GOVT DIGVIJAY AUTONOMOUS PG COLLEGE RAJNANDGAON(CG)

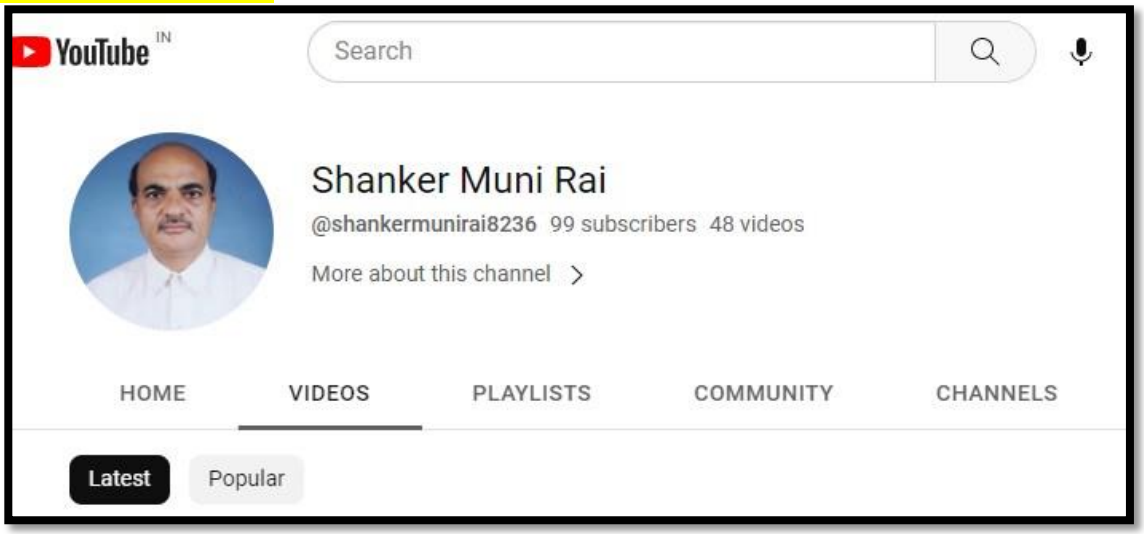
स्थपना वर्ष 1957

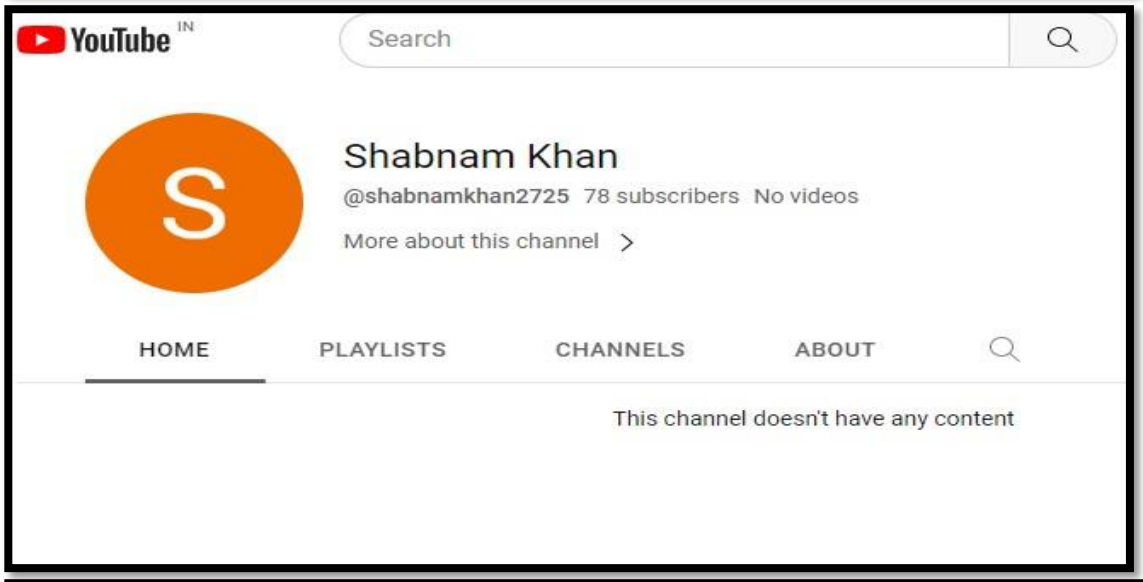
Teaching Learning & Reform Report

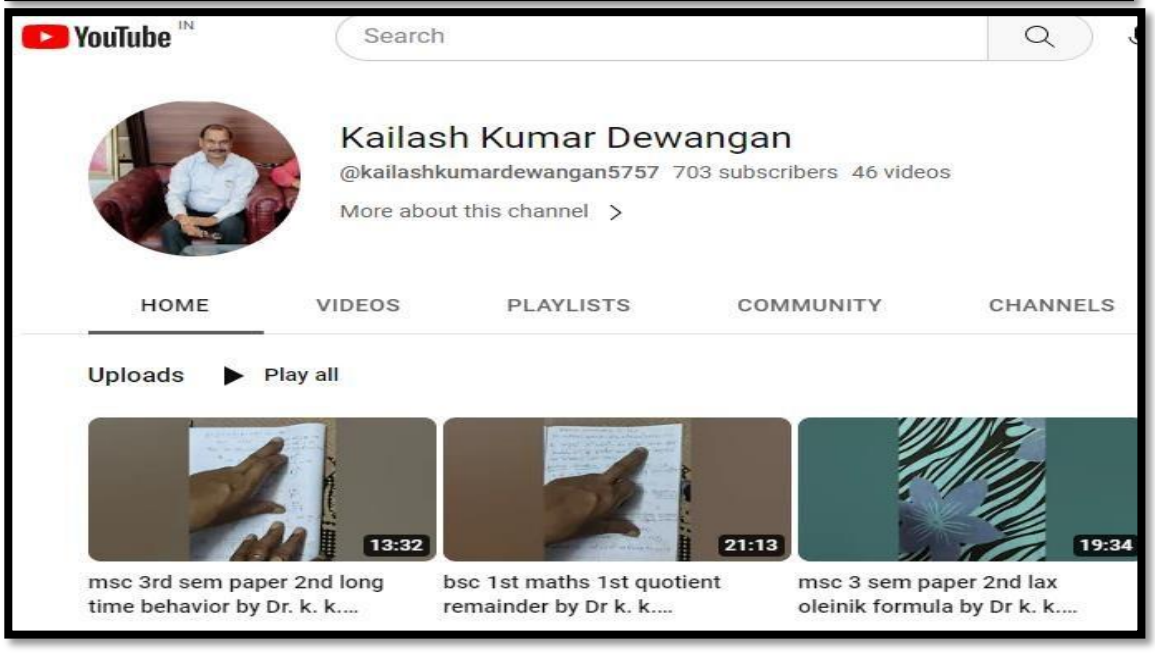
Principal
Govt. Digvijay Auto. PG College,
Rajnandgaon, CG

Teaching Learning

Video Lecture







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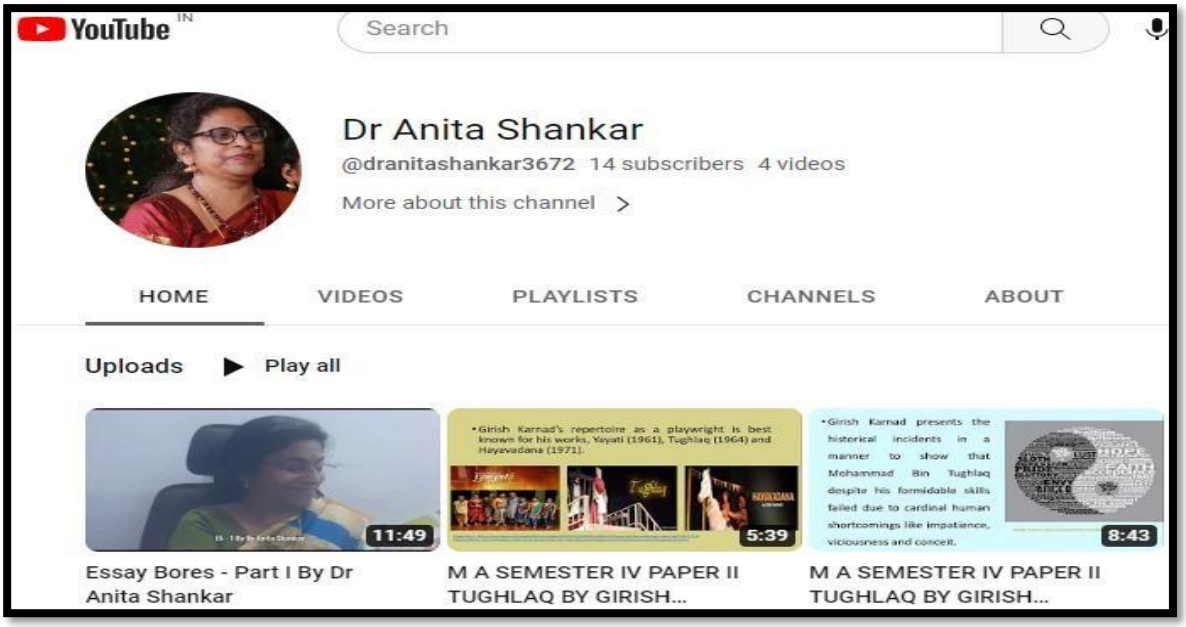

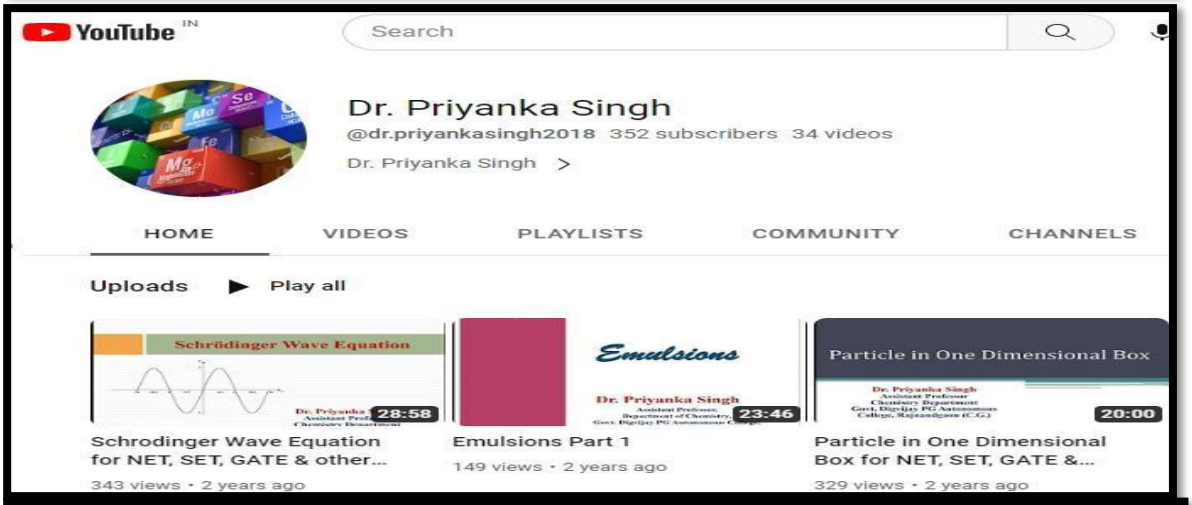

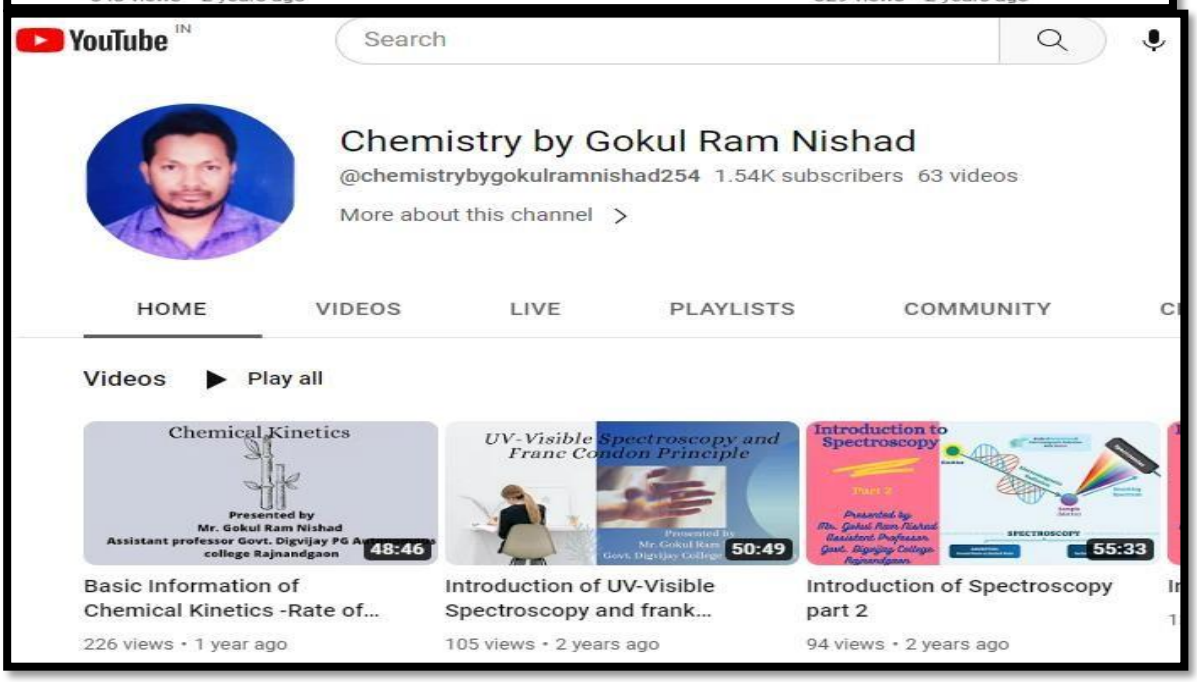

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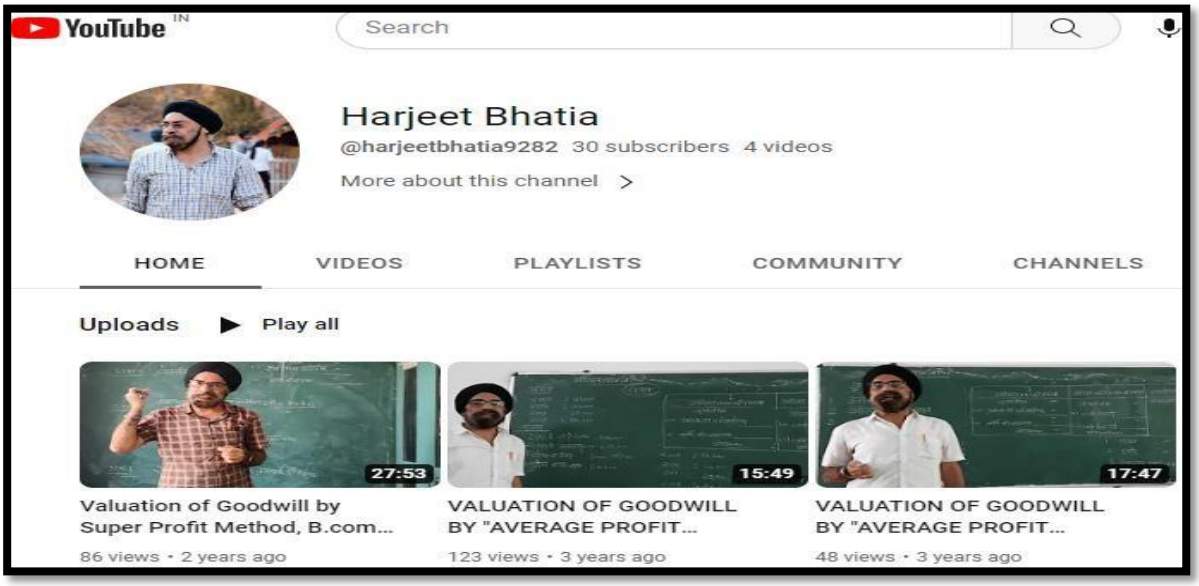

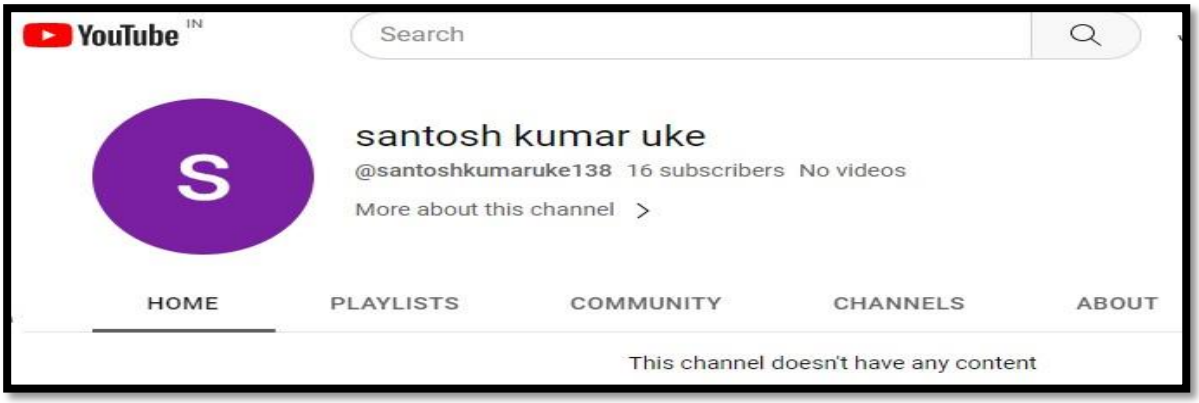

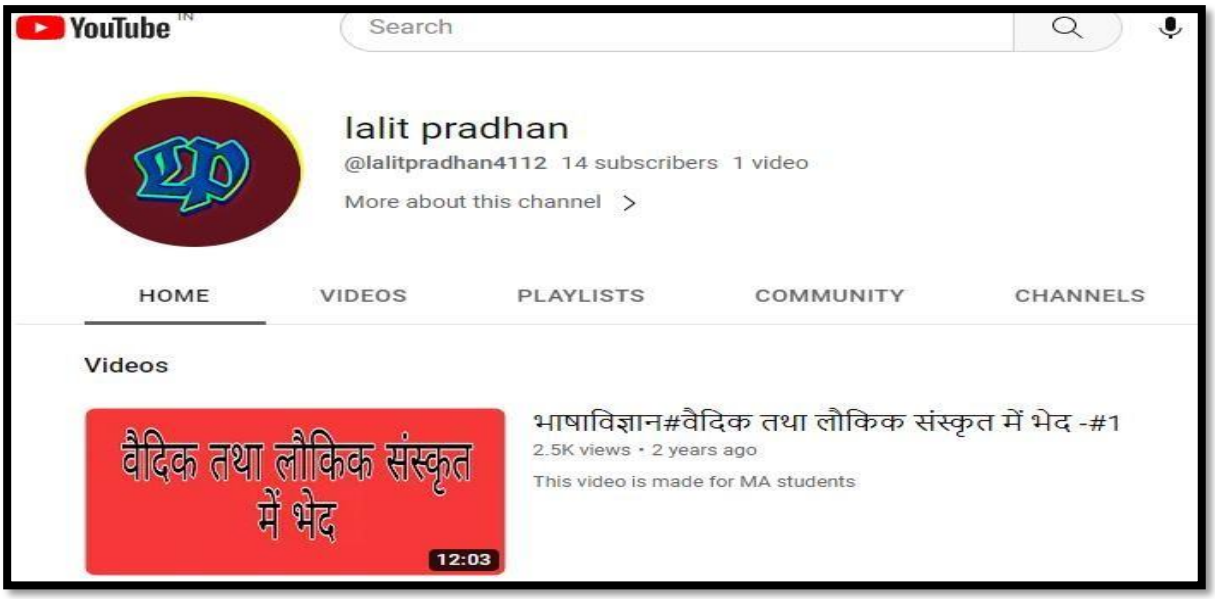

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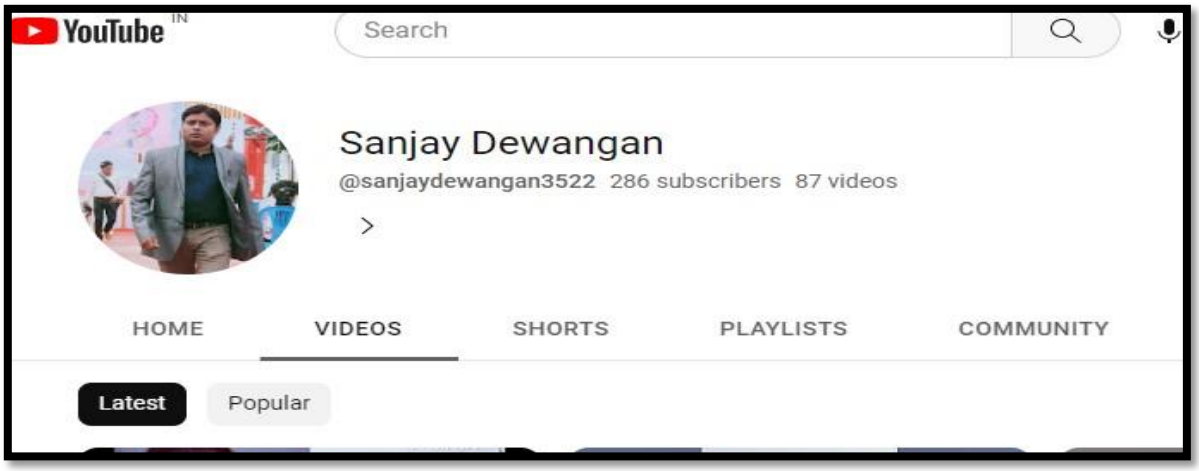

