) and average kinetic energy, law of equipartition of energy, degrees of freedom and molecular basis of heat capacities. Joule Thomson effect, Liquification of Gases. Behaviour of real gases: Deviations from ideal gas behaviour, compressibility factor (Z), and its variation with pressure and temperature for different gases. Causes of deviation from ideal behaviour. van der Waals equation of state, its derivation and application in explaining real gas behaviour, calculation of Boyle temperature. Isotherms of real gases and their comparison with van der Waals isotherms, continuity of states, critical state, relation between critical constants and van der Waals constants, law of corresponding states.	**9**

October 2022	**20**	**CHEMICALBONDING II** **Covalent bond:** Lewis structure, Valence bond theory and its limitations, Concept of hybridization, Energetics of hybridization, equivalent and non-equivalent hybrid orbitals. Valence shell electron pair repulsion theory (VSEPR), shapes of the following simple molecules and ions containing lone pairs and bond pairs of electrons: H2O, NH3, PCl3, PCl5, SF6. H3O + , SF4, ClF3, and ICl2 - Molecular orbital theory. Bond order and bond strength, Molecular orbital diagrams of diatomic and simple polyatomic molecules N2, O2, F2, CO, NO.	**5**
		CONFORMATIONAL ANALYSIS OF ALKANES Conformational analysis of alkanes, ethane, butane, cyclohexane and sugars. Relative stability and Energy diagrams. Types of cycloalkanes and their relative stability, Baeyer strain theory: Theory of strainless rings, Chair, Boat and Twist boat conformation of cyclohexane with energy diagrams; Relative stability of mono-substituted cycloalkanes and disubstituted cyclohexane.	**5**
		LIQUID STATE CHEMISTRY Intermolecular forces, magnitude of intermolecular force, structure of liquids, Properties of liquids, viscosity and surface tension. **COLLOIDS and SURFACE CHEMISTRY** Classification, Optical, Kinetic and Electrical Properties of colloids, Coagulation, Hardy Schulze law, flocculation value, Protection, Gold number, Emulsion, micelles and types, Gel, Syneresis and thixotrophy, Application of colloids. Physical adsorption, chemisorption, adsorption isotherms (Langmuir and Freundlich). Nature of adsorbed state. Qualitative discussion of BET.	**5** **5**
November 2022	**23**	**A. s-BLOCK ELEMENTS** General concepts on group relationships and gradation properties, Comparative study, salient features of hydrides, solvation & complexation tendencies including their function in biosystems and introduction to alkyl & aryls, Derivatives of alkali and alkaline earth metals **B. p-BLOCK ELEMENTS** General concepts on group relationships and gradation properties. Halides, hydrides, oxides and oxyacids of Boron, Aluminum, Nitrogen and Phosphorus. Boranes, borazines, fullerenes, graphene and silicates, interhalogens and pseudohalogens.	**8**
		A. Carbon-Carbon sigma (σ) bonds Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig Reaction, Free radical substitutions: Halogenation-relative reactivity and selectivity. **B. Carbon-Carbon Pi (л) bonds:** Formation of alkenes and alkynes by elimination reactions, Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations.	**2**

		SOLID STATE CHEMISTRY Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, qualitative idea of point and space groups, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method. Crystal defects.	**8**
December 2*022	**26**	**A CHEMISTRY OF NOBLE GASES** Chemical properties of the noble gases, chemistry of xenon, structure, bonding in xenon compounds **B. THEORETICAL PRINCIPLES IN QUALITATIVE ANALYSIS (H2S SCHEME)** Basic principles involved in the analysis of cations and anions and solubility products, common ion effect. Principles involved in separation of cations into groups and choice of group reagents. Interfering anions (fluoride, borate, oxalate and phosphate) and need to remove them after Group II.	**9**
		AROMATIC HYDROCARBONS Aromaticity: Hückel's rule, aromatic character of arenes, cyclic carbocations/ carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft's alkylation/acylation with their mechanism. Directive effects of the groups.	**8**
		A. CHEMICAL KINETICS Rate of reaction, Factors influencing rate of reaction, rate law, rate constant, Order and molecularity of reactions, rate determining step, Zero, First and Second order reactions, Rate and Rate Law, methods of determining order of reaction, Chain reactions. Temperature dependence of reaction rate, Arrhenius theory, Physical significance of Activation energy, collision theory, demerits of collision theory, non mathematical concept of transition state theory.	**9**
January 2022	**25**	**B. CATALYSIS** Homogeneous and Heterogeneous Catalysis, types of catalyst, characteristic of catalyst, Enzyme catatysed reactions, Micellar catatysed reactions, Industrial applications of Catalysis.	**10**
		Revision, Test, Home Work	**15**

