	MARATHI SAHITYATIL NAVE PRAVAH
Day & I Time: 1	ate: Tuesday, 23-03-2021 Max. Marks: 100 .00 AM to 02.00 PM
सूचनाः	र्व प्रश्न आवश्यक आहे.
प्र. 1 🔇) 'नवसाहित्य प्रवाहांनी मराठी साहित्य परंपरेला आणि साहित्याच्या इतिहासाला 10 नवे वळण दिले' या विधानाचा परामर्श घ्या.
ē	पुढीलपैकी कोणत्याही दोन प्रश्नांची थोडक्यात उत्तरे लिहा. 10 1) सामाजिक पर्यावरणाचा साहित्य निर्मितीप्रक्रियेवर कसा प्रभाव पडतो, स्पष्ट करा. 1 2) नवकवितेचे जनक या नात्याने बा. सी. मर्ढेकरांचा परिचय करून द्या. 1 3) नवसाहित्याच्या स्वरूपाविषयी तुम्हाला काय वाटते ते लिहा. 10
प्र.2 २) मराठी ग्रामीण साहित्य चळवळीच्या संदर्भात डॉ. आनंद यादवांच्या कार्याचे 10 मल्यमापन करा.
2	पुढीलपैकी कोणत्याही दोन प्रश्नांची थोडक्यात उत्तरे लिहा. 10 1) मराठी ग्रामीण साहित्याच्या मुख्य प्रेरणांचा परामर्श घ्या. 2) 2) मराठी ग्रामीण साहित्याचा विचारव्यूह कशाप्रकारे आकाराला आला आहे ते समजावून द्या. 3) 3) ग्रामीण साहित्य चळवळ आणि साहित्यनिर्मिती यांचा अनुबंध स्पष्ट करा.
प्र.3 ई र	 भराठी दलित साहित्य निर्मितीच्या प्रेरणांचा विस्तृत परामर्श घ्या. भंक्षिप्त टिपा लिहा. (कोणत्याही दोन) भराठी दलित साहित्याला आता साचलेपण आले आहे असे तुम्हाला वाटते का? चर्चा करा. भराठी दलित साहित्याची महत्त्वाची वैशिष्ट्ये अधोरेखित करा. भराठी दलित साहित्याचे वेगळे सौंदर्यशास्त्र असावे का? तुमचे मत नोंदवा.
प्र.4 ः) ''स्त्रीवाद ही एक समाज परिवर्तन घडवू पाहणारी 'राजकीय—जाणीव' आहे.'' या 10 विधानाचा परामर्श घ्या
ē	yclering yclering 10 </td
प्र.5 ई र	 भराठी आदिवासी साहित्याची संकल्पना आणि स्वरूपाची चिकित्सा करा. 10 संक्षिप्त टिपा लिहा. (कोणत्याही दोन) 1) मराठी आदिवासी साहित्याच्या प्रेरणा 2) मराठी आदिवासी कवितेचे स्वरूप 3) विविध आदिवासी कलाविष्कार

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Ph.D. Course Work Examination March-2021 MARATHI (Paper – II)

SLR-DN-2

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Ph.D. Course Work Examination March-2021 English (Paper – II)

Day & Date: Tuesday, 23-03-2021 Max. Marks: 100 Time: 11.00 AM to 02.00 PM Instructions: 1) All questions are compulsory. 2) All questions carry equal marks. Q.1 Evaluate the relationship between Feminist criticism and 'women's a) movement' of the 1960s. Write short notes on (Any Two) b) 1) Gynocriticism 2) Relationship between language and Feminist criticism 3) Psychoanalysis and Feminism Q.2 Does stylistics make scientific and objectivity analysis of literary texts? a) Elaborate your answer. Write short notes on (Any Two) b) 1) Scope of stylistics 2) Stylistics and linguistic features of narrative 3) Applications of stylistics Q.3 "New historicism unfolds the historicity of texts and textuality of history". a) Illustrate. Write short notes on (Any Two) b) 1) Cultural materialism 2) Historical context 3) New historicism and Foucault Q.4 "Ecocriticism is the study of the relationship between literature and the a) physical environment". Write short notes on (Any Two) b) 1) Green studies