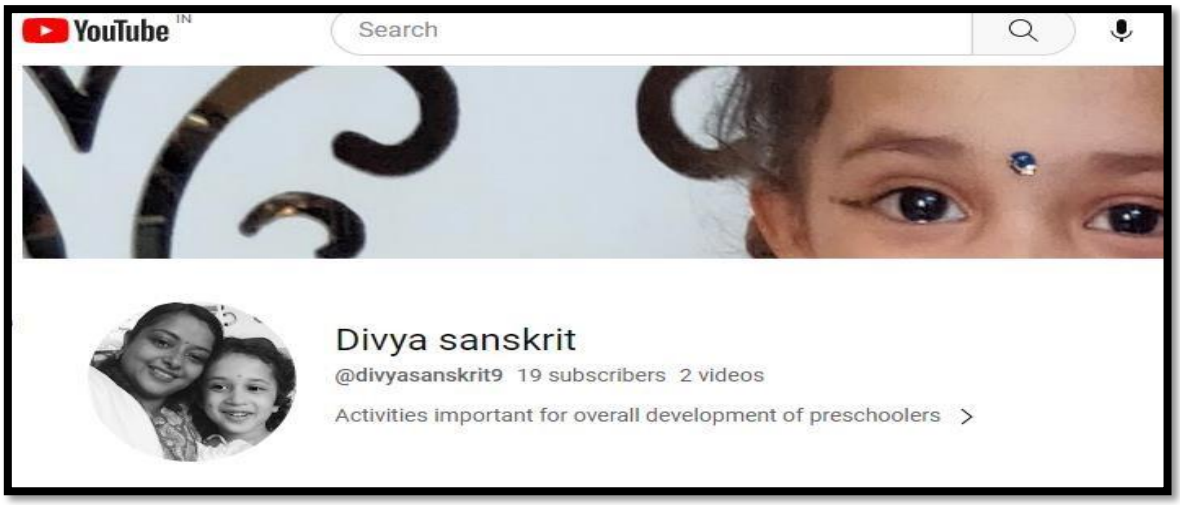

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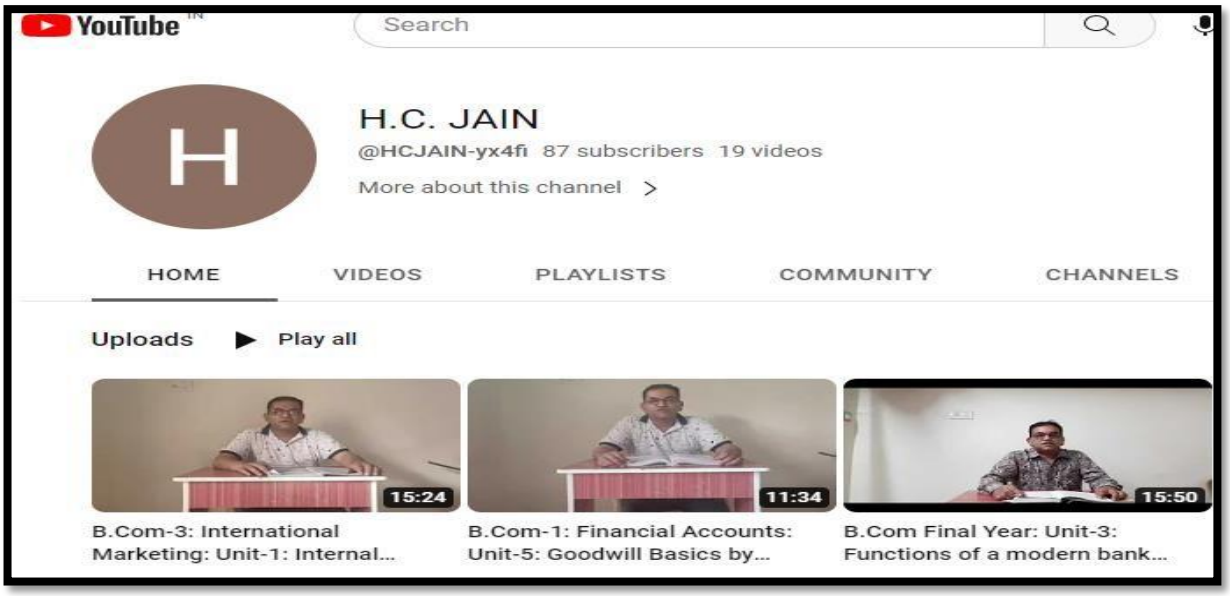

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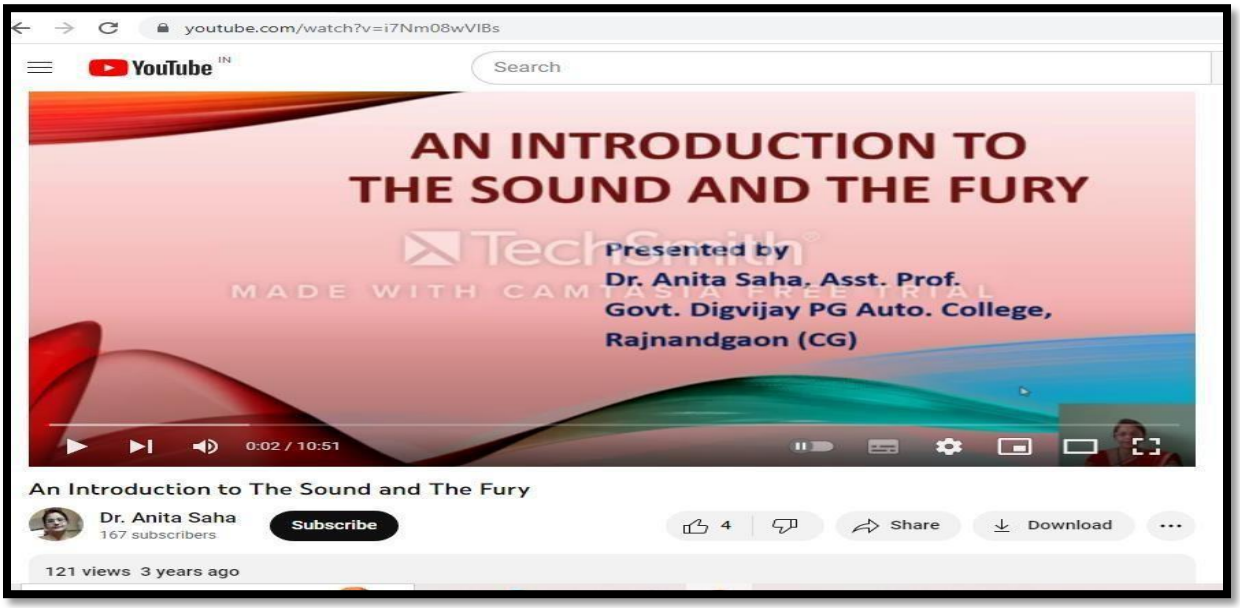
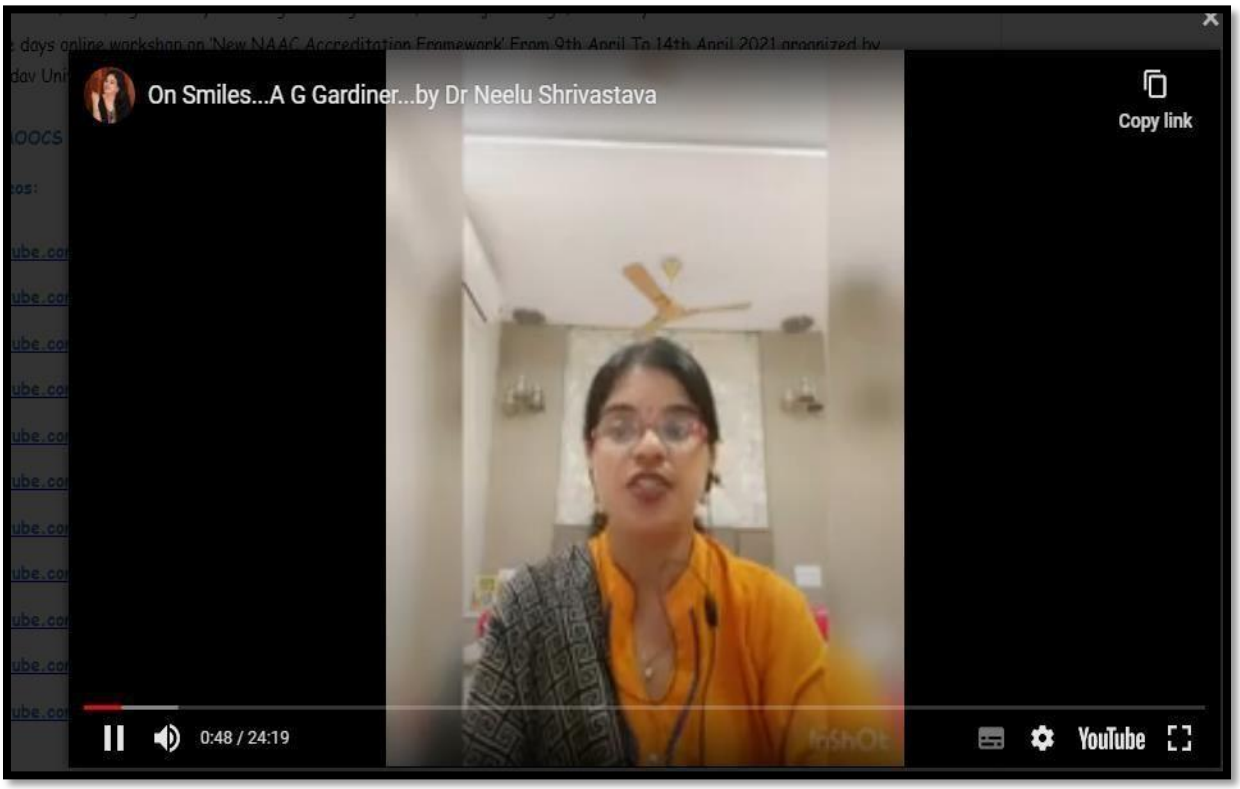
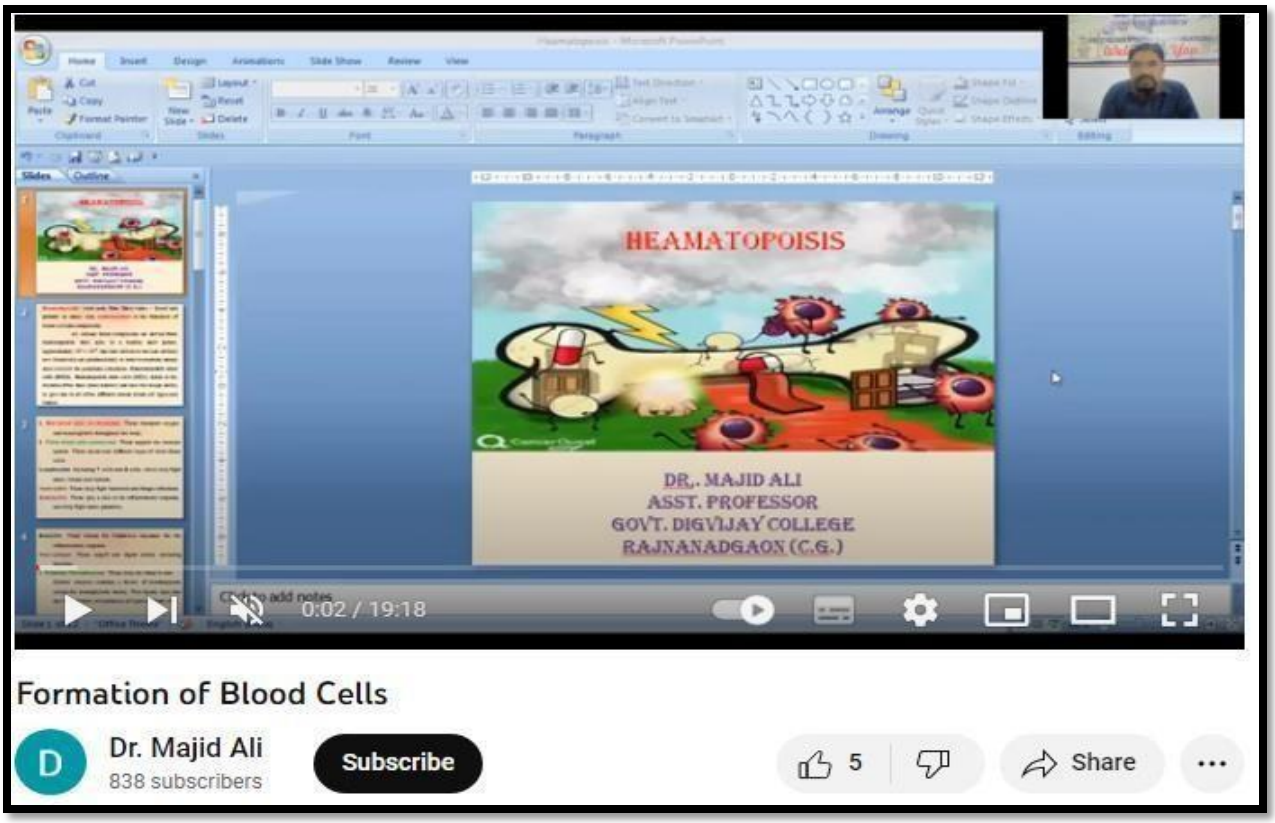
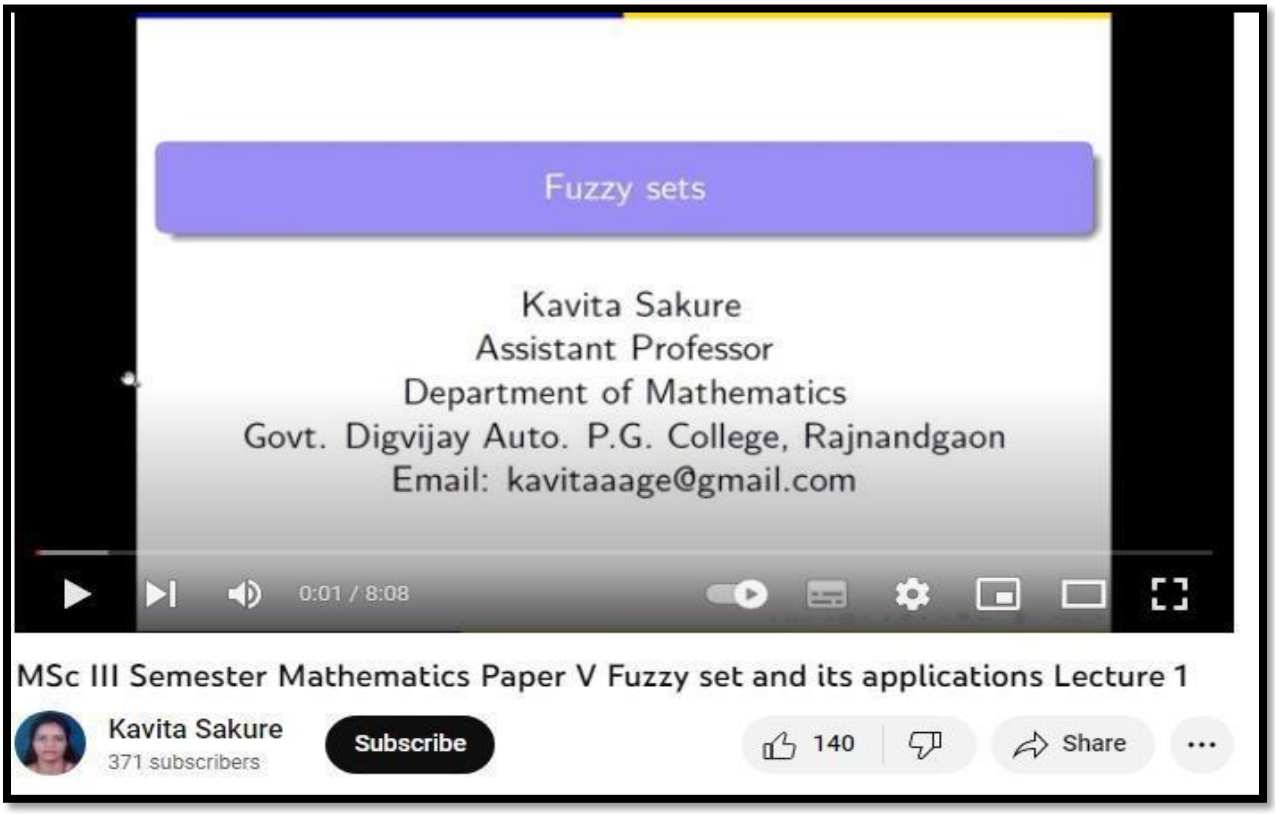