February 2022	**23**	**PRACTICAL EXAMINATION** Three experiments are to be performed 1. Inorganic Mixture Analysis, four radicals two basic & two acid (excluding insoluble, Interfering & combination of acid radicals) OR Two Titrations (Acid-Bases,Redox and Iodo/Iodimetry) 2. Detection of functional group in the given organic compound and determine its MPt/BPt. **O R** Crystallization of any one compound as given in the prospectus along with the Determination of mixed MPt. **O R** Decolorisation of brown sugar along with sublimation of camphor/ Naphthlene 3. Any one physical experiment that can be completed in two hours including calculations 4. Viva **5.** Sessionals In case of Ex-Students two marks will be added to each of the experiments	**10** **8** **3** **2**

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LECTURE/TEACHING PLAN

B.Sc. – II YEAR YEAR 2023-24

Name of the teacher : **Mrs. PRITI KHURSHAIL**

Department : **CHEMISTRY**

Subject/Paper : INORGANIC CHEMISTRY (PAPER:I)
ORGANIC CHEMISTRY(PAPER: II)
PHYSICAL CHEMISTRY(PAPER: III)

Month/Year	Teaching day Available	Topic/Subject to the taught	Lectures Required
August 2022	**21**	**CHEMISTRY OF TRANSITION SERIES ELEMENTS** Transition Elements: Position in periodic table, electronic configuration, General Characteristics, viz., atomic and ionic radii, variable oxidation states, ability to form complexes, formation of coloured ions, magnetic moment μso (spin only) and μeff and catalytic behaviour. General comparative treatment of 4d and 5d elements with their 3d analogues with respect to ionic radii, oxidation states and magnetic properties.	**7**
		CHEMISTRY OF ORGANIC HALIDES Alkyl halides: Methods of preparation, nucleophilic substitution reactions – SN1, SN2 and SN i mechanisms with stereochemical aspects and effect of solvent etc.; nucleophilic substitution, elimination reactions. Aryl halides: Preparation, including preparation from diazonium salts, Nucleophilic Aromatic Substitution; SNAr, Benzyne mechanism. Relative reactivity of alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions.	**7**
		. **THERMODYNAMICS-I** Intensive and extensive variables; state and path functions; isolated, closed and open systems; Zeroth law of thermodynamics. First law: Concept of heat, work, internal energy and statement of first law; enthalpy, Relation between heat capacities, calculations of q, w, U and H for reversible, irreversible and free expansion of gases under isothermal and adiabatic conditions. Joule-Thomson expansion, inversion temperature of gases, expansion of ideal gases under isothermal and adiabatic condition	**7**

September 2022	**25**	**A. OXIDATION AND REDUCTION:** Redox potential, electrochemical series and its applications, Principles involved in extraction of the elements. **B. COORDINATION COMPOUNDS:** Werner's theory and its experimental verification, IUPAC nomenclature of coordination compounds, isomerism in coordination compounds. Stereochemistry of complexes with 4 and 6 coordination numbers. Chelates, polynuclear complexes.	**8**
		ALCOHOLS **A. Alcohols:** Nomenclature, preparation, properties and relative reactivity of 1°, 2°, 3° alcohols, Bouvaelt-Blanc Reduction for the preparation of alcohols, Dihydric alcohols – methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [Pb(OAc)4 and HIO4] and pinacol-pinacolone rearrangement. **B. Trihydric alcohols -** Nomenclature, methods of formation, chemical reactions of glycerol. **PHENOLS** **A.** Structure and bonding in phenols, physical properties and acidic character, Comparative acidic strength of alcohols and phenols, acylation and carboxylation. **B.** Mechanism of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben-Hoesh reaction, Lederer-Manasse reaction and Reimer-Tiemann reaction.	**4** **4**
		A. THERMODYNAMICS-II Second Law of Thermodynamics: Spontaneous process, Second law, Statement of Carnot cycle and efficiency of heat engine, Carnot's theorem, thermodynamic state of temperature. Concept of entropy: Entropy change in a reversible and irreversible process, entropy change in isothermal reversible expansion of an ideal gas, entropy change in isothermal mixing of ideal gases, physical signification of entropy, Molecular and statistical interpretation of entropy. B. Gibbs and Helmholtz free energy, variation of G and A with pressure, volume, temperature, Gibbs-Helmholtz equation, Maxwell relations, Elementary idea of Third law of Thermodynamics, concept of residual entropy, calculation of absolute entropy of molecule.	**9**
October 2022	**20**	**COORDINATION CHEMISTRY** Valence bond theory (inner and outer orbital complexes), electroneutrality principle and back bonding. Crystal field theory, Crystal field splitting and stabilization energy, measurement of 10 Dq (Δo), CFSE in weak and strong fields, pairing energies, factors affecting the magnitude of 10 Dq (Δo, Δt). Octahedral vs. tetrahedral coordination.	**5**