RECENT TRENDS IN CRITICAL THEORIES

- 2) Culture and nature
- 3) Ecocriticism and environment
- Q.5 "Lesbian and gay criticism are about sex and sexualities". Illustrate your 10 a) answer. Write short notes on (Any Two) 10 b)
 - 1) Lesbian feminism
 - 2) Gender identities
 - 3) Queer theory

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SLR-DN-3

	SLR-DN-5		
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		Ph.D. Course Work Examination March-2021 Hindi (Paper – II) HINDI SAHITYA – ALOCHANA AUR VIMARSH (New) हिंदी साहित्य : आलोचना और विमर्श	
Day & Time: सूचनार्ग	، Dato 11.0 قرب : 1 2)	e: Tuesday, 23-03-2021 Max. Marks: 1 0 AM to 02.00 PM 1) सभी प्रश्न अनिवार्य है।) दाई ओर लिखे अंक प्रश्नों के गुण दर्शाते है।	00
प्र.1	अ)	आलोचना का स्वरूप स्पष्ट करते हुए मार्क्सवादी आलोचना का विवेचन कीजिए।	10
		अथव। 'साहित्य का समाजशास्त्र–एक अध्ययन' – स्पष्ट कीजिए।	
	ब)	निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लिखिए। 1) मार्क्सवादी आलोचना। 2) मनोविश्लेषणवाद।	10
प्र.2	अ)	3) समाजशास्त्राय आलाचना। 'हिन्दी साहित्य में आदिवासी विमर्श' – का विवेचन कीजिए। अथवा	10
	ब)	'इतिहासदर्शन—साहित्य अध्ययन की विधा — विशद कीजिए। निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लिखिए। 1) अंबेडकरवाद। 2) तुलनात्मक अध्ययन स्वरूप। 3) घमंत जातियों का जागरण।	10
प्र.3	अ)	अस्तित्ववाद–एक विशिष्ट मतवाद स्पष्ट कीजिए। अथवा दलित विमर्श की संकल्पना एवं महत्व विशद कीजिए।	10
	ब)	निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लिखिए। 1) ग्रामबोध 2) मंडल आयोग और जनजागरण 3) भूमंडलीकरण	10
प्र.4	अ)	उत्तर आधुनिकतावाद का हिंदी साहित्य पर प्रभाव – स्पष्ट कीजिए। अथवा हिंदी साहित्य में दलित विमर्श – स्पष्ट कीजिए।	10
	ब)	निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लिखिए। 1) नवभांडवलदार (नवउपभोक्तावाद) 2) महानगर बोध 3) भाषा वैज्ञानिक अध्ययन	10

अ) गांधीवाद का स्वरूप स्पष्ट करते हुए हिंदी उपन्यास पर गांधीवाद का प्रभाव 10 ਸ.5 विशद कीजिए।

अथवा

आधुनिक बोध की संकल्पना विशद कीजिए।

निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लिखिए। ब)

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- तुलनात्मक अध्ययन के आयाम।
 आदिवासी विमर्श-स्वरूप।
- 3) आंचलिकता।

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		Ph.D. Course Work Examination March-2021 History (Paper – II) RECENT TRENDS IN HISTORY	
Day & Time	& Date : 11.00	e: Tuesday, 23-03-2021 Max. Marks: 0 AM to 02.00 PM	100
Instr	uctior	ns: 1) All questions are compulsory.2) Figures to the right indicate full marks.	
Q.1	a) b)	 Assess the works and ideas of K. P. Jayaswal. Short answer type. (any two) 1) Write a note on James Mill as an 19th Century Historian. 2) Write a note on Marxist School of History. 3) Write a note on importance of Local History. 	10 05 05 05
Q.2	a) b)	 Explained the Marxist theory of D. D. Kosambi. Short answer type. (any two) 1) Assess the works and ideas of V. A. Smith. 2) Write a nature of Post Modernism theory of History. 3) Write a note on Nationalist Approach of History. 	10 05 05 05
Q.3	a) b)	 Discuss the contributions of R. C. Datta Modern Indian Historiography. Short answer type (any two) 1) Write a note on works and ideas of M. G. Ranade. 2) Assess the Writings of Irfan Habib. 3) Write a note on works and ideas of Ranjit Guha. 	10 05 05 05
Q.4	a) b)	 Write a essay on Subaltern School of History. Short answer type (any two) 1) Sketch the writings of Bipin Chandra. 2) Assess the works and ideas of Sumit Sarkar. 3) Write a note on Regional History. 	10 05 05 05
Q.5	a) b)	Discuss the contributions of Mountstuart Elphinstone to ancient Indian Historiography Short answer type (any two)	10
	,	 Assess the nature of Colonial school of History Write a note Marxist theory. Give an account of Scientific historical theory in 19th Century. 	05 05 05