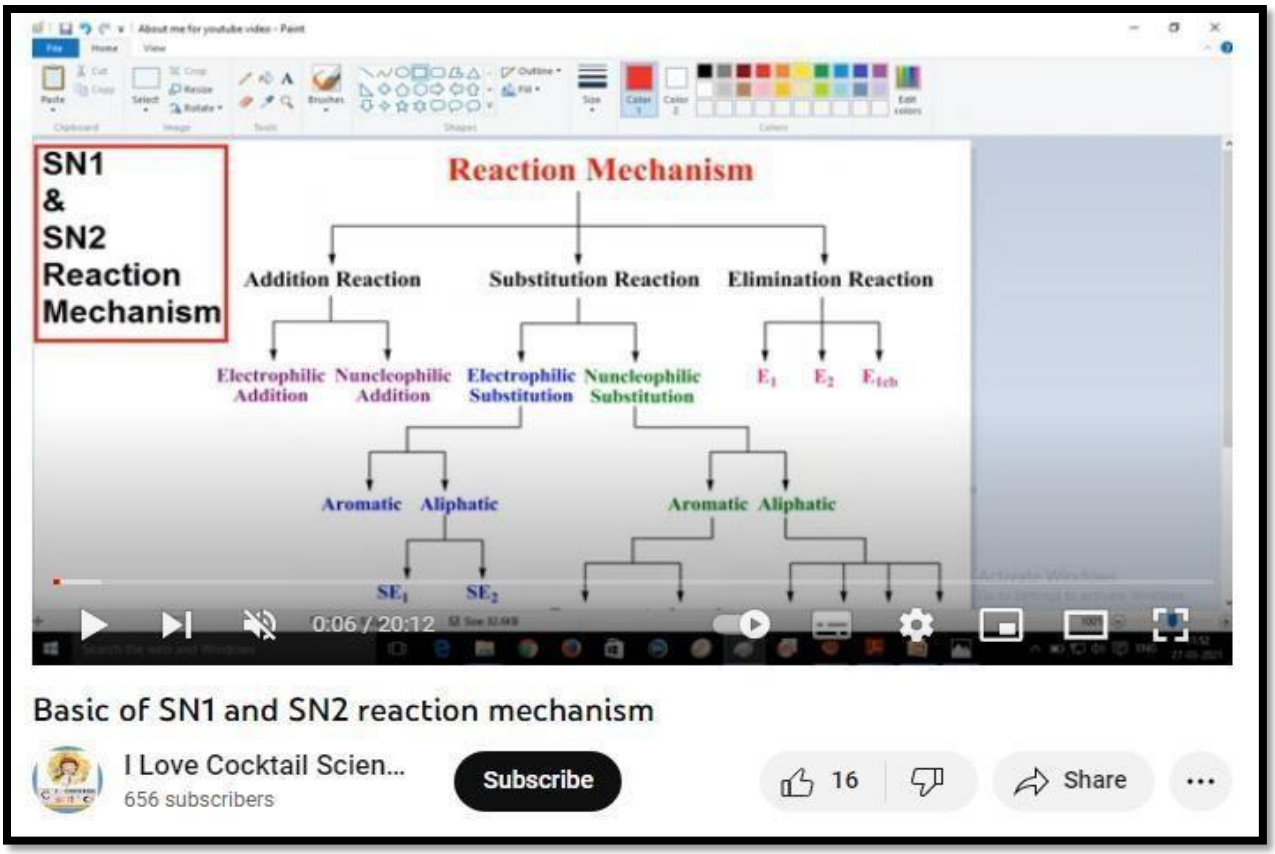


Teaching Learning





Teaching Learning



Basic of SN1 and SN2 reaction mechanism

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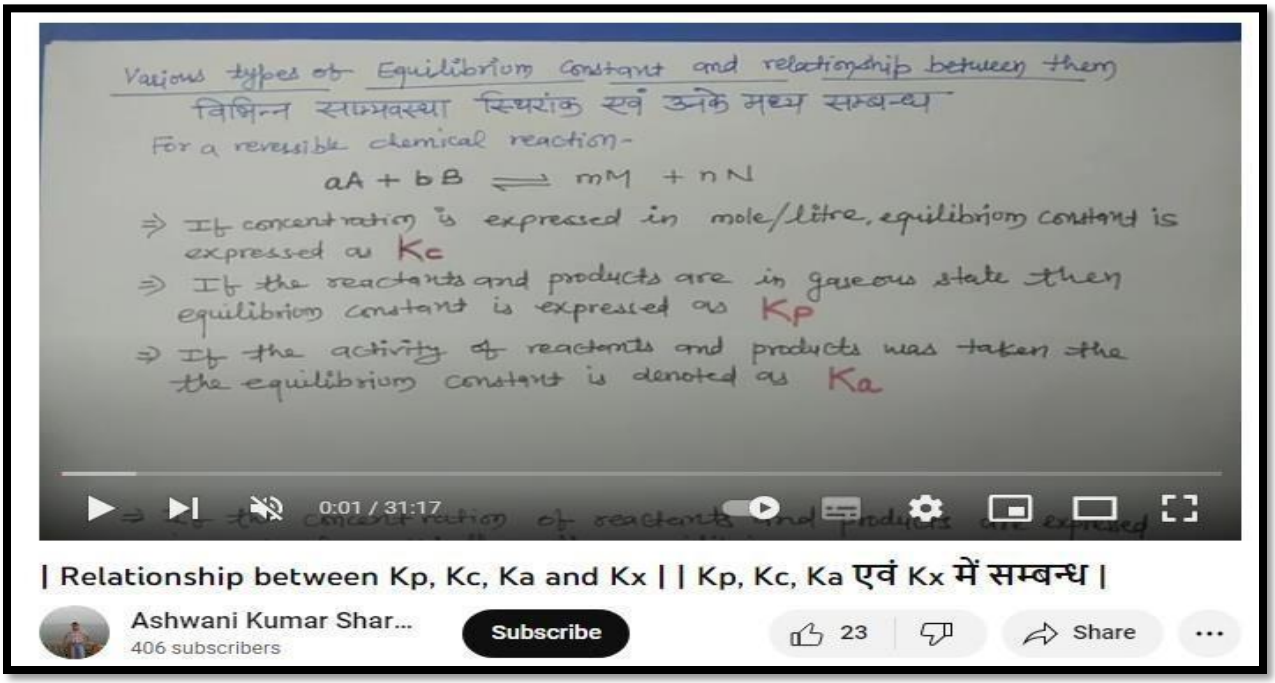

| Relationship between Kp, Kc, Ka and Kx | | Kp, Kc, Ka एवं Kx में सम्बन्ध |

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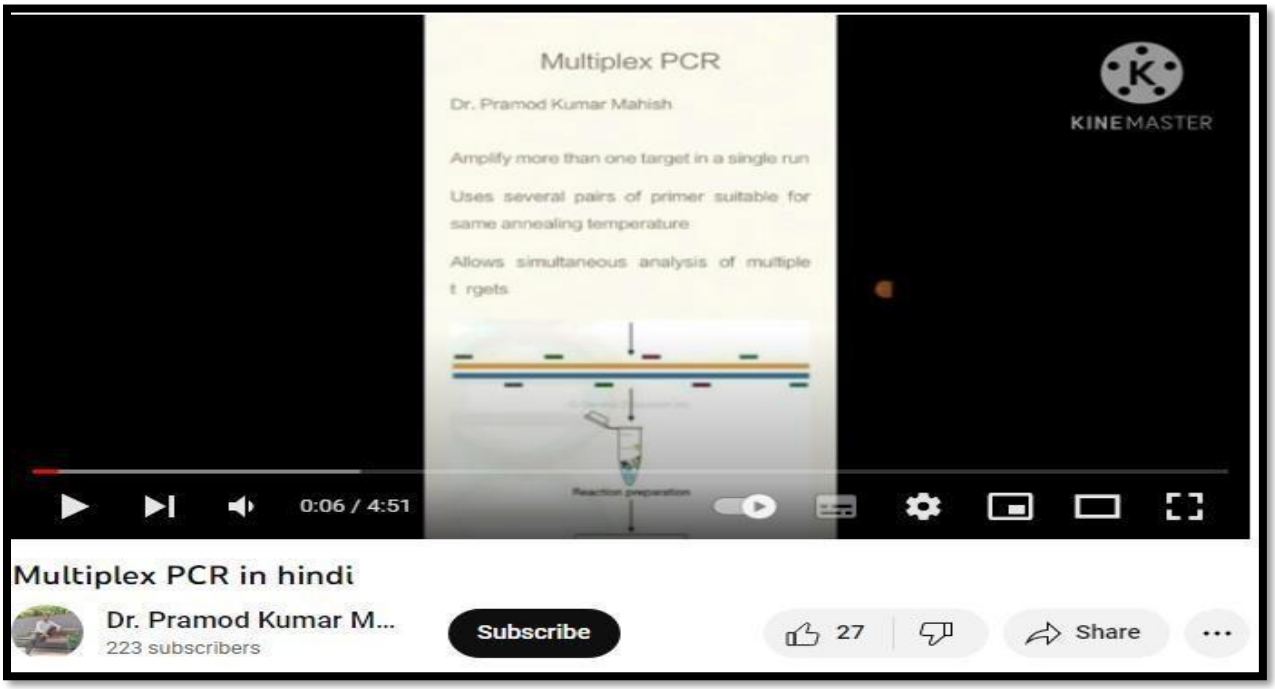
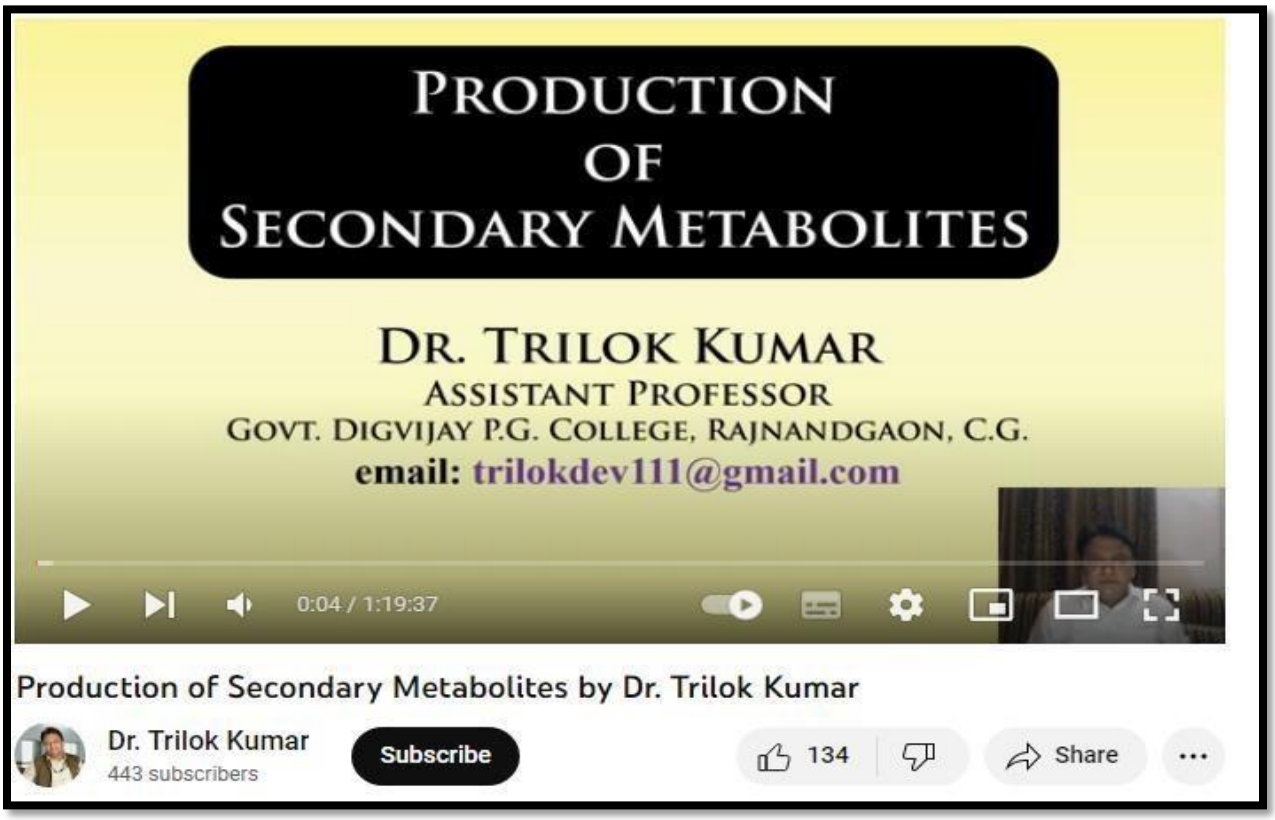
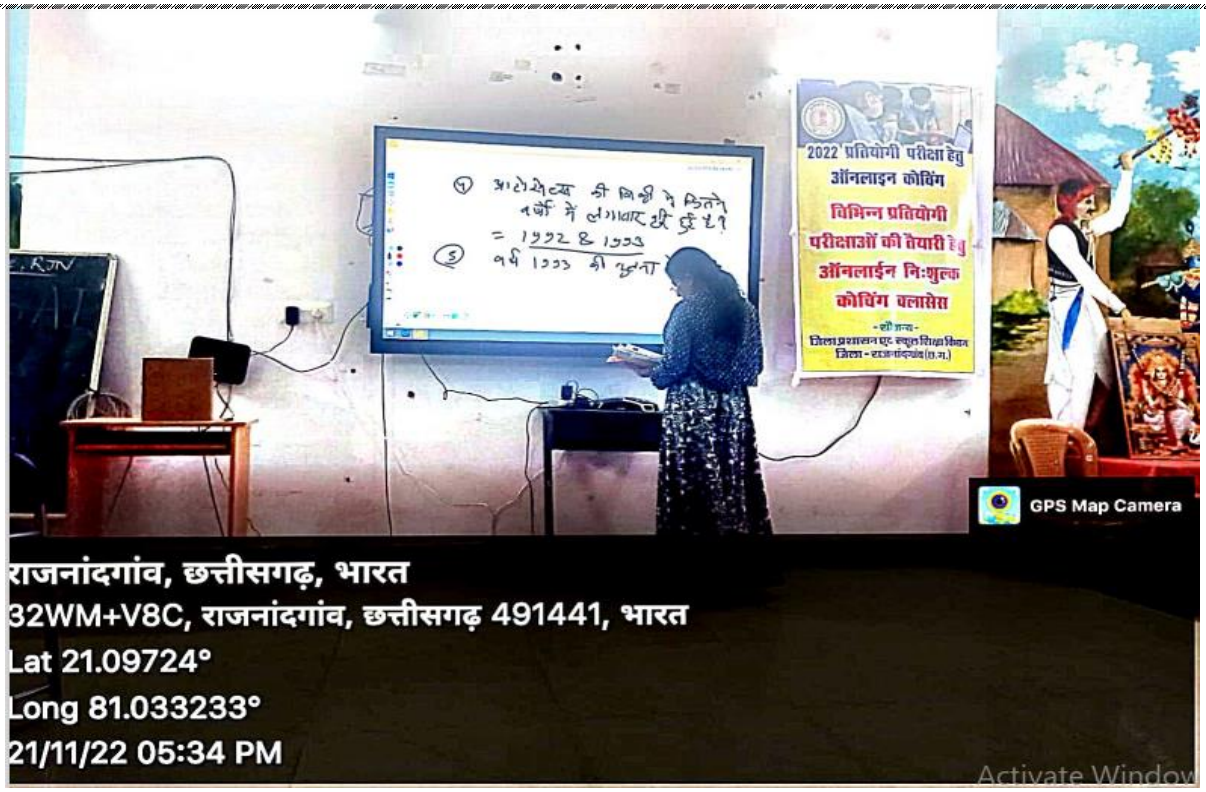
Teaching Learning





Teaching Learning

Use Of ICT


2022 प्रतियोगी परीक्षा हेतु
ऑनलाइन कोचिंग
विभिन्न प्रतियोगी
परीक्षाओं की तैयारी हेतु
ऑनलाइन निःशुल्क
कोचिंग क्लासेस
GPS Map Camera
राजनांदगांव, छत्तीसगढ़, भारत
32WM+V8C, राजनांदगांव, छत्तीसगढ़ 491441, भारत
Lat 21.09724°
Long 81.033233°
21/11/22 05:34 PM
Activate Window

Question Paper

Printed Pages = 8

Roll No. _____

VO—227

Annual Examination, 2020

B.Sc. Part I

ANTHROPOLOGY

Paper I

(Foundation of Anthropology)

Time : 3 Hours] [MAXIMUM MARKS : 50

नोट : *खण्ड 'अ', 'ब', 'स' निम्नलिखित निर्देशानुसार हल कीजिएं।*

***Note** : Attempt section 'A', 'B', 'C' according to the following instructions.*

खण्ड 'अ' **(5 × 2 = 10)**

(Section 'A')

नोट : *सभी **पाँच** प्रश्न हल कीजिए। एक या दो लाइन में उत्तर दीजिए।*

***Note** : Attempt all the **five** questions. Answer write in one or two lines.*

1. शारीरिक जैविक मानव विज्ञान की परिभाषा दीजिए।

   Define Physical Biological Anthropology.

2. मानवमिति का क्या अर्थ है ?

   What is the meaning of Anthropometry ?