		ALDEHYDES AND KETONES **A.** Nomenclature, structure and reactivity of carbonyl group. General methods of preparation of aldehydes and ketones. Mechanism of nucleophilic addition to carbonyl groups: Benzoin, Aldol, Perkin and Knoevenagel condensation. Condensation with ammonia and its derivatives, Wittig reaction, Mannich reaction, Beckmann and Benzil- Benzilic rearrangement. **B.** Use of acetate as protecting group, Oxidation of aldehydes, Baeyer-Villiger oxidation of ketones, Cannizzaro reaction, MPV, Clemmensen reduction, Wolf-Kishner reaction, LiAlH4 and NaBH4 reduction. Halogenation of enolizable ketones, An introduction to α,β-unsaturated aldehydes and ketones.	**5**
		A. CHEMICAL EQUILIBRIUM Criteria of thermodynamic equilibrium, degree of advancement of reaction, chemical equilibria in ideal gases. Concept of Fugacity, Thermodynamic derivation of relation between Gibbs free energy of reaction and reaction quotient. Coupling of exergonic and endergonic reactions. Equilibrium constants and their quantitative dependence on temperature, pressure and concentration. Thermodynamic derivation of relations between the various equilibrium constants Kp, Kc and Kx. Le Chatelier principle (quantitative treatment). Equilibrium between ideal gas and a pure condensed phase.	**5**
		B. IONIC EQUILIBRIA Ionization of weak acids and bases, pH scale, common ion effect; dissociation constants of mono protic acids (exact treatment). Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions; derivation of Henderson equation and its applications. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.	**5**
November 2022	**23**	**A. CHEMISTRY OF LANTHANIDE** ELEMENTS Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds. **B. CHEMISTRY OF ACTINIDES** General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from uranium, similarities between the latter actinides and the latter lanthanides	**5** **4**
		A. CARBOXYLIC ACIDS Preparation, Structure and bonding, Physical and chemical properties including, acidity of carboxylic acids, effects of substituents on acid strength, Hell-Volhard Zeilinsky reaction. Reduction of carboxylic groups, Mechanism of decarboxylation. Di carboxylic acids: Methods of formation and effect of heat and dehydrating agents, Hydroxyacids.	**4**