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Seat No.			S	bet	Ρ
		Ph.D. Co RECENT TR	ourse Work Examination March-2021 Economics (Paper – II) ENDS IN INTERNATIONAL ECONOMICS		
Day & Time: 1	Date 11.00	: Tuesday, 23-03 AM to 02.00 PM	8-2021 Max. Ma 1	ırks:	100
Instruc	ction	s: 1) All question 2) All question	ns are compulsory. ns carry equal marks.		
Q.1	a)	Describe in deta	il the gains from international trade in the context of a		10
I	b)	Write short ans 1) Emmuanuel's 2) GATT	w ers. (Any Two) Theory of Unequal Exchange		10
		3) Recent Expor	t Promotion Measures		
Q.2	a)	Critically examin Pattern.	he the Linder's Theory of Volume of Trade and Demand	I	10
ļ	b)	Write short ans 1) Technologica 2) SEZs 3) Dumping in F	swers. (Any Two) I Upgradation and Exports oreign Trade		10
Q.3	a) b)	Explain in detail Write short ans 1) Sectoral Com 2) Exports impa- 3) Role of MNCs	the Structure, Objectives and Functions of WTO. wers. (Any Two) petitiveness of Indian Exports ct on Human Capital s in international trade		10 10
Q.4	a)	What are the tre	nds in the composition and direction of foreign trade in		10
I	b)	1) Export Infrast 2) Free Trade in 3) Vernon's Prod	swers. (Any Two) ructure in India npact on domestic prices duct Cycle Theory		10
Q.5	a)	Distinguish betw	veen Foreign Direct Investment (FDI) and Foreign		10
I	b)	1) Terms of Trac 2) Intra-Industry 3) Limitations of	Juestions. (Any Two) de Trade India's foreign trade policy		10

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Ph.D. Course Work Examination March-2021 Economics (Paper – II) ADVANCED THEORIES IN ECONOMICS

Day & Date: Tuesday, 23-03-2021 Time: 11.00 AM to 02.00 PM Max. Marks: 100

Instructions: All questions are compulsory.

Explain consumer's equilibrium and substitution effects under indifference curve approach.	10
 Write short notes on any two of the following. 1) Chamberlain's views on competition 2) Properties of indifference curves 3) Price leadership models 	10
 State Baumol's sales maximisation hypothesis. Write short notes on any two of the following. 1) Static and dynamic models of the firm 2) Extension of IS-LM model with labour market 3) Behavioral Model of Cyert 	10 10
 Compare the Neo-classical and Keynesian views on interest rate. Write short notes on any two of the following. 1) Workable Competition 2) Full cost pricing rule 3) Scale of production 	10 10
 What are the Isoquants? What are their properties? Write short notes on any two of the following. 1) Production possibility curve 2) March Goals of firm 3) Modigliani's contribution to pricing 	10 10
What is monopolistic competition? Examine Mrs. Robinson's approach to equilibrium	10
 Write short notes on any two of the following. 1) Revealed Preference theory 2) Why cost curves are U shaped? 3) Shift in LM curves and Monetary Policy 	10
	 Explain consumer's equilibrium and substitution effects under indifference curve approach. Write short notes on any two of the following. 1) Chamberlain's views on competition 2) Properties of indifference curves 3) Price leadership models State Baumol's sales maximisation hypothesis. Write short notes on any two of the following. 1) Static and dynamic models of the firm 2) Extension of IS-LM model with labour market 3) Behavioral Model of Cyert Compare the Neo-classical and Keynesian views on interest rate. Write short notes on any two of the following. 1) Workable Competition 2) Full cost pricing rule 3) Scale of production What are the Isoquants? What are their properties? Write short notes on any two of the following. 1) Production possibility curve 2) March Goals of firm 3) Modigliani's contribution to pricing What is monopolistic competition? Examine Mrs. Robinson's approach to equilibrium. Write short notes on any two of the following. 1) Revealed Preference theory 2) Why cost curves are U shaped? 3) Shift in LM curves and Monetary Policy