P. T. O.

Roll No..... Printed Pages = 6

W–227

Annual Examination, 2021

B.Sc. Part I

(New Course)

ANTHROPOLOGY

Paper I

(Foundation of Anthropology)

Time Allowed : 3 Hours] [Maximum Marks : 50

नोट : खण्ड 'अ' से सभी प्रश्न हल करना अनिवार्य है। खण्ड 'ब' एवं 'स' से प्रत्येक इकाई से केवल एक प्रश्न करना अनिवार्य है।

Note : *Attempt all the questions from Section 'A', Section A is compulsory. Attempt one question from each unit from section 'B' and section 'C'.*

खण्ड 'अ' **5×2=10**

(Section A)

नोट : सभी पाँच प्रश्न हल कीजिए। एक या दो लाइन में उत्तर दीजिए।

Note : *Attempt all the five questions. Answer write in one or two lines.*

P. T. O.

Adoption Of LOCF/NEP 2020

कार्यालय आयुक्त उच्च शिक्षा
ब्लॉक सी. 30, द्वितीय एवं तृतीय मंजिल, इन्द्रावती भवन,
नवा रायपुर, अटल नगर (छ.ग.)
फोन नं. 0771-2263412, फैक्स - 2263412, Email - slqaccg@gmail.com

क0 79 /11 /आउशि/ गु.प्र./ 2022 नवा रायपुर अटल नगर दिनांक 27/6/2022

प्रति,

प्राचार्य,
समस्त स्वशासी महाविद्यालय
छत्तीसगढ

विषय :- स्वशासी महाविद्यालयों के प्राचार्य एवं परीक्षा नियंत्रकों की बैठक दिनांक 22.06.2022 का कार्यवाही विवरण।

---00---

उपरोक्त विषयांतर्गत लेख है स्वशासी महाविद्यालयों के प्राचार्यो एवं परीक्षा नियंत्रकों की आवश्यक बैठक आयुक्त उच्च शिक्षा की अध्यक्षता में दिनांक 22 जून 2022 को समय दोपहर 12.00 बजे से बैठक कक्ष, उच्च शिक्षा संचालनालय तृतीय मंजिल नवा रायपुर अटल नगर में आयोजित किया गया था जिसका कार्यवाही विवरण संलग्न कर आवश्यक कार्यवाही हेतु आपकी ओर प्रेषित है।

(आयुक्त, उच्च शिक्षा द्वारा अनुमोदित)

27.6.2022

(डॉ.एच.पी. खैरवार)
अपर संचालक
उच्च शिक्षा संचालनालय,
नवा रायपुर, अटल नगर (छ.ग.)

क0 80/ 11 /आउशि/गु.प्र./ 2022 नवा रायपुर दिनांक 27/6/2022

प्रतिलिपि :-

1. सचिव, छ.ग.शासन उच्च शिक्षा विभाग, मंत्रालय महानदी भवन नवा रायपुर अटल नगर(छ.ग)।
2. निज सहायक, आयुक्त उच्च शिक्षा संचालनालय नवा रायपुर अटल नगर (छ.ग.) ।

27.6.2022

अपर संचालक
उच्च शिक्षा संचालनालय,
नवा रायपुर, अटल नगर (छ.ग)

कार्यालय आयुक्त उच्च शिक्षा
ब्लॉक सी. 30, द्वितीय एवं तृतीय मंजिल, इन्द्रावती भवन,
नवा रायपुर, अटल नगर (छ.ग.)
फोन नं. 0771–2263412, फैक्स – 2263412, Email – slqaccg@gmail.com

क0 79 /11 /आउशि/ गु.प्र./ 2022 नवा रायपुर अटल नगर दिनांक 27/6/2022

प्रति,

प्राचार्य,
समस्त स्वशासी महाविद्यालय
छत्तीसगढ़

विषय :– स्वशासी महाविद्यालयों के प्राचार्य एवं परीक्षा नियंत्रकों की बैठक दिनांक 22.06.2022 का कार्यवाही विवरण।

——00——

उपरोक्त विषयांतर्गत लेख है स्वशासी महाविद्यालयों के प्राचार्यो एवं परीक्षा नियंत्रकों की आवश्यक बैठक आयुक्त उच्च शिक्षा की अध्यक्षता में दिनांक 22 जून 2022 को समय दोपहर 12.00 बजे से बैठक कक्ष, उच्च शिक्षा संचालनालय तृतीय मंजिल नवा रायपुर अटल नगर में आयोजित किया गया था जिसका कार्यवाही विवरण संलग्न कर आवश्यक कार्यवाही हेतु आपकी ओर प्रेषित है।

(आयुक्त, उच्च शिक्षा द्वारा अनुमोदित)

27.6.2022
(डॉ.एच.पी. खैरवार)
अपर संचालक
उच्च शिक्षा संचालनालय,
नवा रायपुर, अटल नगर (छ.ग.)
नवा रायपुर दिनांक 27/6/2022

क0 80/ 11 /आउशि/गु.प्र./ 2022

प्रतिलिपि :–

1. सचिव, छ.ग.शासन उच्च शिक्षा विभाग, मंत्रालय महानदी भवन नवा रायपुर अटल नगर(छ.ग)।
2. निज सहायक, आयुक्त उच्च शिक्षा संचालनालय नवा रायपुर अटल नगर (छ.ग.)।

27.6.2022
अपर संचालक
उच्च शिक्षा संचालनालय,
नवा रायपुर, अटल नगर (छ.ग.)

स्वशासी महाविद्यालयों के प्राचार्य एवं परीक्षा नियंत्रकों की बैठक दिनांक 22.6.2022 का कार्यवाही विवरण।

प्रदेश स्थित स्वशासी महाविद्यालयों के प्राचार्य एवं परीक्षा नियंत्रकों की बैठक दिनांक 22.6.2022 को दोपहर 12:00 बजे श्रीमती शारदा वर्मा, आयुक्त, उच्च शिक्षा की अध्यक्षता में आयुक्त कार्यालय के सभाकक्ष में आयोजित की गई। बैठक में विभागीय अधिकारी, स्वशासी महाविद्यालयों के प्राचार्य एवं परीक्षा नियंत्रक उपस्थित थे। उपस्थित अधिकारियों की सूची पृथक से संलग्न है।

बैठक में सर्वप्रथम राज्य स्तरीय समिति द्वारा जारी निर्देशों के पालन में महाविद्यालयों की अकादमिक, प्रशासनिक गतिविधियां, परीक्षा पद्धति एवं मूल्यांकन प्रणाली पर महाविद्यालय–वार पालन प्रतिवेदन प्रस्तुत किया गया तथा निम्नानुसार निर्देश जारी किये गये:

- महाविद्यालयों द्वारा प्रस्तुत जानकारी के उपरान्त आगामी शिक्षा सत्र से स्वशासी संस्थाओं को राष्ट्रीय शिक्षा नीति, 2020 के अनुरूप नवाचार प्रारंभ करने के संबंध में निम्नानुसार बिन्दुओं पर सर्व सहमति व्यक्त की गई:--
- पूर्व में समन्वय समिति की बैठक में सभी स्वशासी महाविद्यालयों में सेमेस्टर प्रणाली लागू करने का निर्णय लिया गया था, किन्तु अभी तक केवल शासकीय बिलासा कन्या महाविद्यालय, बिलासपुर, शासकीय ई. राघवेन्द्र स्नातकोत्तर महाविद्यालय, बिलासपुर, एवं राजीव गांधी शासकीय स्नातकोत्तर महाविद्यालय, अंबिकापुर में ही सेमेस्टर पद्धति से स्नातक स्तर पर अध्यापन कार्य प्रारंभ किया गया है। नई शिक्षा नीति में सी. बी.सी.एस. प्रणाली लागू करने पर काफी फोकस है, किन्तु सेमेस्टर प्रणाली के अभाव में सी.बी.सी.एस. लागू किया जाना संभव नहीं है। अतः नई शिक्षा नीति के निर्देश के अनुक्रम में आगामी शिक्षा सत्र 2022--23 से सभी स्वशासी महाविद्यालयों में सेमेस्टर प्रणाली एवं सी.बी.सी.एस. प्रारंभ करने के संबंध में उपस्थित 08 स्वशासी महाविद्यालयों द्वारा सहमति व्यक्त की गई।
- सी.बी.सी.एस. प्रणाली लागू करने के पूर्व सभी विषयों के पाठ्यक्रम को क्रेडिट प्रणाली में परिवर्तित करना अनिवार्य है। अतः सभी विषयों के स्नातक पाठ्यक्रम को सेमेस्टर--वार महाविद्यालय के अकादमिक कौंसिल से अनुमोदित कराकर पाठ्यक्रम की सभी इकाई को क्रेडिट में भी परिवर्तित करने का सर्वसहमति से निर्णय लिया गया।
- स्वशासी महाविद्यालयों में वर्ष 2022–23 से 04 वर्षीय स्नातक पाठ्यक्रम भी प्रारंभ करने का सर्वसहमति से निर्णय लिया गया जिसके अन्तर्गत सेमेस्टर–वार/वर्ष–वार सभी विषयों के

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पाठ्यक्रम की पुर्नरचना करते हुए महाविद्यालय स्तर पर अकादमिक कौंसिल के अनुमोदन से प्रारंभ किया जाए। पाठ्यक्रम में जो नये अध्याय प्रस्तावित किये जाएं, उनकी विषयवस्तु महाविद्यालय स्तर पर टंकित कराकर विद्यार्थियों को पीडीएफ फार्म में एवं महाविद्यालय की वेबसाइट के माध्यम से उपलब्ध कराया जाए। विश्वविद्यालय अनुदान आयोग के दिशा निर्देश के अनुसार तीन वर्ष तक संचयी आधार पर 7.5 (CGPA) ग्रेड से अधिक प्राप्त करने वाले विद्यार्थियों को चार वर्षीय पाठ्यक्रम के चौथे वर्ष में प्रवेश की पात्रता होगी एवं शेष विद्यार्थियों को तीन वर्षीय पाठ्यक्रम के आधार पर स्नातक उपाधि प्रदान की जाएगी। चार वर्षीय पाठ्यक्रम के साथ स्नातक करने वाले विद्यार्थियों को भविष्य में एक वर्षीय स्नातकोत्तर पाठ्यक्रम में प्रवेश की प्रक्रिया प्रारंभ की जावे। यह व्यवस्था शिक्षा सत्र 2022–23 में स्नातक प्रथम वर्ष में प्रवेश लेने वाले विद्यार्थियों के लिए प्रारंभ होगी।

स्नातक पाठ्यक्रम को केडिट में परिवर्तन करने के परिणामस्वरूप प्रत्येक महाविद्यालय स्तर पर सैद्धांतिक इकाई के किसी भाग को वैकल्पिक अध्ययन के लिए चिन्हांकित करते हुए विद्यार्थियों को उक्त इकाई के एवज में समान केडिट के मूक/स्वयं (Mooc/Swyam) के कोर्स पूर्ण करने की सुविधा दी जाए।

इस कार्यालय के द्वारा पूर्व में जारी निर्देश के अनुक्रम में जिन महाविद्यालयों में पूर्व से एन.सी.सी. संचालित है, वहां एन.सी.सी. में दर्ज विद्यार्थियों को NCC as an Elective Paper पढ़ने की सुविधा प्रारंभ की जाए।

- इसी प्रकार राजीव गांधी शासकीय स्नातकोत्तर महाविद्यालय, अंबिकापुर एवं शासकीय जे. योगानंदम् छत्तीसगढ़ महाविद्यालय, रायपुर में विधि का कला संकाय के अंतर्गत वैकल्पिक विषय के रूप में अध्यापन प्रारंभ किया जाए।
- एन.सी.सी. ~~एवं सिंधि विम्सें~~ का पाठ्यक्रम भी स्नातक स्तर के अन्य विषयों के पाठ्यक्रम की भांति संबंधित स्वशासी महाविद्यालय में अकादमिक कौंसिल के स्तर से अनुमोदित किया जाए। जिन स्वशासी महाविद्यालयों में एक से अधिक संकाय में शिक्षण सुविधा उपलब्ध है वहां एक संकाय के विद्यार्थियों को दूसरे संकाय से कोई एक वैकल्पिक विषय चयन करने की सुविधा भी इसी सत्र से प्रारंभ की जाए।
- शासकीय नागार्जुन विज्ञान महाविद्यालय, रायपुर एवं शासकीय ई राघवेन्द्र राव विज्ञान महाविद्यालय, बिलासपुर में वर्तमान में केवल विज्ञान संकाय संचालित है। इन दोनों महाविद्यालयों में अतिरिक्त अधोसरचना विकसित करके बहुसंकायी शिक्षण व्यवस्था प्रारंभ करने से उपलब्ध संसाधनों का अधिकतम उपयोग हो सकेगा एवं जी.ई.आर. में भी वृद्धि

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होगी। इस दृष्टि से दोनों संस्थाओं के प्राचार्य अधोसंरचना निर्माण एवं संकाय प्रारंभ करने का प्रस्ताव तत्काल संचालनालय को उपलब्ध कराएं।

- महाविद्यालयों द्वारा प्रस्तुत जानकारी के आधार पर शासकीय नागार्जुन स्नातकोत्तर विज्ञान महाविद्यालय, रायपुर, ई राघवेन्द्र राव शासकीय विज्ञान महाविद्यालय, बिलासपुर एवं शासकीय बिलासा कन्या महाविद्यालय, बिलासपुर में नैक ग्रेडिंग में कमी होना पाया गया। स्वशासी महाविद्यालय होते हुए भी उपरोक्त स्थिति खेदजनक है। अतः उक्त तीनों संस्थाओं के प्राचार्य नैक के मानदंड में कमी के लिए प्रकरणवार समीक्षा कर उत्तरदायी सहायक प्राध्यापक/प्राध्यापक के नाम अनुशासनात्मक कार्यवाही हेतु संचालनालय को भेजें। साथही उक्त कमियों में सुधार हेतु महाविद्यालय स्तर पर कार्य योजना तैयार कर आगामी एक वर्ष के पश्चात ग्रेडिंग के उन्नयन हेतु पुनः नैक को आवेदन प्रस्तुत करें।
- प्राचार्यों ने अवगत कराया कि बिलासपुर एवं अंबिकापुर विश्वविद्यालय द्वारा पीएचडी की अनुमति एवं अन्य कार्य समय पर नहीं करने के कारण महाविद्यालयों में भी शोध कार्य पर प्रतिकूल प्रभाव पड़ा है, जिसका विपरीत असर नैक मूल्यांकन में भी दिखता है। इस संबंध में शासन स्तर से दोनों विश्वविद्यालयों को समुचित निर्देश जारी करनें का प्रारूप/प्रस्ताव संचालनालय से शासन को भेजा जाए।
- कुछ महाविद्यालयों द्वारा 'वेल्यू एडेड पाठ्यक्रम' संचालित नहीं किये जा रहे हैं। अतः सभी महाविद्यालय अपने स्तर से विद्यार्थियों के लिए 'वेल्यू एडेड पाठ्यक्रम' लागू करना सुनिश्चित करें।
- जिन संस्थाओं में अभी तक विश्वविद्यालय अनुदान आयोग के प्रतिनिधि का नामांकन नहीं हुआ है उनके द्वारा प्रतिनिधि नामांकन की कार्यवाही एक माह में पूर्ण की जावे।
- सभी पीएचडीधारी प्राध्यापक/सहायक प्राध्यापकों को शोध गाइड लाइन के अनुरूप पंजीयन कराना अनिवार्य किया जावे तथा सभी शैक्षणिक अमले को वर्ष में न्यूनतम एक शोध पत्र यू.जी.सी. केयर लिस्ट जर्नल में प्रकाशित करने के लिए निर्देशित किया जाए।
- राष्ट्रीय शिक्षा नीति की मंशा के अनुरूप सभी स्वशासी महाविद्यालयों में कौशल विकास संबंधी सर्टिफिकेट एवं डिप्लोमा कोर्स भी प्रारंभ किये जाएं।
- राष्ट्रीय शिक्षा नीति के अंतर्गत सभी राज्यों में वर्ष 2030 तक 50 प्रतिशत जी.ई.आर. का लक्ष्य प्राप्त करने का निर्देश हैं। इस दिशा में नियमित विद्यार्थियों के साथ साथ 'ओपन डिस्टेंस लर्निंग' के माध्यम से भी विद्यार्थियों की दर्ज संख्या बढ़ाने की जरूरत है। विश्वविद्यालय अनुदान आयोग की नई गाइड लाइन के अनुसार राज्य में संचालित 'ए' ग्रेड

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प्राप्त शिक्षण संस्था 'ओपन डिस्टेंस लर्निंग' पाठ्यक्रम संचालित कर सकते हैं। अतः विश्वनाथ यादव तामस्कर शासकीय महाविद्यालय, दुर्ग, जिसे पूर्व से 'ए+' ग्रेड प्राप्त है, के द्वारा 'ओपन डिस्टेंस लर्निंग' पाठ्यक्रम प्रारंभ करने हेतु प्रस्ताव तैयार कर पृथक से संचालनालय को उपलब्ध कराया जावे, ताकि आगामी बजट में स्वीकृति हेतु अग्रिम तैयारी की जा सके।

- प्राचार्य, शासकीय वी.वाय.टी. महाविद्यालय, दुर्ग द्वारा यह अवगत कराया गया कि उनकी संस्था एन.आई.आर.एफ. रैंकिंग के लिए पात्रता रखती है, किन्तु एन.आई.आर.एफ के आवेदन हेतु न्यूनतम काइटेरिया शिक्षक–विद्यार्थी अनुपात 1:50 निर्धारित है एवं उनकी संस्था के सैटअप एवं दर्ज विद्यार्थियों का अनुपात 1:96 (कुल विद्यार्थी–8317 कुल सैटअप--86) होता है। इस प्रकार गुणवत्ता में पात्र होने के बावजूद न्यूनतम मापदण्ड की पूर्ति न कर पाने के कारण अभी तक एन.आई.आर.एफ. में एप्लाई नहीं कर सके हैं। एन. आई.आर.एफ. को नई शिक्षा नीति में बढ़ावा देने का निर्देश है तथा प्रदेश में एन.आई.आर. एफ की रैंकिंग प्राप्त संस्था उपलब्ध होने से प्रदेश का गौरव भी बढ़ेगा। इसे देखते हुए शासकीय वी.वाय.टी. महाविद्यालय, दुर्ग के लिए संशोधित सैटअप का प्रस्ताव एक माह में संचालनालय को प्रस्तुत करने का निर्देश दिया गया।

- उपरोक्तानुसार सभी बिन्दुओं पर महाविद्यालय स्तर पर तत्काल कार्यवाही प्रारंभ कर दी जाए और आगामी 15 दिवस में सभी बिन्दुओं पर प्रगति की समीक्षा हेतु आयुक्त कार्यालय में बैठक आयोजित की जाएगी तथा उपरोक्त सभी बिन्दुओं को शासन के संज्ञान में लाने हेतु संचालनालय से शासन को पत्र भेजकर सूचित किया जाए।

–सही– डॉ. एस.आर.कमलेश प्राचार्य सह अपर संचालक	–सही– डॉ. पी.सी. चौबे, प्राचार्य सह अपर संचालक–रूसा	2/2/16 श्रीमती शारदा वर्मा, आयुक्त,
–सही– डॉ. अमिताभ बैनर्जी, प्राचार्य,	–सही– डॉ. के.एल. टाण्डेकर प्राचार्य,	–सही– डॉ. आर.एन. सिंह प्राचार्य,
	–सही– डॉ. ज्योतिरानी सिंह प्राचार्य,	–सही– डॉ. किरण गजपाल प्राचार्य,

स्वशासी महाविद्यालयों के प्राचार्य एवं परीक्षा नियंत्रकों की बैठक दिनांक 22.6.2022 में उपस्थित सदस्यों की सूची।

1. श्रीमती शारदा वर्मा,
   आयुक्त,
   उच्च शिक्षा संचालनालय,
   रायपुर।
2. डॉ. एच.पी. खैरवार
   अपर संचालक,
   उच्च शिक्षा संचालनालय,
   रायपुर।
3. श्री आर.के. शुक्ला,
   अपर संचालक,
   उच्च शिक्षा संचालनालय,
   रायपुर।
4. डॉ. पी.सी. चौबे,
   प्राचार्य सह अपर संचालक–रूसा
   शासकीय नागार्जुन पी.जी. विज्ञान महाविद्यालय,
   रायपुर।
5. डॉ. एस.आर.कमलेश
   प्राचार्य सह अपर संचालक
   शासकीय विज्ञान महाविद्यालय
   बिलासपुर।
6. डॉ. आर.एन. सिंह
   प्राचार्य,
   शासकीय वी.वाय.टी. पी.जी. महा.
   दुर्ग।
7. डॉ. के.एल. टाण्डेकर
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   शासकीय दिग्विजय पी.जी. महाविद्यालय,
   राजनांदगांव।
8. डॉ. अमिताभ बैनर्जी,
   प्राचार्य,
   शासकीय जे.योगान्दम छ.ग. महाविद्यालय,
   रायपुर।
9. डॉ. किरण गजपाल
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   शास. दू.ब. पी.जी. महिला महाविद्यालय,
   रायपुर।
10. डॉ. ज्योतिरानी सिंह
    प्राचार्य,
    शासकीय बिलासा पी.जी. कन्या महाविद्यालय,
    दुर्ग।
11. डॉ. रिजवान उल्ला
    प्र. प्राचार्य, प्रतिनिधि
    शासकीय राजीवगांधी पी.जी. महाविद्यालय, अंबिकापुर।

Teaching Plan

DEPARTMENT OF GEOLOGY

Teaching Plan 2022-23
class – B.Sc. I st sem (DSC+GE)
Paper – Geodynamics & Geomorphology
Credit – 04

Unit – 1

Introduction to Geology and its branches, Definition, Nature and Scope of Geomorphology, Origin of the Earth. Earth in Solar System. Internal Structure of the Earth.