		B. CARBOXYLIC ACID DERIVATIVES Structure of acid chlorides, esters, amides and acid anhydrides, Relative stability of acyl derivatives. Physical properties, inter-conversion of acid derivatives by nucleophilic acyl substitution. Mechanism of acid and base catalyzed esterification and hydrolysis.	**4**
		PHASE EQUILIBRIUM **A.** Phase rule, Phase, component and degree of freedom, derivation of Gibbs phase rule, Clausius-Claperon equation and its applications to Solid-Liquid, Liquid-Vapor and SolidVapor, limitation of phase rule, applications of phase rule to one component system: Water system and sulphur system. Application of phase rule to two component system: Pb-Ag system, desilverization of lead, Zn-Mg system, Ferric chloride-water system, congruent and incongruent melting point and eutectic point. Three component system: Solid solution liquid pairs . **B.** Nernst distribution law, Henry's law, application, solvent extraction	**6**
December 2022	**26**	**A. ACIDS BASES :** Arrhenius, Bronsted-Lowry, conjugate acids and bases, relative strengths of acids and bases, the Lux-flood, Solvent system and Lewis concepts of acids and bases. **B. NON-AQUEOUS SOLVENTS** .Physical properties of a solvent, types of solvents and their general characteristics, reaction in non-aqueous solvents with reference to liquid ammonia and liquid sulphur dioxide, HF, H_2SO_4 , Ionic liquids.	**13**
		ORGANIC COMPOUNDS OF NITROGEN **A.** Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes. Mechanism of nucleophilic substitution in nitroarenes and their reduction in acidic, neutral and alkaline medium. **B.** Reactivity, structure and nomenclature of amines, physical properties. Stereochemistry of amines. Separation of mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines. Preparation of alkyl and aryl amines (reduction of nitro compounds and nitriles), reductive amination of aldehydic and ketonic compounds. Gabriel-Phthalimide reaction, HofmannBromamide reaction, Reactions of amines, electrophilic aromatic substitution of aryl amines, Reaction of amines with nitrous acid. Synthetic transformations of aryl diazonium salts, Azo coupling.	**13**
January 2023	**25**	**PHOTOCHEMISTRY** Characteristics of electromagnetic radiation, Interaction of radiation with matter, difference between thermal and photochemical processes, Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws of photochemistry: Grothus-Drapper law, StarkEinstein law, quantum yield, actinometry, examples of low and high quantum yields, Photochemical equilibrium and the differential rate of photochemical reactions,	**10**

		Quenching, Role of photochemical reaction in biochemical process. Jablonski diagram depicting various process occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), photosensitized reactions, energy transfer processes {simple examples), photostationary states, Chemiluminescence.	
		Revision, Test, Home Work	**15**
February 2023	**23**	**PRACTICAL EXAMINATION** Three Experiments are to be performed. 1. Inorganic – Qualitative semimicro analysis of mixtures. **(OR)** One experiment from synthesis and analysis by preparing the standard solution. 2. (a) Identification of the given organic compound & determine its M.Pt./B.Pt. (b) Determination of Rf value and identification of organic compounds by paper chromatography 3. Any one physical experiment that can be completed in two hours including calculations. 4. Viva . 5. Sessional In case of Ex-Students one marks will be added to each of the experiment.	**10** **8** **3** **2**

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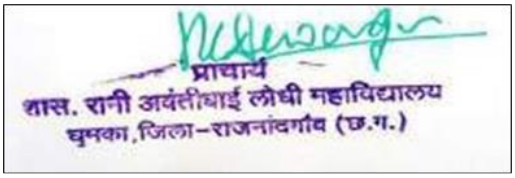

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LECTURE/TEACHING PLAN

B.Sc. – III YEAR YEAR 2023-24

Name of the teacher : **Mrs. PRITI KHURSHAIL**

Department : **CHEMISTRY**

Subject/Paper : INORGANIC CHEMISTRY (PAPER:I)
ORGANIC CHEMISTRY(PAPER: II)
PHYSICAL CHEMISTRY(PAPER: III)

Month/Year	Teaching day Available	Topic/Subject to the taught	Lectures Required
August 2022	**21**	**METAL-LIGAND BONDING IN TRANSITION METAL COMPLEXES** (A) Limitations of valence bond theory, Limitation of Crystal Field Theory, Application of CFSE, tetragonal distortions from octahedral geometry, Jahn–Teller distortion, square planar geometry. Qualitative aspect of Ligand field and MO Theory. (B) Thermodynamic and kinetic aspects of metal complexes. A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, substitution reactions of square planar complexes, Trans-effect, theories of trans effect. Mechanism of substitution reactions of square planar complexes.	**7**
		HETEROCYCLIC COMPOUNDS Classification and nomenclature, Structure, aromaticity in 5-membered and 6-membered rings containing one heteroatom; Synthesis, reactions and mechanism of substitution reactions of: Furan, Pyrrole (Paal-Knorr synthesis, Knorr pyrrole synthesis, Hantzsch synthesis), Thiophene, Pyridine (Hantzsch synthesis), Indole (Fischer indole synthesis and Madelung synthesis), Quinoline and isoquinoline, (Skraup synthesis, Friedlander's synthesis, Knorr quinoline synthesis, Doebner- Miller synthesis, Bischler-Napieralski reaction, Pictet- Spengler reaction, Pomeranz-Fritsch reaction).	**7**
		QUANTUM MECHANICS–I Black-body radiation, Planck's radiation law, photoelectric effect, Compton effect. Operator: Hamiltonian operator, angular momentum operator, Laplacian operator, postulate of quantum mechanics, eigen values, eigen function, Schrodinger time independent wave equation, physical significance of ψ & ψ 2 , application of Schrodinger wave equation to particle in a one dimensional box, hydrogen atom (separation into three equations) radial and angular wave functions.	**7**