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Ph.D. Course Work Examination March-2021 Psychology (Paper – II) RECENT TRENDS IN PSYCHOLOGY

Day & Date: Tuesday, 23-03-2021 Max. Marks: 100 Time: 11.00 AM to 02.00 PM **Instructions:** 1) All questions are compulsory. 2) Figures to the right indicate full marks. Q.1 Define the perception. Explain the organization principals 10 a) Write short notes on (Any Two) 10 b) 1) Explain the concept of extinction and spontaneous recovery. 2) Autobiographical memory 3) Stages of problem solving Q.2 Explains the importance of reinforcement schedules in learning. a) 10 Write short notes on (Any Two) 10 b) 1) Non Verbal communication in emotions 2) Top down and Bottom up Processing 3) Explain how to assess the emotional intelligence. Q.3 Describe and evaluate the theories of motivation. 10 a) Write short notes on (Any Two) 10 b) 1) Explain the Stanford Binet's intelligence test. 2) Cognition in learning 3) Touch and smell Sensation Q.4 Explain the theories of Emotions. 10 a) Write short notes on (Any Two) 10 b) 1) Divided Attention 2) Transfer of Training 3) Critical thinking Q.5 Explain the Spearman and Sternberg theories of intelligence. 10 a) Write short notes on (Any Two) 10 b) 1) Observational learning 2) Causes of forgetting 3) Iconic and Echoic memory

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	Ph.D. Course Work Examination March-2021 Social Work (Paper – II) RECENT TRENDS IN SOCIAL WORK					
Day & Time: 1	Date 11.00	e: Tuesday, 23-03-2021 Max. Marks D AM to 02.00 PM	: 100			
Instruc	ction	is: 1) All questions are compulsory.2) Figures to the right indicate full marks.				
Q.1	a) b)	 Discuss the historical development of Social Work in India and abroad. Give answers in short (Any Two) 1) Values of professional Social Work 2) Fields of Social Work 3) Social Work education 	10 10			
Q.2	a) b)	 Explain the various theories of motivation for work. Give answers in short (Any Two) 1) Concept of Industry 2) Social Security legislations 3) Employee welfare 	10 10			
Q.3	a)	Critically evaluate the role of Panchayat Raj Institution in Rural	10			
l	b)	 Give answers in short (Any Two) 1) Urban slums 2) Tribal Community 3) Mahatma Gandhi National Rural Employment Guarantee Act 	10			
Q.4	a)	With the help of field work experience write interventional strategies for empowering rural women	10			
I	b)	 Give answers in short (Any Two) 1) Child rights 2) Policies for aged population 3) Concept of Family 	10			
Q.5	a) b)	 Critically examine the various policies and programs for Mental Health. Give answers in short (Any Two) 1) Mental Hygiene Movement 2) Psycho-sexual Development 3) Medical Social work 	10 10			

Medical Social work 3)

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Ph.D. Course Work Examination March-2021 Journalism & Mass Communication (Paper – II) Mass Communication & Society