(September – 2022)

Unit – 2

Concept and Theories of Continental drift, Isostacy. Sea floor spreading Theory and evidences, Concept of plate tectonics tectonic plates and types and plate boundaries, Mountain building process. Introduction to Paleomagnetism and Polar Wondering.

(October – 2022)

Unit – 3

Volcanoes Types and Distribution, Earthquakes: Causes and effects, Measurments of Earthquakes, Seismic zone of India, Process of rock weathering. Cycle of Erosion, Soil formation, Soil profile & Type of Soil.

(November – 2022)

Unit - 4

Geological works of rivers: fluvial landforms.
Geological works of wind: Aeolian landforms.
Geological works of sea: Coastal landforms.
Geological works of Glacier: Glacial landforms.
Geological works of Ground water: Karst landforms.

(December - January 2022-23)

Head
Deptt. of Geology
Govt. Digvijay College
Rajnandgaon (C.G.)

Teaching Plan 2022-23
Class - B.Sc. II nd Sem. (DSC+GE)
Paper - Mineralogy & Crystallography

Credits - 04

Unit - 1 Definition of Minerals & Crystals, Crystal Structure, and unit cells, Elements of Crystal & forms, Crystallographic axes & axial angles, parameters & miller's Indices of Crystal Notation.

(Jan-February - 2023)

Unit - 2

Law of Crystallography, Crystal symmetry, Normal classes of Seven Crystal System, forms of Normal classes, Twining in Crystals.

Feb (March - 2023)

Unit - 3

Silicate structure and classification of Silicates, Bonding in minerals, Iso morphism and Solid solution, polymorphism and Pseudomorphism, physical properties of minerals.

(March-April - 2023)

Unit - 4 Nature of Light : Reflection & Refraction of light, Refractive Index : Critical angle and Total Internal Reflection and Becke Effect, Double Refraction. Nicol prism : Construction and working Polarizing Microscope and Its parts

and functions, optical properties of minerals. study of composition, classification, physical and optical properties of the Olivine, Garnet, pyroxenes, Feldspar and Silica.

(April - 2023)

Sarma.
Head
Deptt. of Geology
Govt. Digvijay College
Rajnandgaon (C.G.)

Teaching Plan 2022-23
class - B.Sc. 2nd year (paper-I)
Paper-I Petrology

Unit - 1

Magma, definition, Origin and composition. Bowen's reaction series, magmatic differentiation and assimilation.
System, phases and component, principles of thermodynamics, Crystallisation and phase equilibrium of unicomponent magma (Silica); Bi - component magma : Albite - Anorthite and Diopsite - Albite - Anorthite. Tri - component magma Diopside - Albite - Anorthite.
Textures, structures and classification of igneous rocks. Forms of igneous rocks.

(September - 2022)

Unit - 2

Rock association in Time & space, concepts of rock kindreds Petrographic studies of Acid igneous rocks. Petrographic studies of Alkaline igneous rocks. Petrographic studies of Basic igneous rock. Petrographic studies of Ultrabasic igneous rocks.

(October - 2022)

Unit - 3

Origin, transportation & deposition of Sediments, Dynamics of Sedimentary

depositional environment ; Aeolian, fluvial, coastal and abyssal environment. Concept of sedimentary facies, Concept of diagenesis. Textures & structures of sedimentary rocks.

(November - December)

Unit-4 classification of sedimentary rocks, Petrography of sedimentary rock : rudaceous, arenaceous, calcareous sedimentary rocks, Metamorphism ; definition, agents, facies & grade, Textures, structures & classification of metamorphic rocks, Equilibrium & non-equilibrium reactions in metamorphism.

(December - 2022)

Unit - 5

Paragenetic diagrams ; projective analysis A.C.F. & A.K.F. diagrams, Progressive metamorphism of Argillaceous rocks, progressive dynamo-thermal metamorphism of impure limestone, progressive dynamo-thermal metamorphism of basic igneous rocks, petrographic provinces of India.

(January - 2022)

Teaching Plan 2022-23
Class - B.Sc. 2nd Year (Paper - II)
Structural Geology

Unit - 1

Definition and Scope of structural Geology. Study of outcrops. Effects of dip and slope on outcrops. Identification of bedding Dip and Strike measurement. clinometer and Brunton compass, Recognition of top and bottom of beds, Concept of rock deformation Concept of stress and strain ellipsoids.

(December - January)

Unit - 2

Fold morphology, Geometric and genetic classification of folds, Recognition of folds in the field and on geological maps. Effect of folds on outcrops, Elementary idea of mechanics of ~~foleting~~ faulting.

(January - 2023)

Unit - 3

Fault morphology. Slip & separation. Geometri and genetic classification of faults, Recognitio of faults in the field and on geological maps, Effects of faults on outcrops, Elementary idea of mechanics of faulting.

(February - 2023)

Unit - 4

Joint morphology, geometric and genetic classificatn of joints, Foliation: terminology, kinds, origin and relation to major structures, salt domes, plutons; tectonics & emplacement.

(March - 2023)

Unit - 5

Types and recognition of Unconformity, Outlier & inlier, Overlap & offlap, Concept of tectonics, Tectonic framework of Peninsula, Indo - Gangetic Plains and Extra - Peninsular India, stereographic projection & its use in Structural Geology.

(March - April)

Head
Deptt. of Geology
Govt. Digvijay College
Rajnandgaon (C.G.)

Teaching Plan 2022-23
class - 3rd Year (paper-I)
Palaeontology & Stratigraphy

Unit - 1

Palaeontology: Fossils - definition, Essentials for fossilization, modes of fossilization. Uses of fossils; Index fossils & their significance, Application of palaeontology in the study of stratigraphy, palaeontology and Paleo-geography, Micro palaeontology & its significance, Study of plant fossils & their significance.

(September - October 2022)

Unit - 2

Morphology & geologic distribution of foraminifera & Anthozoa fossils. Gastropoda & Lamellibranchia, Morphology & geologic distribution of Cephalopoda, Echinodea, Brachiopoda fossils, Trilobite & Graptolite fossils.

(October - 2022)

Unit - 3

Principles of stratigraphy: Geological time scale, Basic concept of lithostratigraphic, chronostratigraphic & biostratigraphic units, Structural & physical subdivision and characteristic features of Indian subcontinent Distribution, classification & economic importance of Archaeozoic rock of India (Dharwar, Chhattisgarh), Vindhyan & Gondwana

supergroup.

(November - 2022)

Unit - 4

Distribution, stratigraphy & Economic importance of Bastar & Vindhyan & chhattisgarh super group of rocks. stratigraphy of Gondwana supergroup. Deccan Traps, fossil contents of Bagh & Lameta Beal, Palaeontology of Salt Range group of rocks.

(December - 2022)

Unit - 5

Distribution, stratigraphy & Economic importance of Palaeozoic rocks of Spiti Valley, Creataceous rocks of Tiruchirapalli, jurrasic rocks of kutch - Region, Tertiary rocks of Assam Region, Distribution, stratigraphy & Vertebrate Palaeontological importance of Siwalik group of rocks.

(January - 2023)

Head
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Govt. Digurjay College
Rajnandgaon (C.G.)

Teaching Plan 2022-23

Class - 3rd year (Paper - II)

Earth Resources & Applied Geology

Unit - 1

Economic Geology introduction & its perspectives; Global mineral deposit & resources. Distribution of mineral deposits in time & space, classification of mineral deposits. Geological thermometers, Magmatic & Hydrothermal processes of mineral formation, Weathering products & Residual deposits. Oxidation & supergene sulphide enrichment processes, Sedimentary processes of ore formation Placer deposits.

(January - 2023)

Unit - 2

Geological, Geographical distribution, mode of occurrence, mineralogy & economic importance of following metallic & nonmetallic deposits of India. Iron, Manganese, Chromium, Copper, Lead, Zinc, Gold, Aluminium, Refractory and Fertilizer minerals, Minerals used in cement & chemical industries.

(February - 2023)

Unit - 3

Coal deposits; Origin, Defintion & stratigraphy, Fundamentals of coal petrography, peat, Lignite, Bituminous & Anthracite Indian coal deposits

with special reference to Coal deposits of Chhattisgarh, Origin of Natural - hydrocarbons, migration & accumulation, Types of oil traps; structural, stratigraphic & composite. Offshore & Onshore oil deposits of India, Radioactive minerals, Mineralogy, Geochemistry, prospecting techniques, Geological & Geographical distribution of atomic - minerals, principles of mineral economics. National Mineral Policy.

(Feb - March 2023)

Unit - 4

Enginering Geology & its importance, engineering properties of rocks, Geological conditions for construction of large Dams & Tunnels, Elementary study of Aerial photographs & Satellite imageries, Application of remote sensing techniques in town-planning, Hydrologic cycle, Mode of occurrence of ground water, quality of ground water, Hydrologic properties, Hydrologic properties of rocks. classification of Aquifers, Ground water provinces of India.

(March - 2023)

Unit - 5

Introduction to mineral exploration, Surface & subsurface methods of mineral Exploration, prospecting methods; Drilling, Sampling & Assaying

Geophysical prospecting techniques: Gravity, Electrical & Magnetic methods, Aerial and Seismic prospecting methods, Environmental impact of over exploitation of mineral resources.

(April – 2023)

Sharma
Head
Deptt. of Geology
Govt. Digvijay College
Rajnandgaon (C.G.)

DEPARTMENT OF COMPUTER APPLICATION

GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE , RAJNANDGAON

Department of Computer Science

2022-23

B. SC. PART - II

COMPUTER SCIENCE

PAPER - I

COMPUTER HARDWARE

AIM - The emphasis in on the design concepts & organisational details of the common PC, learning the complicated electronics of the system of the computer Engineers.

OBJECT OF THE COURSE -

1. To introduce the overall organisation of the microcomputers.
2. To introduce the common peripheral devices used in computers.
3. To introduce the hardware components, use of micro processor and function of various chips used in microcomputer.

N.B. : Since the computer organisation study is very vast & complicated, so the study is restricted to only the description and understanding part, fence the paper setter is requested to keep this important factor in mind.

September

UNIT-I

CLASSIFICATION AND ORGANIZATION OF COMPUTERS

Digital and analog computers and its evolution. Major components of digital computers; Memory addressing capability of CPU; word length and processing speed of computes. Microprocessors single chip microcomputers; large and small computers. Users interface Hardware software and firmware multi programming multi user system. Dumb smart and intelligent terminals computer network and multi processing, LAN parallel processing. Flinn's classification of computers. Computer flow and data flow computers.

October

November

UNIT-II

CENTRAL PROCESSING UNIT.

CPU organization, ALU control unit registers. Instructions for INTEL 8085, Instruction word size, Various addressing mode interrupts and exceptions, some special Control signals and I/O devices. Instruction cycle fetch and execute operation, time Diagram, data flow.

December

UNIT-III

MEMORY OF COMPUTERS.

Main memory secondary memory, backup memory, cache memory; real and virtual Memory Semiconductor memory. Memory controller and magnetic memory; RAM; disks, optical disks Magnetic bubble memory; DASD, destructive and non destructive. readout. Program of data Memory and MMU.

January

UNIT-IV

I/O DEVICES.

I/O devices of micro controller; processors. I/O devices, printer, plotter, other output devices, I/O port serial data transfer scheme, Micro controller, signal processor, I/O processor I/O processor arithmetic processor.

February

UNIT-V

SYSTEM SOFTWARE AND PROGRAMMING TECHNIQUE.

ML, AL, HLL, stack subroutine debugging of programs macro, micro programming, Program Design, software development, flow & chart multi programming, multiuser, multi tasking Protection, operating system and utility program, application package.

RECOMMENDED BOOKS :

1. Computer Fundamentals : Architecture and Organization - By B.Ram (Wilwy East-ern Ltd.)
2. Computers Today - By Donal H. Sanders
3. Computers Fundamental - By Rajaraman.
4. IBM PC - XT Clones - By Govinda Rajalu

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Govt. Digvijay College Rajnandgaon

GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE , RAJNANDGAON

Department of Computer Science

2022-23

B. SC. PART – II

COMPUTER SCIENCE

PAPER - II

SOFTWARE

AIM - Introduction to the web-language-HTML & problem solving throgh the concept of object oriented programming.

OBJECT OF THE COURSE -

1. To introduce the internet & web related technology & learn the intricacies of web-page designing using HTML.
2. To introduce the object oriented programming concept using C++ language.
3. To introduce the problem solving methodology using the C++ programming features.

Examiners are requested to prepare unit-wise Questions papers.

UNIT- I

HTML BASICS & WEB SITE DESIGN PRINCIPLES

Concept of a Web Site, Web Standards, What is HTML? HTML Versions, Naming Scheme for HTML Documents , HTML document/file, HTML Editor , Explanation of the Structure of the homepage , Elements in HTML Documents ,HTML Tags, Basic HTML Tags, Comment tag in HTML, Viewing the Source of a web page, How to download the web page source? XHTML, CSS, Extensible Markup Language (XML), Extensible Style sheet language (XSL), Some tips for designing web pages, HTML Document Structure. HTML Document Structure-Head Section, Illustration of Document Structure,<BASE> Element,<ISINDEX> Element,<LINK> Element ,META, <TITLE> Element,<SCRIPT> Element ,Practical Applications, HTML Document Structure-Body Section:- Body elements and its attributes: Background; Background Color; Text; Link; Active Link (ALINK); Visited Link (VLINK); Left margin; Top margin,) Organization of Elements in the BODY of the document: Text Block Elements; Text Emphasis Elements; Special Elements — Hypertext Anchors; Character-Level Elements; Character References ,Text Block Elements: HR (Horizontal Line); Hn (Headings) ; P (Paragraph); Lists; ADDRESS ; BLOCKQUOTE; TABLE; DIV (HTML 3.2 and up) ; PRE (Preformatted); FORM ,Text Emphasis Elements, Special Elements — Hypertext Anchors ,Character-Level Elements: line breaks (BR) and Images (IMG), Lists , ADDRESS Element, BLOCKQUOTE Element, TABLE Element, COMMENTS in HTML ,CHARACTER Emphasis Modes, Logical & Physical Styles, Netscape, Microsoft and Advanced Standard Elements List, FONT, BASEFONT and CENTER.

September

October

UNIT- II

IMAGE, INTERNAL AND EXTERNAL LINKING BETWEEN WEBPAGES

Netscape, Microsoft and Advanced Standard Elements List, FONT, BASEFONT and CENTER Insertion of images using the element IMG (Attributes: SRC (Source), WIDTH, HEIGHT, ALT (Alternative), ALIGN),IMG (In-line Images) Element and Attributes; Illustrations of IMG Alignment, Image as Hypertext Anchor, Internal and External Linking between Web Pages Hypertext Anchors ,HREF in Anchors ,Links to a Particular Place in a Document ,NAME attribute in an Anchor ,Targeting NAME Anchors ,TITLE attribute, Practical IT Application Designing web pages links with each other, Designing Frames in HTML. Practical examples.

November

UNIT-III

INTRODUCTION TO OOP

Advantages of OOP, The Object Oriented Approach, Characteristics of object oriented languages- Object, Classes, Inheritance, Reusability, Polymorphism and C++.

Function: Function Declaration, Calling Function, Function Defines, Passing Argument to function, Passing Constant, Passing Value, Reference Argument, returning by reference, Inline Function, Function Overloading, Default Arguments in function.

December

UNIT-IV

OBJECT CLASSES AND INHERITANCE

Object and Class, Using the class, class constructor, class destructors, object as function argument ,copy constructor ,struct and classes , array as class member, Static Class Data, Static Member

January

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January

Functions, , Friend function, Friend class, operator overloading. Type of inheritance, Base class, Derive class. Access Specifier: protected. Function Overriding, member function, String, Template Function.

February

UNIT-V

POINTERS AND VIRTUAL FUNCTION

pointers: & and * operator pointer variables, .pointer to pointer, void pointer,pointer and array, pointer and function, pointer and string, memory management, new and delete, pointer to object, this pointer Virtual Function: Virtual Function, Virtual member function, accesses with pointer,pure virtual function File and Stream: C++ streams, C++ Manipulators, Stream class, string I/O, char I/O, Object I/O, I/O with multiple object, Disk I/O,

RECOMMENDED BOOKS :

1. Introduction to HTML : Kamlesh Agarwala, O.P.Vyas, Prateek A. Agrawala (Kitab Mahal Publication)
2. Let us C++ : Y. Kanetkar B.P.B Publication
3. Programming in C++ : E. Balaguruswami
4. Mastering in C++ : Venu Gopal
5. Object Oriented Programming in C++ : Lafore R, Galgotia Publications.

H.O.D
Department of Computer Science
New Divyjay College Rainanda

Computer System Architecture
Subject Code - BCA-306

Max Marks : 80 **Min Marks : 27**

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

UNIT I

September

Data Representation - Data Types, Number System, Fixed Point Representation - I's, 12 complement, Binary Fixed point representation, Arithmetic operation on Binary operation Overflow & Underflow, Codes, ASCII, EBCDIC codes. Grey codes, Excess-3, BCD codes Error detection & correcting codes.

UNIT II

October

Digital Logic Circuits - Logic Gates AND, OR, NOT, Gates & their truth tables, NOR, NAN XOR Gates, Boolean algebra, Basic Boolean Law, Demerger's theorem, Map Simplification minimizing technique, K Map, Sum of products, Product of sums Combinational & sequent circuits Half adder & Full adder, Full Subtractor , Flip Flop - RS, D, JK & T Flip Flop, Shift register, RAM & ROM.