September 2022	**25**	**MAGNETIC PROPERTIES OF TRANSITION METAL COMPLEXES** Types of magnetic behavior, methods of determining magnetic susceptibility, spin only formula, L-S coupling, correlation of μso (spin only) and μeff. values, orbital contribution to magnetic moments, application of magnetic moment data for 3d metal complexes. Electronic spectra of Transition Metal Complexes. Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground states, spectro-chemical series. Orgel-energy level diagram for d1 and d2 states, discussion of the electronic spectrum of [Ti(H2O)6] 3+ complex ion.	**7**
		A. ORGANOMETALLIC REAGENT Organomagnesium compounds: Grignard reagents formation, structure and chemical reactions. Organozinc compounds: formation and chemical reactions. Organolithium compounds: formation and chemical reactions. **B. ORGANIC SYNTHESIS VIA ENOLATES** Active methylene group, alkylation of diethylmalonate and ethyl acetoacetate, Synthesis of ethyl acetoacetate: The Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate. Robbinson annulations reaction.	**9**
		QUANTUM MECHANICS–II Quantum Mechanical approach of Molecular orbital theory, basic ideas-criteria for forming M.O. and A.O., LCAO approximation, formation of H2 + ion, calculation of energy levels from wave functions, bonding and antibonding wave functions, Concept of σ, σ*, π, π* orbitals and their characteristics, Hybrid orbitals-sp,sp2 ,sp3 Calculation of coefficients of A.O.'s used in these hybrid orbitals. Introduction to valence bond model of H2, comparison of M.O. and V.B. models. Huckel theory, application of Huckel theory to ethene, propene, etc.	**9**
October 2022	**20**	**ORGANOMETALLIC CHEMISTRY** Definition and classification of organometallic compounds on the basis of bond type. Concept of hapticity of organic ligands. Metal carbonyls: 18-electron rule, electron count of mononuclear, polynuclear and substituted metal carbonyls of 3d series. General methods of preparation (direct combination, reductive carbonylation, thermal and photochemical decomposition) of mono and binuclear carbonyls of 3d series. Structures of mononuclear and binuclear carbonyls of Cr, Mn, Fe, Co and Ni using VBT. πacceptor behavior of CO (MO diagram of CO to be discussed), Zeise's salt: Preparation and structure. Catalysis by Organometallic Compounds – Study of the following industrial processes and their mechanism : **1.** Alkene hydrogenation (Wilkinsons Catalyst) **2.** Polymeration of ethane using Ziegler – Natta Catalyst	**5**

		BIOMOLECULES **A. CARBOHYDRATES** Occurrence, classification and their biological importance. Monosaccharides: relative and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, determination of ring size of glucose and fructose, Haworth projections and conformational structures; Interconversions of aldoses and ketoses; Killiani Fischer synthesis and Ruff degradation; Disaccharides – Structural comparison of maltose, lactose and sucrose. Polysaccharides – Elementary treatment of starch and cellulose. **B. AMINO ACIDS, PROTEINS AND NUCLEIC ACIDS** Classification and Nomenclature of amino acids, Configuration and acid base properties of amino acids, Isoelectric Point, Peptide bonds, Protein structure, denaturation/ renaturation, Constituents of nucleic acid, DNA, RNA nucleoside, nucleotides, double helical structure of DNA.	**5**
		SPECTROSCOPY Introduction: Characterization of Electromagnetic radiation, regions of the spectrum, representation of spectra, width and intensity of spectral transition, Rotational Spectrum of Diatomic molecules. Energy levels of a rigid rotor, selection rules, determination of bond length, qualitative description of non-rigid rotator, isotopic effect. Vibrational Spectroscopy: Fundamental vibration and their symmetry vibrating diatomic molecules, Energy levels of simple harmonic oscillator, selection rules, pure vibrational spectrum, determination of force constant, anharmonic oscillator Raman spectrum: Concept of polarizability, quantum theory of Raman spectra, stokes and antistokes lines, pure rotational and pure vibrational Raman spectra. Applications of Raman Spectra. Electronic Spectroscopy: Basic principles, Electronic Spectra of diatomic molecule, Franck-Condon principle, types of electronic transition, application of electronic spectra.	**5**
		BIOINORGANIC CHEMISTRY Essential and trace elements in biological processes, Excess and deficiency of some trace metals, Toxicity of some metal ions (Hg, Pb, Cd and As), metalloporphyrins with special reference to hemoglobin and myoglobin. Biological role of alkali and alkaline earth metals with special reference to Ca^{2+} and Mg^{2+} , nitrogen fixation.	**5**
November 2022	**20**	**SYNTHETIC POLYMERS** **A.** Addition or chain growth polymerization, Free radical vinyl polymerization, Ziegler-Natta polymerization, Condensation or Step growth polymerization, polyesters, polyamides, phenols-formaldehyde resins, urea-formaldehyde resins, epoxy resins and polyurethanes, natural and synthetic rubbers.	**7**