Day & Date: Tuesday, 23-03-2021 Max. Marks: 100 Time: 11.00 AM to 02.00 PM Instructions: 1) All questions are compulsory. 2) Figures to the right indicate full marks. Q.1 Define Mass communication and explain the term Mass audiences'. 10 a) Answer any two questions of the following. 10 b) 1) Explain Bullet theory in detail. 2) Describe why and how two step flow of communication theory developed. 3) 'Use and Gratification theory shifted mass communication research.' Explain the statement. Q.2 Discuss the various alternative communication theory. 10 a) b) Answer any two questions of the following. 10 1) Explain Indian communication theory in detail. 2) Discuss four theories of the press. 3) Explain the contribution of communication theoriest in development of normative theories. Write a note on 'Social reform movement and early press'. Q.3 10 a) Answer any two questions of the following. 10 b) 1) Write about emergency and Indian Press. 2) Describe the changing trends in television channel management. 3) What is culture? How cultural studies are important in mass media research. **Q.4** Explain need of Environmental Journalism. 10 a) Answer any two questions of the following. 10 b) 1) Explain the need of impact studies in mass media research. 2) State the types of media and explain the importance of traditional media in the Indian context. 3) Discuss issues on women and media. Q.5 State the objectives and functions of Press Council of India. 10 a) Answer any two questions of the following. b) 10 1) Explain role PCI in paid news issue. 2) State the constitutional provision of freedom of press.

3) Write a note on self regularity authority for electronic media.

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Ph.D. Course Work Examination March-2021 Education (Paper – II) TRENDS IN EDUCATION

Day & Date: Tuesday, 23-03-2021 Time: 11.00 AM to 02.00 PM

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Instructions: 1) All questions are compulsory. 2) Figures to the right indicate full marks.

- Q.1 a) Explain the concept of TQM and justify it with reference to Teacher 20 Education Program. OR Explain the concept and process of Project based Learning. 20 b) Q.2 Discuss the NAAC Assessment and Accreditation for improving quality of 20 a) institute. OR Explain the collaborative teaching and Team teaching. 20 b) Q.3 Explain the continuous and comprehensive evaluation system. 10 a) Write the role of NCTE in Teacher Education. b) 10 OR Explain the concept of virtual classroom. 10 a) Explain the inclusive Education. 10 b) Q.4 Short Answer questions. (Any Five) 40 RTE Act 2009 a)

 - b) Open book system
 - Role of Bal Bharti c)
 - Online examinations d)
 - Write various communication mode uses in Open University e)
 - **f)** Mobile teaching
 - Functions of U.G.C. in Financial Assistance Scheme g)

Max. Marks: 100

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		Ph.D. Course Work Examination March-2021 Education (Paper – II) NEW TRENDS IN EDUCATION	
Day & Time:	Date 11.00	e: Tuesday, 23-03-2021 Max. Marks: 7	100
Instru	iction	ns: 1) All questions are compulsory.2) All questions carry equal marks.	
Q.1	a) b)	 What are CCE and its advantages and disadvantages? Short answer questions. (Any Two) 1) Write a short note on: Open Book Exam 2) What should be the criteria for checking the quality of educational research? 3) Explain the difference between the functioning of Open University and other University. 	10 10
Q.2	a) b)	 How do you develop an e-learning strategy? Short answer questions. (Any Two) 1) What are the barriers to TQM implementation? 2) What is the role of the Teacher in Constructivism? 3) Why school needs an online exam system? 	10 10
Q.3	a) b)	 How do you introduce project based learning? Short answer questions. (Any Two) 1) What are the types of cloud computing? 2) How do you make a virtual classroom fun? 3) What are the basic features of RTE-2009? 	10 10
Q.4	a) b)	 Describe the criteria of assessment and accreditation of NAAC? Write short answers. (Any Two) 1) State the role of NCTE in maintaining the quality of Teacher Education College. 2) Differentiate between digital age education and traditional age education. 3) What are the challenges of blended learning? 	10 10
Q.5	a) b)	 What are the effective methods for accommodating students with disabilities in inclusive settings? Short answer questions. (Any Two) 1) What is the role of Balbharti in school education? 2) The semester examination system is more useful than annual examination system. Discuss. 3) Write any five functions of UGC. 	10 10 n
		3) Write any five functions of UGC.	