UNIT III

November December

CPU organization, ALU & control circuit, Idea about arithmetic circuits, Program control Instruction sequencing Introduction to Microprocessor, System buses, Registers, Program counter, Block diagram of a Macro computer system, Microprocessor control signals, Interfacing devices , Introduction to Motherboard, SMPS

UNIT IV

January

Input output organization, 1/0 Interface, Properties of simple I/O devices and their Controller isolated versus Memory mapped 1/0, Modes of Data transfer, Synchronous & Asynchronous Transfer, Handshaking, Asynchronous serial transfer, I/O processor

UNIT V

February

Auxiliary memory - Magnetic drum, Disk & Tape, Semiconductor memories, Memory hierarchy, Associative memory, Virtual memory, address space & memory space, Address mapping , Page table, Page replacement, cache memory, Hit ratio, Mapping Techniques, Writing cache.

REFERENCE:

1. Computer System architecture -- M. Morris Mano
2. Computer Architecture and Organization- Nicholas P Carter, Schaum's Outlines
3. Computer Organization and Architecture William Stallings

Head
Department of Computer Application
Govt. Digvijay P.G. College

M.SC. COMPUTER SCIENCE 2022-23
FIRST SEMESTER
Paper IV : Object Oriented Programming using 'C++'

(PCSCT104)

Max Marks:100 **Min Marks:40**

NOTE: - The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Course Outcome:
Students will be able to:

- Understand object oriented programming, difference between object oriented programming and procedural programming.
- Able to build program using C++ features such as Class, objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling, etc.
- Able to build C++classes using appropriate encapsulation and design principles.
- Improve problem solving skills by applying object oriented or non-object oriented techniques

UNIT - I : Language Fundamental
Advantages of OOP, The Object Oriented Approach, and Characteristics of object oriented languages- Object, Classes, Inheritance, Reusability, and Polymorphism.
Overview of C++: History of C++, Data Types, Constants and Variables, Operators and Expression. Control structures : if , if-else, nested if-else, while(), do-while() , for(;;), break, continue, switch, goto, String, Storage class.

September

UNIT - II : Structure, Function & Array
Structures : A Simple structures ,specify the structures, Defining a structure variable, Accessing structures member, Enumeration data type.
Function: Function Declaration, Calling Function, Function Defines, Passing Argument to function, Passing Constant, Passing Value, Reference Argument, Passing struct variable, Overloaded Function, Inline Function, Default Argument, return statement, returning by reference.
Array: Defining array, array element, initiation array, multi dimensional array, passing array to function.

October

UNIT - III : Object Classes and Inheritance
Object and Class, Using the class, class construct, class destructors, object as function argument, struct andclasses, array as class member, operator overloading. Type of inheritance, Derive class, Base class. Access specifier: protected. Overriding, member function.

November

UNIT - IV : Pointers
Pointers : & and * operator pointer variables, pointer to void ,pointer and array, pointer and function, pointer and string, memory management, new and delete, pointer to object, pointer to pointer.

UNIT - V : Virtual Function and File & Stream
Virtual Function : Virtual Function, Virtual member function, accesses with pointer, Late binding, pure virtual function, Friend function, Friend class, static function, this pointer, Templates.

December

File and Stream: C++ streams, Stream class, string I/O, char I/O, Object I/O, I/O with multiple object, File pointer, Disk I/O.

RECOMMENDED BOOKS :

1. ObjectOrientedProgramming : McGregor and Sykes S A, 1992 VanNostrand.
2. The C++ProgrammingLanguage : StrustrpB,AddisionWasley.
3. Object Oriented ProgramminginC++ : Lafore R, GalgotiaPublications.
4. Introduction to Object Oriented Programming : Witt KV, GalgotiaPublications.
5. ObjectOrientedProgramming : Blaschek G, SpringerVerlag
6. ObjectDataManagement : Cattel R, AddisonWasley.

Suggested Digital Platforms Web Links:
https://onlinecourses.swayam2.ac.in/aic20_sp01/preview

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Govt. Digvijay College Rajnandgaon

23/7/22

Operating Systems with Linux
Subject Code - BCA-205

Max. Marks: 80 **Min Marks : 27**

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

UNIT - I: Introduction
Defining operating system, History and Evolution of operating system, **Basic Concepts**: batch processing, spooling, multiprogramming, multiprocessor system, time sharing, real time systems, Functions and Goals of operating system.

November

UNIT - II: Process Management
Process concept, Process Control Block, **Process State**: State Transition Diagram, **Scheduling Queues**, Queuing Diagram, Types of schedulers-context switching and dispatcher, various types of CPU scheduling algorithms and their evaluation, multilevel queues and multilevel feedback queues.

December

January

UNIT - III: Memory Management
Preliminaries of memory management, Contiguous memory allocation, fragmentation, partition allocation policies, compaction, Non-Contiguous memory allocation, Paging, Segmentation, **Virtual Memory**: Demand paging, Swapping, **Page replacement policies**: FIFO, Optimal, LRU, MRU.

February

UNIT - IV: Introduction to UNIX
Introduction to Multi-user System, Emergency and history of Unix, Feature and benefits, Versions of Unix. **System Structure:**-Hardware requirements, Kernel and its function, introduction to System calls and Shell.
File System : Feature of Unix File System, Concept of i-node table, links, commonly used commands like who, pwd, cd, mkdir, rm, ls, mv, lp, chmod, cp, grep, sed, awk, pr, lex, yacc, make, etc. Getting started (login / logout).**Vi Editor:**-Intro to text processing, command and edit mode, invoking vi, command structure, deleting and inserting line, deleting and replacing character, searching strings.

UNIT – V: Shell Programming
Introduction to shell feature, wild card characters, i/out redirections, standard error redirection, system and user created shell variables, profile files, pipes/tee, background processing, command line arguments, command substitution, read statement, conditional execution of commands, special shell variables $ #, #?, $* etc. Shift commands, loops and decision making- for, while and until, choice making using case...esac, decision making if ....fi, using test, string comparison, numerical comparison, logical operation, using expr.

BOOKS RECOMMENDED:
1. Operating System Concepts, Abraham Silberschatz, Peter B. Galvin and Greg Gagne (Wiley India Edition)
2. Modern Operating System, Andrew .S. Tanenbaum, (PHI)
3. UNIX Complete Reference

Head
Department of Computer Application
Govt. Digvijay P.G. College
Rajnandgaon (C.G.)

M.SC. COMPUTER SCIENCE 2022-23
SECOND SEMESTER
Paper IV: Principles of Compiler Design
(PCSCT204)

Max Marks:100 Min Marks :40

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Course Outcome

Students will be able to:

- Specify and analyze the lexical, syntactic and semantic structures of advanced language features
- Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation
- Write a scanner, parser, and semantic analyzer without the aid of automatic generators
- Turn fully processed source code for a novel language into machine code for a novel computer
- Describe techniques for intermediate code and machine code optimization
- Design the structures and support required for compiling advanced language features.

February January

UNIT-I

Introduction to Compilers: Overview, Structure, implementation. Programming Language Grammars: Inter Language grammars, derivation, reduction, syntax tree, ambiguity, regular grammars & expressions.

UNIT-II

Scanning and Parsing Techniques : The Scanner, parser, translation, elementary symbol table organization,structures.

March

UNIT-III

Memory Allocation: Static and dynamic memory allocation, array allocation and access, allocation for strings, structure allocation, common & equivalence allocation. Introduction to Compilation of expressions.

UNIT-IV

Compilation of Control Structures : Control transfers, procedural calls, conditional execution, iteration control constructs. Error detection, indication &recovery.

April

Compilation of I/O Statements: Compilation of I/O list, compilation of FORMAT list. IOSUB, file control.

UNIT-V

Code Optimization: Major issues, optimizing transformations, local optimizations, program flow analysis. Global Optimization, writing compilers.

BOOKS RECOMMENDED:

1. Compiler Construction -D.M.Dhandhere(M)
2. Compiler Writing -Tremble-Sorenson(TMH)
3. Computers : Princ, Techniques cools by Aho-Person.
4. The Essence of Compilers by Hanter-Pearson.

31/07/22

H.O.D
Department of Computer Science
Govt. Nivelay College Mahendergarh

Core Paper -V :- Semester II
DSC -V :- UBCCT202-Web Technology
Theory: - 60Lectures
(Credits: 06, Theory-04, Practical- 02)

UBCCT202
Web Technology

UNIT-I Basics of Internet **(15 Lecture)**

History, Evolution, Internet applications, Intranet, WWW, Emergence of Web, Web page, Web Site, client, Web Servers, Web Browser, Web concept, Search Engine, URL, DNS, Internet Connection, Internet Service Provider, Web Design Strategies, OSI and TCP/IP model, various protocols like HTTP, FTP, SMTP, TELNET, Internet services: Email concept, Sending and receiving secure Email, Voice and video Conferencing, web Based chat services, Chat Services, Internet Messaging, Internet Relay Chat, News Group.

March

UNIT-II HTML **(15 Lecture)**

Introduction, Html version, HTML tags, Creating headings on a web pages : Aligning the headings, creating list, Working with Links: Creating a Hyperlinks Setting the Hyperlink Colors, Linking Different sections of A web page, Creating Paragraph, Working with Images, using Images as Links, Working with Tables, Working with Frames: Creating a Frame, Creating Vertical and Horizontal Frames, Setting the Frame Border Thickness, Applying Hyperlink Targets to a Frame, Creating an HTML Form, Specifying the Action URL and Method to Send the Form, Using the HTML Controls.

UNIT-III DHTML and Java Script **(15 Lecture)**

DHTML: Introduction, Cascading style sheet (CSS), Inline Style sheet, External Style Sheet, Internal Style Sheets, DHTML document object model, Event handling, Java Script: Introduction, Language elements, Variables, operators, control statement Array and function in JavaScript, Objects of Java script, Client-Side and server side Java script, Benefits of using JavaScript, Embedding JavaScript into HTML Page, Handling Events, overview of VB Script.

April

UNIT-IV Introduction to PHP **(15 Lecture)**

Introduction to PHP, Features, Advantages of PHP over other scripting languages, Installing, creating and running PHP script, working with variable, constant, operators in PHP, Control statements, looping constructs, String function, Arrays, User defined Function, Working with forms, Accessing database through PHP.

Reference Books:

1. Web Technology, A developers perspective N.p.Gopalan & J.Akilandeswari,PHI Publications.
2. The Complete Reference: HTML&CSS, Thomas A.Powell, McGraw Hill.
3. Introduction to HTML, Kamlesh N Agrawal, O.P.Vyas, P.A.Agrawal.
4. Web Technology & Design,Ramesh Bangia New Age International
5. HTML,DHTML,javascript & Perl and CGI,Ivan Bayros, BPB Publications.
6. Internet and Web Design, Ramesh Bangia New Age International

Head
Department of Computer Application
Govt. Digvijay P.G. College
Rajnandgaon (C.G.)

Narwini

M.Sc. COMPUTER SCIENCE 2022-23

Software Engineering

Paper 1 (PCSCT401)

Max Marks: 100 **Min Marks: 40**

NOTE:- The Question paper setter is advised to prepare unit-wise question with the provision of internal choice.

Objectives-

1. To introduce the concept of Software's, characteristics types, applications.
2. To introduce Software Engineering process using different methods.

UNIT-I

Introduction :- Definition of Software Engineering, software crisis, Software Myths, software processes & characteristics, Software life cycle model- Waterfall, Prototype, Evolutionary and Spiral Models, RAD Model.

Software Requirements analysis & specifications: Requirement engineering, requirement elicitation techniques like FAST, QFD & Use case approach, requirements analysis using DFD, Data dictionaries & ER Diagrams, Requirements documentation, Nature of SRS, Characteristics & organization of SRS, Requirement Management, IEEE Std. for SRS.

UNIT-II

Software Project Planning: -Size Estimation line of code & Function count, cost Estimation Models, COCOMO ,Putnam resource allocation model, validating software Estimation Model, Risk Management.

Software Design: - Cohesion & coupling classification of cohesiveness & coupling function oriented design, object oriented design.

March

UNIT-III

Software Metrics: -Software measurement: What & Why, Token count, data structure metrics, information Flow metrics.

Software Reliability:- Importance Hardware reliability & Software Reliability, Failure and Faults, Reliability models- Basic model , Software quality models, CMM, CMMI &ISO 9001.

UNIT-IV

Software Testing: - Testing process, Design of test cases, Software Testing-Verification and Validation; Testing Techniques -white box, black box; Levels of Testing - Unit, integration, validation and system; Alpha & Beta testing. Debugging - Debugging Process, Error, Fault and Failure.

April

UNIT V

Software Maintenance:- Introduction to Maintenance; Categories of Maintenance, Management of Maintenance, Maintenance process, Maintenance models, Regression testing Reverse Engineering, Software Re- Engineering, configuration Management, Documentation.

RECOMMENDED BOOKS

1. K.K. Aggarwal and Yogesh singh, "software Engineering" ,New Age International.
2. R.S. Pressman, "software Engineering –A Practitioner's Approach" McGraw Hill int.
3. Pankaj Jalote ,"An Integrated Approach to software Engineering, narosa

REFERENCES:

1. Stephen R Schach, "Classical & Object Oriented software Engineering" IRWIN.
2. James peter, W. pedrycz, software Engineering: An Engineering Approach.
3. I. Sommerville ,"software Engineering", Addison Wesley,8Ed,2009

H.O.D

Department of Computer Science
Govt. Dhyllay College Rajnandgaon

M.SC. COMPUTER SCIENCE 2022-23
SECOND SEMESTER
Paper I: RDBMS (SQL Programming with Oracle)
(PCSCT201)

Max Marks:100 **Min Marks :40**

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Course Outcome

Students will be able to:

- Establish a basic understanding of the process of Database Development and Administration using MySQL.
- Student will implement the concepts of both Operating Systems & Database Administration skills.
- Understand fundamental concepts of RDBMS (SQL/PLSQL)
- Understand functioning of database management systems as well as associated tools and techniques
- Develop a good database design and normalization techniques to normalize a database.
- Able to write Procedure, Function, Cursor and Trigger using SQL/PLSQL.

UNIT - I : Overview of Database Management -

Data, Information and knowledge, Increasing use of data as a corporate resource, data processing verses data management, file oriented approach verses database oriented approach to data management; data independence, database administration roles, DBMS architecture, different kinds of DBMS users, importance of data dictionary, contents of data dictionary, types of database languages. Data models: network, hierarchical, relational. Introduction to distributed databases, Client/Server databases, Object- oriented databases, Object-relational databases, Introduction to ODBC concept.

UNIT - II : Relational Model & Relational Algebra -

Entity - Relationship model as a tool for conceptual design-entities, attributes and relationships. ER diagrams; Concept of keys; Case studies of ER modeling Generalization; specialization and aggregation. Converting an ER model into relational Schema. Extended ER features, Introduction to UML, Representation in UML diagram (Class Diagram etc.).

Relational Algebra: select, project, cross product different types of joins (inner join, outer joins, self join); set operations, Tuple relational calculus, Domain relational calculus, Simple and complex queries using relational algebra, stand alone and embedded query languages.

March

UNIT - III :SQL

Introduction to SQL constructs (SELECT...FROM, WHERE... GROUP BY... HAVING... ORDERBY....), INSERT, DELETE, UPDATE, DROP, VIEW definition and use, Temporary tables, Nested queries, and correlated nested queries, Integrity constraints: Not null, unique, check, primary key, foreign key, references, Triggers. Embedded SQL and Application Programming Interfaces.

Introduction to PL/SQL variables – literals – data types – advantages of PL/SQL; Control statements:if ; iterative control – loop, while, for , goto ; exit when; Cursors : Types – implicit, explicit – parameterized cursors – cursor attributes; Exceptions: Types – internal , user-defined , handling exceptions – raise statement.

UNIT - IV :PL/SQL

PL/SQL tables and records: Declaring PL/SQL tables - referring PL/SQL tables, inserting and fetching rows using PL/SQL table, deleting rows; records - declaration of records - deleting records; Sub programs: Functions - procedures – input-output parameters; purity functions - packages - package specification - advantages of packages - private and public items - cursors inpackages.

April

UNIT - V : Relational Database Design-

Normalization concept in logical model; Pitfalls in database design, update anomalies: Functional dependencies, Join dependencies, Normal forms (1NF, 2NF, 3NF). Boyce Codd Normal form, Decomposition, Multi-Valued Dependencies, 4NF, 5NF. Issues in physical design; Concepts of De- normalization, Indexing, Clustering indexes. Data Organization - Fixed length records, variable length records, Organization of records in files, Indexing: - indexed files -B-tree, B+-tree, and Hashing Techniques.

Department of Computer Science
Govt. Dayalu College Rajnandgaon

Session – 22-23

BCA - 2nd year / BCA - 3rd year / PGDCA

Computer Networks
Subject Code - BCA-204

Max Marks : 80 **Min Marks : 27**

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

UNIT - I -Introduction to Computer Networking

Data Communication. Networks - Distributed Processing. Network Criteria, Applications, Protocols and Standards, Standard Organization. Line Configuration - Point to Point. Multi Point. Topology - Mesh Star, Tree. Bus. Ring, Hybrid. Transmission mode. Categories of Network - LAN. MAN. WAN. Inter Networks.

UNIT - II -Transmission of Digital Data

Analog and Digital, digital data transmission - parallel transmission, serial transmission, DTE-DCE interface - data terminal equipment, data circuit terminating equipment. standards. modems-Transmission rate, Modem standards.

UNIT – III- The OSI Model

ISO organization, The model - Layered architecture, functions of the layers -Physical layer, Data Link layer, Network layer, Transport layer, session layer, Presentation layer, Application layer

UNIT - IV TCP/IP Model & Protocols

The TCP/IP reference model, comparison of TCP/IP & OSI, Introduction to Internet - ARPANET. Architecture of Internet, Client server model, www, IP Address Classes Protocols: IP. HTTP. TCP. FTP. ARP

UNIT – V Network Security

Introduction of Network Security and it's importance. **Cryptography:** Definitions, **Symmetric Key Cryptography: Traditional Ciphers, Simple modern Ciphers, Asymmetric Key Cryptography:** RSA. Security Services, Digital Signatures.

BOOKS RECOMMENDED:

1. Introduction to Data communication & Networking - Behrouz & Forouzan
2. Computer Networking - Andres & Tanenbaum

23/07/22

23/7/22

Software Engineering
Subject code -BCA -304

Max Marks: 80 **Min Marks: 27**

Note: The question paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

't-I

Software Engineering Fundamentals: Definition of software product; software development paradigms; software engineering; knowledge engineering and end user development approaches.

July

Software Analysis:

Abstraction; partitioning and projection; system specification; software requirements specification (SRS) standards; formal specification method; specification tools; flow based, data based and object orientated analysis.

Unit-II

System design:: Idealised and constrained design; process oriented design (Gane and Sarson and Yourdon notations); data oriented design (Warnier-(Orr, E-r modeling); Object oriented design (Booch approach); Cohesion and coupling; Design metrics; design documentation standards.