		B. SYNTHETIC DYES Colour and constitution (Electronic Concept). Classification of Dyes. Chemistry of dyes. Chemistry and synthesis of Methyl Orange, Congo Red, Malachite Green, Crystal Violet, phenolphthalein, fluorescein, Alizarine and Indigo.	
		ELECTROCHEMISTRY-I **A.** Electrolytic conductance: Specific and equivalent conductance, measurement of equivalent conductance, effect of dilution on conductance, Kohlrausch law, application of Kohlrausch law in determination of dissociation constant of weak electrolyte, solubility of sparingly soluble electrolyte, absolute velocity of ions, ionic product of water, conductometric titrations. **B.** Theories of strong electrolyte: limitations of Ostwald's dilution law, weak and strong electrolytes, Elementary ideas of Debye – Huckel - Onsager's equation for strong electrolytes , relaxation and electrophoretic effects. **C.** Migration of ions: Transport number, Determination by Hittorf method and moving boundary method, ionic strength.	**7**
		HARD AND SOFT ACIDS AND BASES (HSAB) Classification of acids and bases as hard and soft. Pearson's HSAB concept, acid-base strength and hardness and softness. Symbiosis, Applications of HSAB principle. INORGANIC POLYMERS Types of inorganic polymers, comparison with organic polymers, synthesis, structural aspects and applications of silicones. Silicates, phosphazenes and polyphosphate.	**6**
December 2022	**22**	**A. INFRA-RED SPECTROSCOPY** Basic principle, IR absorption Band their position and intensity, IR spectra of organic compounds. B. **UV-VISIBLE SPECTROSCOPY** Beer Lambert's law, effect of Conjugation, Types of electronic transitions λmax, Chromophores and Auxochromes, Bathochromic and Hypsochromic shifts, Intensity of absorption Visible spectrum and colour. **C. NMR SPECTROSCOPY** Basic principles of Proton Magnetic Resonance, Tetramethyl silane (TMS) as internal standard, chemical shift and factors influencing it; Spin – Spin coupling and coupling constant (J); Anisotropic effects in alkene, alkyne, aldehydes and aromatics, Interpretation of NMR spectra of simple organic compounds. 13CMR spectroscopy: Principle and applications.	**4** **4** **4**
		ELECTROCHEMISTRY-II A. Electrochemical cell and Galvanic cells – reversible and irreversible cells, conventional representation of electrochemical cells, EMF of the cell and effect of temperature on EMF of the cell, Nernst equation Calculation of ΔG, ΔH and ΔS for cell reactions. B. Single electrode potential : standard hydrogen electrode, calomel electrode, quinhydrone electrode, redox electrodes,	

		electrochemical series C. Concentration cell with and without transport, liquid - junction potential, application of concentration cells in determining of valency of ions , solubility product and activity coefficient D. Corrosion-types , theories and prevention	
		Revision, Test, Home Work	**10**
January 2023	**24**	INORGANIC CHEMISTRY Gravimetric analysis: Estimation of nickel (II) using Dimethylglyoxime (DMG).• Estimation of copper as CuSCN• Estimation of iron as Fe2O3 by precipitating iron as Fe(OH)3.• Estimation of Al (III) by precipitating with oxine and weighing as Al(oxine)3 (aluminium• oxinate). Estimation of Barium as BaSO4• Inorganic Preparations: Tetraamminecopper (II) sulphate, [Cu(NH3)4]SO4.H2O• Cis and trans K[Cr(C2O4)2. (H2O)2] Potassium dioxalatodiaquachromate(III)• Tetraamminecarbonatocobalt (III) ion• Potassium tris(oxalate)ferrate(III)/ Sodium tris(oxalate)ferrate(III)• Cu(I) thiourea complex, Bis (2,4-pentanedionate) zinc hydrate; Double salts (Chrome• alum/ Mohr's salt)	**10**
		1. Preparation of organic Compounds Acetylation of one of the following compounds: amines (aniline, o-, m-, p- toluidines and• o-,m-, p-anisidine) and phenols (β-naphthol, vanillin, salicylic acid) Benzolyation of one of the following amines (aniline, o-, m-, p-toluidines and o-, m-,• panisidine) and one of the following phenols (β-naphthol, resorcinol, p cresol) by Schotten-Baumann reaction. Bromination of any one of the following: a. Acetanilide by conventional methods• b.Acetanilide using green approach (Bromate-bromide method) Nitration of any one of the following: a. Acetanilide/nitrobenzene by conventional• method b. Salicylic acid by green approach (using ceric ammonium nitrate). Reduction of p-nitrobenzaldehyde by sodium borohydride.• Hydrolysis of amides and esters.• Semicarbazone of any one of the following compounds: acetone, ethyl methyl ketone,• cyclohexanone, benzaldehyde. Benzylisothiouronium salt of one each of water soluble and water insoluble acids• (benzoic acid, oxalic acid, phenyl acetic acid and phthalic acid). Aldol condensation using either conventional or green method.•	**14**
February 2023	**26**	Benzil-Benzilic acid rearrangement.• Preparation of sodium polyacrylate.• Preparation of urea formaldehyde.• Preparation of methyl orange.• The above derivatives should be prepared using 0.5-1g of the organic compound. The solid samples must be collected and may be used for recrystallization, melting point and TLC. 2. Qualitative Analysis Analysis of an organic mixture containing two solid components using water, NaHCO3, NaOH for separation and preparation of suitable derivatives. 3.	**13** **13**

		Extraction of caffeine from tea leaves. 4. Analysis of Carbohydrate: aldoses and ketoses, reducing and non-reducing sugars. 5. Identification of simple organic compounds by IR spectroscopy and NMR spectroscopy. (Spectra to be provided). 6. Estimation of glycine by Sorenson's formalin method. 7. Study of the titration curve of glycine. 8. Estimation of proteins by Lowry's method. 9. Study of the action of salivary amylase on starch at optimum conditions. 10. Effect of temperature on the action of salivary amylase.	
February 2023	**26**	**PHYSICAL CHEMISTRY** Conductometry Determination of cell constant• Determination of equivalent conductance, degree of dissociation and dissociation• constant of a weak acid. Perform the following conductometric titrations:• i. Strong acid vs. strong base ii. Weak acid vs. strong base iii. Mixture of strong acid and weak acid vs. strong base iv. Strong acid vs. weak base To determine the strength of the given acid conductometrically using standard alkali• solution. To determine the solubility and solubility product of a sparingly soluble electrolyte• conductometrically To study the saponification of ethyl acetate conductometrically.• Potentiometry/pH metry Perform the following potentio/pH metric titrations: i. Strong acid vs. strong base ii. Weak acid vs. strong base iii. Dibasic acid vs. strong base iv. Potassium dichromate vs. Mohr's salt v. Determination of pKa of monobasic acid	**13**
		UV/ Visible spectroscopy Verify Lambert-Beer's law and determine the concentration of CuSO4/KMnO4/K2Cr2O7• in a solution of unknown concentration Determine the concentrations of KMnO4 and K2Cr2O7 in a mixture.• Study the kinetics of iodination of propanone in acidic medium.• Determine the amount of iron present in a sample using 1,10-phenathroline.• Determine the dissociation constant of an indicator (phenolphthalein).• Study the kinetics of interaction of crystal violet/ phenolphthalein with sodium• hydroxide. Study of pH-dependence of the UV-Vis spectrum (200-500 nm) of potassium dichromate.• Spectral characteristics study (UV) of given compounds (acetone, acelaldehyde, acetic• acid, etc.) in water. max valuesλ Absorption spectra of KMnO4 and K2Cr2O7 (in 0.1 M H2SO4) and determine •	**13**

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