August

Unit-III

Role of Case Tools : Relevance of case tools; High-end and Low-end case tools; automated support for data dictionaries, data flow diagrams, entity relationship diagrams.

Coding and Programming: Choice of programming languages; mixed language programming and call semantics; Re-engineering legacy systems; coding standard.

September

Unit -IV

Software Quality and Testing: Software quality assurance; types of software testing (white box black box, unit, integration, validation, system etc); debugging and reliability analysis; program complexity analysis; software quality and metrics; software maturity model and extension. Software cost and Time estimation. Functions points; issue in software cost estimation; introduction to the Rayleigh curve 3; Algorithm cost model (COCOMO, Putnam-slim, Watson and feliix).

Oct

Unit -V

Software Project Management: Planning software projects; work background structure; integrating software design and project planning ; software project teams; project monitoring and controls.

November

RECOMMENDED BOOKS:

1. Software Engineering: A Practitioner's Approach - By Essman Roger, Tata McGraw Hill.
2. An Integrated Approach To Software Engineering- By Jalote Pankaj, Narosa: New Delhi.

PGDCA-101

INTRODUCTION TO SOFTWARE ORGANISATION

UNIT – I: Introduction to Computers

Computers – Introduction, Computer System Characteristics, Strength and Limitations of Computer, Development of Computers, Types of Computers, Generations of Computers. Introduction to Personnel Computers – Uses of PC's, Components of PC's, Evolution of PC's, Developments of Processors, Architecture of Pentium IV, Configuration of PC's; Input Device; Output Devices.

August

UNIT – II : Computer Organization

Central Processing Unit – Arithmetic Logic Unit, Control Unit, Registers, Instruction Set, Processor speed. Storage Devices – Storage and its need, Storage Evaluation Units, Primary Storage, Secondary Storage, Data Storage and Retrieval Systems, SIMM, DIMM, Types of Storage Devices.

UNIT – III : Computer Software

Basics of Software – needs of Software, Types of Software; Free Domain Software; Open Source Software; Compiler, Interpreter and Assembler; Linker and Loader; Debugger; Integrated Development Environment; Operating System – Introduction, Uses of OS, Functions of OS, Booting process, Types of Reboot, Booting from different OS, Types of OS, DOS, Windows, Linux.

September

UNIT – IV: Programming Languages – Introduction, Comparison between Human and Computer Language; Program; Data, Information and Knowledge; Characteristics of Information; Types of Programming Languages; Generations of Languages; Program Development Steps; Programming Paradigms; Object-Oriented Programming; Structured Programming, Functional Programming, Process Oriented Programming.

October

UNIT – V : Communication, Networks and Internet

Communication – Introduction, Communication process, Communication Types, Communication Protocols, Communication Channels/Media. Networks – Introduction; Types of Network; Topology; Media - NIC, NOS, Bridges, HUB, Routers, Gateways. Internet – Introduction, Growth of Internet, Owner of Internet, Internet Service Provider, Anatomy of Internet, ARPANET and Internet History of World Wide Web, Services Available on Internet - File Transfer Protocol, Gopher, E-mail, Telnet, Newsgroups, WWW, Applications of Internet.

November

Books Recommended

1. Using IT : Williams T MHill
2. Essentials of Information Technology : A. Mansoor, Prgya Publications 3.
IT : Curtin T MHill
4. Fundamental of Information Technology : Chetan Shrivastava_Kalyani Publishers 5.
Computer Fundamentals : P.K Sinha BPB Pubications 6. Fundamental of Computer :
V. Rajaraman
7. Computer today : Sanders D.H

26/04/22

23/07/22

DEPARTMENT OF COMPUTER SCIENCE

Session - 2022-23

Core Paper -II :- Semester I
DSCII:- UBCCT102 -Programming in 'C' Language
Theory: - 60 Lectures
(Credits: 06, Theory-04, Practical - 02)

UBCCT102
Programming in C Language

UNIT-I Fundamental of C **(15 Lecture)** — September

Overview of C :History of C,structure of "C" program, keywords ,tokens, Data types, Constants, Literals and variables, operators and expressions: Arithmetic operators,Relationaloperators,Logical operators ,Expressions, Operators: Operators precedence and associativity,Type casting, Console I/O formatting Unformatted I/Ofunctionsgetch(),getchar(),getch(),gete(),pute(),putchar() .

UNIT-II- Control Structure & Looping Statement **(15 lecture)** — October

If Statement & Switch case: Simple If, If -else, Nested If, Else if ladder, conditional operators, switch statement, **Looping & branching statements:** do... while ,while, for, Nested loops, break and continue, go to and label, exit function.

UNIT-III- Array, Function & Pointer **(15 Lecture)** — November

Array : Array declaration, one and two Dimensional numeric and character array, multidimensional array. **Functions:** Definition function components, functions arguments, return value, function call statements, function prototype, Types of function, Call by value and Call by reference, Function using arrays, recursive function, **Pointer:** Definition of pointer, pointer declaration, using & and* operators, Types of pointers: Void pointer, pointer to pointer, pointer arithmetic.

Union-IV String, Structure& Union **(15 lecture)** — November, December

STRING: String declaration, initialization, string manipulation with/without using library function. **Structure, Union And Enum Structure:** Basics, declaring structure and structure variable, typedef statement, array of structure, array within structure, Nested structure: passing structure to function, function returning structure. **Union:** Basics, declaring union & union variable, Enum: declaring enum and enum variable.

Reference Books:

1. Programming in Ansi C, E. Balagurusamy, Tata Megraw Hills (latest Edition)
2. Let Us C, Yashwant Kantekar, Infinity Science Press Eight Edition.
3. Mastering C: K.R.Venugopal, Tata Megraw Hill.
4. The C programming language, Brian W.kernighan, Dennis M.Ritchie, prentice Hall, Second Edition.

Head
Department of Computer Application
Govt. Digvijay P.G. College
Mandsaur (M.P.)

M.SC. COMPUTER SCIENCE 2022-23

FIRST SEMESTER: M.Sc.

Paper I : Mathematical Foundation of Computer Science

Max Marks:100 **Min Marks:40**

NOTE: - The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Course Outcome:

Student will be able to-

- Understand the concepts of Digital Electronics.
- Apply the concept of Automata Theory
- Solve the problems with Optimization Methods
- Use the hypothetical testing
- Familiar with the graph theory and its applications

UNIT – I: Mathematical Logic, Sets Relations and functions } September

Mathematical Logic : Notations, Algebra of Propositions & Propositional functions, logical connectives, Truth values & Truth table Tautologies & Contradictions, Normal Forms, Predicate Calculus, Quantifiers.
Set Theory: Sets, Subsets, Power sets, Complement, Union and Intersection, De-Morgan's law Cardinality, relations: Cartesian Products, relational Matrices, properties of relations equivalence relation functions: Injection, Surjection, Bijection, Composition, of Functions, Permutations, Cardinality, the characteristic functions recursive definitions, finite induction.

UNIT – II: Lattices & Boolean Algebra } October

Lattices: Lattices as Algebraic System, Sub lattices, some special Lattices (Complement, Distributive, Modular).
Boolean Algebra: Axiomatic definitions of Boolean algebra as algebraic structures with two operations, Switching Circuits.

UNIT – III: Groups Fields & Ring } October

Groups: Groups, axioms, permutation groups, subgroups, co-sets, normal subgroups, free subgroups, grammars, language).
Fields &Rings: Definition,Structure, Minimal Polynomials, Irreducible Polynomials, Polynomial roots & its Applications.

UNIT - IV: Graphs } November

Graphs: Simple Graph, Multigraph &Psuedograph, Degree of a Vertex, Types of Graphs, Sub Graphs and Isomorphic Graphs, Operations of Graphs, Path, Cycles and Connectivity, Euler and Hamilton Graph, Shortest Path Problems BFS(Breadth First Search, Dijkastra's Algorithm, Representation of Graphs, Planar Graphs, Applications of Graph Theory.

UNIT - V:Trees } November December

Trees: Trees, Properties of trees, pendant vertices in a tree, center of tree, Spanning tree, Binary tree, Tree Traversal, Applications of trees in computerscience.

BOOKS RECOMMENDED:

1. A text book of Discrete Mathematics – By Swapan Kumar Sarkar.(S.Chand& companyLtd.).
2. Discrete Mathematical structure with Applications to computerscience - By J.P Trembly & R.P. Manohar.
3. DiscreteMathematics -By K.A Ross and C.R.Bwritht.
4. DiscreteMathematicsStructures for computerscience -By Bernard Kohman& RobertC.Bushy.
5. DiscreteMathematics -By Seymour Lipschutz Mare Lipson, Tata McGraw-Hill Edition.

Suggested Digital Platforms Web Links:

https://onlinecourses.nptel.ac.in/noc22_cs123/preview
https://onlinecourses.nptel.ac.in/noc22_cs85/preview

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M.SC. COMPUTER SCIENCE 2022-23
THIRD SEMESTER
Paper V: Object Oriented Analysis And Design
(PCSCT305)

Max Marks : 100 **Min Marks : 40**

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Course Outcome:

Students will be able to:

- be able to use an object-oriented method for analysis and design
- be able to analyze information systems in real-world settings and to conduct methods such as interviews and observations
- have a general understanding of a variety of approaches and perspectives of systems development, and to evaluate other IS development methods and techniques
- know techniques aimed to achieve the objective and expected results of a systems development process
- know different types of prototyping
- know how to use UML for notation.

Unit-I } September

Introduction: Two views of software Developments: SSAD and OOAD, Why Object –Orientation? Object and classes, Abstraction and encapsulation, Methods and Message, Interfaces, Inheritance and Polymorphism, Access Control, The Business case for OO Developments.

Object Oriented Methodologies: Object Oriented Design –Booch, Object Modeling Techniques- Rumbaugh, Object – Oriented Analysis – Coad-Yourdan, Object – Oriented Software Engineering – Ivar Jacbson,

Unit-II } October

Unified Approach: Diagramming and Notational Techniques using the UML, UML Notation, {Analysis Diagramming Techniques.} == Introduction to all (ten) Diagram, {Design Diagramming Techniques}, Generalization/Specialization, Aggregation and composition, Association, Cardinality, Navigability, Icons, relationships and adornments.

Object-Oriented Systems Development Process:

Rational Unified Process, Four Major phases: Inception, Elaboration, Construction, Transition, Requirements Engineering:

Problem analysis, Understanding Stockholders need, Type of requirements, Use-case Model: Writing Requirements

Unit-III } October November

Analysis: Behavioral Analysis, Domain Analysis or Business Object Analysis, Use-case Driven Object Oriented analysis : The UML approach., Develop use-case Model, Use-case Description, Documentation, Activity Diagram, Identify the classes.,

Introduction to different approaches for identifying classes, "Noun Phrase" approach OR ,"Conman Class Pattern" approach Or , "CRC" approach Or, Use case Driven Approach. Containment and Composition, Aggregation, Inheritance, SubTypes and IS-A Hierarchies, Association and Link Relationships, Diagramming System Events.

Unit IV } November

Design Phases: Translating Analysis Concept into Design, Optimizing classes and Objects: The Multi- tiered Architecture View, ,Mapping System functions to objects., Object to Object Visibility, Collaboration Diagram, Sequential Diagram, Specification Class Diagram, Specifying Object Interfaces, Designing the Data Access layer, Design User Interface layer, Designing System Interfaces, Controls and Security.

Unit V } November

Design Refinement : Designing for Extensibility, Design for reusability, Portioning class space, Checking Completeness and correctness.

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Maharaja Agrasen College Jagadhri

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Persistent Object and Database Issues: The Cood Data Management Domain, Object Persistence, Object-oriented Database Management System, Object-Oriented verses Relational Database, Mapping object to Relational Data structure. **Testing:** Introduction to Testing Strategies, Impact of Object Orientation on Testing. Testing Business Process, Design Matrix, Discovering reusable pattern.

December

RECOMMENDED BOOKS

1. Object Oriented Analysis and Design with Applications - Grady Booch, Benjamin/Cummings.
2. Object Oriented Modeling and Design. – J Rumbaugh, M Blaha, W .Premerlani 3.Principles of Object-Oriented Software Development - Anton Eliens, Addison Wesley.
4. Object Oriented System Development - Ali Bahrami McGRAW-HILL.
5. Object Oriented Software Engineering – Ivar Jacobson Pearson Education INC
6. Design Object-Oriented Software - Rebecca Wrifs-Brock. Brian Wilkerson, Lauren Wiener.

Suggested Digital Platforms Web Links:
https://onlinecourses.nptel.ac.in/noc22_cs99/preview

3/07/22

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New Nirvilav College Nainamakkal

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M.SC. COMPUTER SCIENCE 2022-23
FIRST SEMESTER
Paper V: Computer System Architecture
(PCSCT105)

MaxMarks:100 Min Marks:40

NOTE:- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Course Outcome:

Students will be able to:

- Get concepts of the basics organizational and architectural issues of a digital computer.
- Analyze performance issues in processor and memory design of a digital computer.
- Understand various data transfer techniques in digital computer.
- Explain block diagram of CPU, Memory and types of I/O transfers

UNIT - I: Representation of Information } September

Number system, Integer & Floating point representation Character code (ASCII, EBCDIC), Error Detect and Correct code, Basic Building Blocks, Boolean Algebra, MAP Simplification, Combination Blocks, Gates, Multiplexers, Decoders, etc Sequential building block, flip-flop, registers, counters, ALU, RAM etc.

UNIT - II: Register transfer language and micro operations } October

Concepts of bus, data movement along registers, a language to represent conditional data transfer, data movement from its memory, arithmetic and logical operations along with register transfer timing in register transfer

UNIT - III: Basic Computer Organization and Design } October

Instruction code, Computer Instructions, Timing and Control, Execution of Instruction, Input and Output Interrupt, Design of Computer.

UNIT - IV : Computer Software } November

Programming Language, Assembly Language, Assembler, Program Loops, Input /Output Programming, System Software. Central Processor Organization: - Processor Bus Organization, Arithmetic Logic Unit, Stack Organization, Instruction Formats, Addressing modes, Data transfer and Manipulation, Program Control, Microprocessor Organization, Parallel Processing,.

UNIT - V: Input –Output & Memory Organization } November December

Input –Output Organization : Peripheral Devices, Input/Output Interface, Asynchronous Data Transfer, Direct Memory Access (DMA), Priority Interrupt, Input-Output Processor, Multiprocessor System Organization, and Data Communication Processor.

Memory Organization : Auxiliary Memory, Micro Computer Memory, Memory Hierarchy, Associative Memory, Virtual Memory, Cache Memory, Memory Management Hardware.

BOOKS RECOMMENDED:

1. Computer System Architecture - M. Morris Mano(PHI).
2. Digital Computer Electronics -Malvino.
3. Digital Computers and Logic Design - M.Morris Mano(PHI).
4. Structured Computer Organization - Andrew M. Tanenbanm(PHI).

Suggested Digital Platforms Web Links:

https://onlinecourses.nptel.ac.in/noc22_cs88/preview
https://onlinecourses.nptel.ac.in/noc22_cs110/preview

23/7/22

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Core Paper -VI :- Semester II

DSC VI:- UBCCT203- Digital Electronics

Theory: - 60Lectures

(Credits: 06, Theory-05+01)

UBCCT-203
Digital Electronics

Unit - I

Number systems : Binary number system, Octal & Hexa-decimal number system. Conversion of Number System, r's & (r-1)s, Binary arithmetic Operations, complement weighted & unweighted codes (BCD,Excess-3,Gray code). } January

Unit - II

Logic Gates: AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates **Boolean algebra:** AND, OR, Inversion, Basic Boolean Law's, Demorgan's theorem. Minimization techniques: K -Map, Sum of Product & Product of Sum. } February

Unit III

Combinational circuits: Multiplexers, Demultiplexers, Decoders & Encoders, Half Adder, Full Adder, Half Subtractor, Full Subtractor. } March

Unit -IV

Sequential Circuits: Flip Flop, Types of Flip Flop: R-S, D, J-K, T, Master Slave, and State Realization of one Flip Flop Using Other Flip Flop, Registers, Counters. } March

Reference Books:

2. Taub & Schelling, *Digital Integrated Electronics*, McGraw-Hill International Edition
3. Charles H.Roth, Jr. *Fundamentals of Logic Design*, Jaico Publishing House, 2000.
4. Donald D.Givone, *Digital Principles and Design*, Tata McGraw-Hill, 2003.
5. Bartee, *Digital Computer Fundamentals*.

Head
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Rajnandgaon (C.G.)

M.SC. COMPUTER SCIENCE 2022-23
SECOND SEMESTER
Paper II: Advanced Computer Networks
(PCSCT 202)

Max Marks:100 Min Marks :40

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Course Outcome

Students will be able to:

- Understand basic computer network technology.
- Understand Data Communications System and its components.
- Enumerate the layers of the OSI model and TCP/IP reference model.
- Able to identify the different types of network devices, their functions within a network and their applications.

UNIT - I

Introduction to Computer Networking : The Concept of Networking, Data Communication, Required network elements, The role of Standards Organization. Line Configuration, Various Topologies, Transmission Mode. Categories of Networks- LAN, MAN, WAN. The benefits of a Computer Networks.

The OSI and TCP/IP Reference Model : The Concept of Layered Architecture, Design Issues for the Layers, Interfaces and services, Detailed Functions of the Layers. Comparison between OSI and TCP/IP Reference model. } January

UNIT - II

Transmission of Digital Data : Shannon's and Nyquist theorems for maximum data rate of a channel. Transmission media- Co-axial, UTP, Fiber optic and wireless. Analog and digital data Transmission- parallel and serial transmission. DTE-DCE interface using RS-232C. Study of modems- 56k and Cable Modem. M.SC. COMPUTER SCIENCE 2022-23. Modem standards.

Multiplexing and Switching : The Concept of Multiplexing- FDM, TDM, WDM. The Concept of Switching- Circuiting, Message switching, Packet switching. } February

UNIT - III

Data Link Layer and Routing Algorithms : Line Discipline, Flow Control- stop and wait, sliding window, Go back N. Error Control- ARQ stop and wait, sliding window ARQ. HDLC, SLIP, PPP. Multiple access protocols- ALOHA, Slotted ALOHA, CSMA/CD. IEEE standards for LAN's and MAN's. The IP protocol, and its header. IP address classes and subnetmask.

The concept of ICMP, ARP, RARP, RSVP, CIDR and Ipv6. : Routing algorithms- shorted path first, Distance Vector, Link State. Congestion Control-The leaky bucket and Token bucket Algorithms. } March

UNIT - IV

Transport Layer : The Concept of client and Server in terms of Socket addressing in Transport layer. Two way and three-way handshaking. TCP header.

Network Performance Issues. The Concept of Domain Name System, Various Resource Records. Architecture and services of E-mail (RFC-822 and MIME). The Concept of World Wide Web- server side and client side.

ATM : The concept of ATM, ATM Adoption layers- AAL1, AAL2, AAL3/4, AAL5, Comparison of AAL protocols. Cell formats for UNI and NNI. Service Categories, Quality of service, Congestion Control inATM. } March, April

UNIT - V

Comparative study of Networking Technologies : X.25, Frame Relay, ATM, SONET, SMDS, ISDN.

Network Security : The importance of Security in Networking, traditional cryptography, Data Encryption } April

M.Sc. COMPUTER SCIENCE 2022-23

Artificial Intelligence And Expert Systems

Paper 2

(PCSCT402)

Max Marks : 100 **Min Marks : 40**

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Objectives –

1. To introduce the concept of AI, characteristics and its applications.
2. To introduce the concepts of Expert Systems and knowledge representation, search techniques, etc.

UNIT – I:

General Issues and overview of AI: The AI problems; what is an AI technique; Characteristics of AI applications

Problem solving, search and control strategies: General problem solving; production systems; control strategies: forward and backward and backward chaining Exhaustive searches: Depth first Breadth first search.

} January

UNIT – II:

Heuristic Search techniques: Hill climbing; Branch and Bound technique; Best first search and A* algorithm; AND /Or Graphs; problem reduction and AO* algorithm; constraint satisfaction problems

Game playing: Min-max search procedure; Alpha-Beta cutoffs; Additional Refinements

} January

UNIT – III:

Knowledge Representation: First order predicate calculus; Skolemization Resolution principle and unification; Inference Mechanisms; Horn's clauses; semantic Networks; frame systems and value inheritance. Scripts; conceptual dependency.

AI Programming Languages: Introduction to Lisp, Syntax and Numeric functions; List manipulation functions; Iteration and Recursion; Property list and Arrays, Introduction to PROLOG.

} February

UNIT – IV:

Natural language processing: Parsing technique; context—context- free grammar; Recursive Transition Nets (RTN); Augmented Transition Nets ((ATN); case and logic grammars; semantic analysis.

Planning : Overview- An example Domain: The Blocks Word; Component of planning systems: Goal Stack Planning (linear planning); Non-linear planning using goal sets; probabilistic reasoning and Uncertainty; probability theory; Baye's Theorem and Bayesian networks; certainty factor.

} March

UNIT – V:

Expert Systems: Introduction to expert systems and Applications of expert systems; various expert system shells: vidwan; frame work; knowledge acquisition; case studies; MYCIN.

Learning: Role learning; learning by induction; Explanation based learning.

} April

BOOKS RECOMMENDED :

1. Elaine Rich and Kevin knight: Artificial Intelligence-Tata McGraw hill.
2. Dan W. Patterson: Introduction to Artificial Intelligence and Expert Systems. Prentice hall of India.
3. Nills j. Nilson: Principles of Artificial Intelligence; Narosa publishing house.
4. Clocksin & C.S. Melish ; Programming in PROLOG – Narosa publishing house.

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M.Sc. COMPUTER SCIENCE 2022-23

Data Mining & Data Warehousing

Paper 3 (PCSCT403)

Max Marks : 100 **Min Marks : 40**

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Objectives –

1. To introduce concepts of Data Mining, Data Warehousing.
2. To introduce different Mining Association rules, classifications and predictions.

UNIT – I:

Introduction & Data Warehousing and OLAP Technology for Data Mining –
What is data mining?, Data Mining: On what kind of data?, Data mining functionality, Are all the patterns interesting?, Classification of data mining systems, What is a data warehouse?, A multi-dimensional data model, Data warehouse architecture, Data warehouse implementation, Further development of data cube technology, From data warehousing to data mining. Concept of Transaction, Transactional database, Distributed Database, Commit Protocols. } January

UNIT - II:

Data Preprocessing, Data Mining Primitive, Languages and System Architecture – Why preprocess the data?, Data cleaning ,Data integration and transformation, Data reduction, Discrimination and concept hierarchy generation, Data Mining Primitive, Data Mining Query Language, Architecture of data mining system. } February

UNIT - III:

Mining Association Rules in Large Databases- Association rule mining, Mining single-dimensional Boolean association rules from transactional databases, Mining multilevel association rules from transactional databases, Mining multidimensional association rules from transactional databases and data warehouse, From association mining to correlation analysis, Constraint-based association mining. } February

UNIT - IV:

Classification and Prediction & Cluster Analysis – What is classification? What is prediction? Issues regarding classification and prediction, Classification by decision tree induction, Bayesian Classification, Classification by back propagation, Classification based on concepts from association rule mining,
What is Cluster Analysis?, Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis. } March

UNIT - V:

Introduction to Python Programming and Application : History of Python Programming Language, Installing Python , Python IDLE, Variables, Input &, Output statement , Operators, Conditional Statement, Looping Statement, Python For Data Analysis Numpy: Introduction to numpy Creating arrays Using arrays and Scalars Indexing Arrays Array Transposition Universal Array Function Array Processing Arrar Input and Output . } March April

BOOKS RECOMMENDED –

1. Data Mining: Concepts and Techniques - Jiawei Han and Micheline Kamber
2. Data Mining Concepts - H. Marget.
3. Python for Data Analysis -Wes McKinney
4. A Practical Introduction to Python Programming -Brian Heinold

H.O.D
Department of Computer Science
Govt. Nehru College Narnaul

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DEPARTMENT OF CHEMISTRY

Subject: -Organic Chemistry

MONTH	UNIT	TOPICS
July	UNIT-1	ALCOHOLS A. Dihydric alcohols - nomenclature, methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [$Pb(OAc)_4$ and HIO_4] and pinacol - pinacolone rearrangement. B. Trihydric alcohols - nomenclature and 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, resonance stabilization of phenoxide lon. Reactions of phenols, acylation and carboxylation. B. Mechanisms of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben - Hoesch reaction, Lederer - Manasse reaction and Reimer-Tiemann reaction. EPOXIDES Synthesis of epoxides. Catalysed ring opening of epoxides, orientation of epoxide ring opening, reactions of Grignard and organolithium reagents with epoxides. Anti 1,2 dihydroxylation of alkenes via epoxides. Crown eithers.
August	UNIT-2	ALDEHYDES AND KETONES A. Nomenclature and Structure of the carbonyIs group. Synthesis of aldehydes and ketones using 1,3 - dithianes, synthesis of ketones from nitriles. Mechanism of nucleophilic additions to carbonyIs group Benzoin, Aldol, Perkin and Knoevenagel condensations. Condensations with ammonia and its derivateves, Wittig reaction, Mannich reaction. B. Use of acetate as protecting group, Oxidation of aldehydes, Baeyer - Villiger oxidation of ketones, Cannizzaro reaction, MPV, Clemmensen Condensation, Wolff-Kishner reaction, LiAIH4 and NaBH4 reduction. Halogenation of enolizable ketones. An introduction to α,β unsaturated aldehydes and ketones.
September	UNIT-3	A. CARBOXYLIC ACIDS 05 HRS. Structure and bonding, Physical properties, acidity of carboxylic acids, effects of substituents on acid strength. Hell-Volhard Zeilinsky reaction. Reduction of carboxylic acids. Mechanism of Decarboxylation. Methods of formation and chemical reactions of unsaturated mono carboxylic acids. Di carboxylic acids : methods of formation and effect of heat and dehydrating agents. B. SUBSTITUTED CARBOXYLIC ACIDS Hydroxy and Halo-substituted Acids. C. CARBOXYLIC ACID DERIVATIVES

		Structure of acid chloredes, esters, amides and acid anhydrides. Relative stability of acyl derivatives. Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution. Mechanisms of acid and base catalyzed esterification and hydrolysis.
October	UNIT-4	ORGANIC COMPOUNDS OF NITROGEN A. Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes. Mechanisms of nucleophilic substitution in nitroarenes and their reduction in acidic, neutral and alkaline medium.
November	UNIT-4	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. Prepatation of alkyl and aryl amines (reduction of nitro compounds, nitriles), reductive amination of aldehydic and ketonic compounds. Gabriel - phthalimide reaction, Hofmann bromamide reaction, Reactions of amines, electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid. Synthetic transformations of aryl diazonium salts, azo coupling.
December	UNIT-5	HETEROCYCLIC COMPOUNDS A. Introduction Molecular orbitl picture and aromatic character of pyrrole, furan, thiophene and pyridine, methods of synthesis and chemical reactions with emphasis on the mechanism of electrophilic substitution. Mechanism and nucleophilic substitution reaction in pyridine derivatives. Comparison of basicity of pyridine. Piperidine and pyrrole.
january	UNIT-5	B. Preparation and reaction of Indole, quinoline and isoquinoline and with special reference to Fisher Indole synthesis and skraup synthesis and Bisher-Napieralski synthesis, Mechanism of electrophilic substitution reactions of indole, quinoline and isoquinoline.

DEPARTMENT OF CHEMISTRY

Session 2022-23

Lesson Plan

Class: - M.Sc. Previous (I Semester)

Subject: Coordination Chemistry and Physical Chemistry (Paper I)

Month	Unit	Topics covered
July	Unit III	**Reaction Mechanism of Transition Metal Complexes** Kinetics of octahedral substitution, acid hydrolysis, factors affecting acid hydrolysis, base hydrolysis, conjugate base mechanism, direct and indirect evidences in favour of conjugate mechanism, anation reactions, reactions without metal ligand bond cleavage.
August	Unit III	**Reaction Mechanism of Transition Metal Complexes** Substitution reactions in square planar complexes, the trans effect, mechanism of the substitution reaction. Redox reactions, electron transfer reactions, mechanism of one electron transfer reactions, outer sphere type reaction, cross reactions and Marcus-Hush theory, inner sphere type reactions.
September	Unit III	**Chemical Dynamics** Method of determining rate laws, collision theory of reaction rates, steric factor, activated complex theory, Arrhenius equation and the activated complex theory, ionic reaction.
November	Unit IV	**Chemical Dynamics** Kinetic salt effects, steady state kinetics. Photochemical reaction (hydrogen-bromine and hydrogen-chlorine reactions).

DEPARTMENT OF CHEMISTRY

Session 2022-23

Lesson Plan

Class: - M.Sc. Previous (II Semester) Subject: - Coordination Chemistry (Paper IV)

Month	Unit	Topics covered
July	Unit II	Electromagnetic radiation, interaction of electromagnetic radiation with matter absorption, emission, transmission, reflection, refraction, dispersion, polarization and scattering.
August	Unit II	Uncertainty relation and natural line width and natural line broadening, transition probability, results of the time dependent perturbation theory, transmission moment, selection rules, intensity of spectral lines. Born-Oppenheimer approximation, rotational, vibrational and electronic energy levels. .
September	Unit III	**Micelles** Surface active agents, classification of surface active agents, micellization, critical micellar concentration (CMC), factors affecting the CMC of surfactants, counter ion binding to micelles, thermodynamics of micellization, reverse micelles.

October	Unit IV	**<u>Macromolecules</u>** **Polymer:** Definition, types of polymers, electrically conducting polymers, mechanism of polymerization, molecular mass, number and mass average molecular mass, molecular mass determination (osmometry, viscometry, diffusion and light scattering methods), sedimentation,chain configuration of macromolecules, calculation of average dimensions of various chain structures.

November	Unit IV	**Classical Thermodynaics** Brief resume of concept of laws of thermodynamics, free energy,chemical potential and entropies. Partial molar properties, partial molar free energy, partial molar volume and partial molar heat content and their significances. Determination of these quantities. Concept of fugacity and determination of fugacity. Non-Ideal system. Excess function for non-ideal solutions, activity, activity coefficient. Debye-Huckel theory for activity coefficient of electrolyte solution, determination of activity and activity coefficients, ionic strength. Application of phase rule to three component systems.

DEPARTMENT OF BOTANY

Teaching plan.

B.Sc. I st year

2022 – 23

Fungi — September To October

General account of habit & Habitate, structure. Cellwall composition. nutrition & Reproduction in fungi.

Heterothallism & Parasexuality outlines of Classification of fungi. Economic importance of fungi. Life cycles of Saprolegnia, Albugo Aspergillus, Peziza, Agaricus, Ustilago Puccinia, Alternaria, & Cercospora, VAM fungi

Bryophyta — Nov. To December

General characteristics, affinities, range of thallus organization, general classification and economic & ecological importance, systematic Position, occurrence, Morphology, Anatomy & Reproductive structure in Riccia manchubi. Pellia Anthoceros Funaria vegetative reproduction in Bryophytes. Evolution of Sporophytes.

Pteridophyte - classification, — Jan. To Feb

General characteristics affinities. anatomy & Reproduction, systematic position. Psilotum, Lycopodium, Selaginella, Equisetum. marsilea.

Heterospory & seed habit, Stellar System in Pteridophytes

विभागाध्यक्ष,
(वनस्पति शास्त्र)
शासकीय दिग्विजय [illegible]

Dr. Kiran Jain

B.Sc IInd year Sept. To October

Plant Anatomy - (Paper I Unit - 4)

Root & shoot apical meristems, Theories of root & shoot apex organization, Permanent Tissues Anatomy of Root & shoot, & leaf of Dicot & Monocot.

Secondary growth in Root & stem.

Anatomical anomalies in the primary Structure of Stem.

Nyctanthus, Boerhaavia, Casuarina,

Anomalous sec. growth in Dracaena, Bignonia, Leptadenia.

October to December

(Unit - 5) Embryology: flower as reproductive organ, Anther, microsporogenesis, Tybes of ovules. Megasporogenesis. Development of male & female gametophyte, Pollination Mechanisms self incompatibility, fertilization Endosperm, Embryo, Polyembryony, Apomixes and Parthenocarpy.

Paper II January to Feb.

Unit - 3 Plant water relation: Diffusion, Permeability Osmosis, Imbibition, Plasmolysis, Osmotic Potential & water Potential Types of Soil water, water holding capacity, wilting, Absorption of water, Theories of ascent of Sap, mineral nutrition and Absorption deficiency symptoms Transpiration, stomatal movement, Significance of transpiration factors affecting, Transpiration Guttation.

Dr. Kiran Jain

(वनस्पति शास्त्र)
शा. कॉलेज दिग्विजय स्वायत्त
राजनांदगांव (छ. ग.)

Sep to Oct

M.Sc I SEM. Paper IV

Biology & Diversity of viruses, Bacteria Algae & fungi

Mycology - General characteristics of fungi, Substrate relationship in fungi, cell ultra structure, unicellular & multicellular organization, cell wall composition, nutrition, Reproduction, Heterothallism Heterokaryosis, Parasexuality & recent trends in classification, General account of Lichens.

Nov to Dec.

Phylogeny & General account of :-
Plasmodiophora, Allomyces, Synchitrium, Saprolegnia, Mucor, Perenospora, Albugo, Pilobolus, Enteromophthera, Taphrina, Chaetomium, Protomyces, Erysiphe, Penicillium, Neurospora, Claviceps, Phyllactinia, Xylaria, Morchella, Melampsora, Puccinia, Ustilago, Tilletia, Uromyces, Lycoperdon, Geaster, Alternaria, Cercospora, Colletotrichum, Trichothecium, Monilia, Helminthosporium, Fusarium & Mycorrhizal fungi as Biocontrol agents.

Dr. Kiran Jain

वनस्पति शास्त्र
शासकीय दिग्विजय महाविद्यालय
राजनांदगांव (छ. ग.)

Paper III (III SEM) **M.M - 80**

Plant physiology

Sept to oct Kiran.

Unit–1.

Translocation of water and solutes and membrane transport: - Plant water relations, Mechanism of water transport through xylem, Root-microbe interactions in facilitating nutrient uptake, Comparison of xylem and phloem transport, Phloem loading and unloading, Passive and active solute transport, Membrane transport system.

Unit–2.

Nov to Dec. Kiran

Photochemistry and photosynthesis: - General concept and historical background, Evolution of photosynthetic apparatus, Photosynthetic pigments and light harvesting complexes, Photo-oxidation of water, Mechanism of electron and proton transport.

Carbon assimilation: - The Calvin cycle, Photorespiration and its significance, C_4 cycle, the CAM pathway, Physiological and ecological consideration.

Dr. Kiran Jain

Unit–3.

Sensory photobiology: - History of discovery of phytochromes, cryptochromes and their photochemical and biochemical properties, Photo-physiology of light induced responses, Cellular localization, Molecular mechanism of action of photomorphogenetic receptors.

Unit–4.

Respiration: - Overview of plant respiration, Glycolysis, TCA cycle, Electron transport and ATP synthesis, Pentose phosphate pathway, Glyoxylate cycle, Alternative oxidase system

Stress physiology: - Plant responses to biotic and abiotic stress, Mechanism of biotic and abiotic stress tolerance, HR and SAR, Water deficit and drought resistance, Salinity stress, Metal toxicity, Freezing and Heat stress, Oxidative stress. High temp. stress, low temp. stress

विन्ध्यजय महाविद्यालय
अमरपाटन (सतना) म.प्र.

Prof. S.K.Jadhav
S.O.S. in Biotechnology

Dr.B.M.Lal
Govt.DB Girls College

Dr.Vimal Kanungo
Govt. NS College

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DEPARTMENT OF BIOTECHNOLOGY

M.Sc. Biotechnology Semester II

Paper 5: Biostatistics & Computer Application in Biotechnology

Month	Topics to be achieved
January 2023	Unit I 1. Brief description and tabulation of data and its graphical representation. 2. Measures of central tendency and dispersion: mean, median, mode 3. Dispersion – Standard deviation and standard error
February2023	Unit II 1. Simple linear regression 2. Correlation – types and measurement 3. Probability – addition and multiplication rules 4. Student 't' test 5. Chi-square test 6. ANOVA
March2023	Unit III 1. Introduction to digital computers: Organization; low – level and high – level languages; 2. Introduction to data structures and database concepts 3. Introduction to Internet and its application. 4. Computer – oriented statistical techniques: Frequency table, Computation of mean, Correlation and standard deviation.
April2023	Unit IV 1. Introduction to Word processing, Spreadsheets and presentation software 2. Introduction to Image processing, video editing & Youtube 3. Internet platforms for the e-learning – online e-class room, online meeting & exam

M.Sc. Biotechnology

Semester IV Paper 15:

Animal Biotechnology &

Bio-ethics

Month	Topics to be achieved
January2023	1. Basic principle of animal tissue culture 2. Laboratory requirement 3. Different types of culture medium for animal tissue culture 4. Primary and established cell line 5. Application of animal cell culture
February2023	1. Basic techniques of mammalian cell culture 2. Maintenance of cell culture 3. Disaggregation – mechanical and enzymatic 4. Stem cells – types, culture and its applications
March2023	1. Cell culture based vaccines – human and veterinary 2. Apoptosis. 3. Transgenic animals – mechanism of production and applications 4. Tissue engineering and its applications
April2023	1. Ethical issues in biotechnology – Gene manipulation, experiments in animals and humans 2. Animal rights, protection of biodiversity 3. Biopiracy

B.Sc. Biotechnology

Semester II DSE

Cell Biology

Month	Topics to be achieved
February 2023	Cell: Introduction and classification of organisms by cell structure.
March 2023	Compartmentalization of eukaryotic cells.
April 2023	Chemical components of biological membranes organization
May 2023	Fluid Mosaic Model and transport across membrane.