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Ph.D. Course Work Examination March-2021 Commerce (Paper – II) RECENT TRENDS IN COMMERCE

Day & Date: Tuesday, 23-03-2021 Max. Marks: 100 Time: 11.00 AM to 02.00 PM Instructions: 1) All questions are compulsory. 2) All questions carry equal marks. Q.1 Explain the role of Govt. in development of E-Commerce in developing 10 a) countries. b) Write short notes on (Any Two) 10 1) B 2 B e-commerce 2) C 2 C e-commerce 3) B 2 C e-commerce Q.2 Explain the contribution of Service industry to Indian economy. 10 a) Write short notes on (Any Two) b) 10 1) IT Service Management 2) Supply chain security 3) Social Currency Q.3 Explain the role of IT system in modern business. 10 a) Write short notes on (Any Two) 10 b) 1) RFID technology 2) M-Commerce services 3) Social rewards **Q.4** Explain the role of Customer Relationship Management (CRM) in 10 a) M - Commerce. Write short notes on (Any Two) 10 b) 1) Issues in E-Commerce 2) Cloud computing environment 3) Internet marketing Explain new trends in International trade. 10 Q.5 a) Write short notes on (Any Two) 10 b) 1) Internationalization of SMEs 2) Emerging Business Model 3) Components of Integrated service management

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Ph.D. Course Work Examination March-2021 Physics (Paper – II) RECENT TRENDS IN PHYSICS

Day & Date: Tuesday, 23-03-2021 Time: 11.00 AM to 02.00 PM Max. Marks: 100

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Q.1	a)	What is working principle of X-ray photoelectron spectroscopy (XPS)? Explain in detail instrumentation of XPS?	10
	b)	 Write short note on any two. 1) Determination work function using UPS 2) XPS data analysis 3) XPS depth profiling 	10
Q.2	a)	Explain the principle of image formation using force microscopy. Explain the process of image formation using magnetic force microscopy and elucidate the information obtained using suitable example.	10
	b)	 Write short note any two. 1) AFM 2) Molecular reorganization using AFM 3) AFM based nano-lithography 	10
Q.3	a)	Explain the requirement of the material to be IR active. How to record the IR spectrum of a given material? Explain different components of IR spectrometer.	10
	b)	 Write short note on any two. 1) FTIR spectrometer 2) Active modes of vibration in perovskite structure 3) IR spectrum of diatomic molecule a harmonic oscillator 	10
Q.4	a)	Explain basic working principle of EDS and WDS. Explain the process of image formation using electron beam. How is it possible to improve the resolution of image using TEM.	10
	b)	 Write short note on any two. 1) FESEM 2) HRTEM 3) UV V is spectroscopy 	10
Q.5	a)	Explain in detail working principle of X-ray diffraction. With the help of suitable diagram explain different components of X-ray diffractometer.	10
	b)	Write short note on any two.1) JCPDS data card2) Lattice parameter determination for tetragonal and hexagonal system3) $\theta - \theta$ and $\theta - 2\theta$ spectrometers	10

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Ph.D. Course Work Examination March-2021 Zoology (Paper – II) RECENT TRENDS IN ZOOLOGY (NEW)

Day & Date: Tuesday, 23-03-2021 Max. Marks: 100 Time: 11.00 AM to 02.00 PM Instructions: 1) All questions are compulsory. 2) Figures to the right indicate full marks. Q.1 Describe Swine flue and a note on its transmission and Pathology. 10 a) Write short notes. (Any Two) 10 b) 1) Principles of Radio-immuno-assey Development and migration of microfilarial worms 2) Metacrypto-merozoites and crypto-merozoites of Plasmodium vivax. 3) Q.2 Describe pathology of Malaria in human body. a) 10 Write short notes. (Any Two) 10 b) 1) Describe mechanism of enzyme action with suitable example. 2) TLC type of chromtography 3) Effects of Chikungunya virus and its treatment Q.3 Describe classification of Mammalian hormones. 10 a) Write short notes. (Any Two) 10 b) Oocyst of Plasmodium vivax 1) What is ultracentrifuge, describe its uses? 2) 3) Giardiasis Describe modern trends in Taxonomy. 10 Q.4 a) Write short notes. (Any Two) 10 b) 1) Sporogenesis of Plasmodium vivax **DNA-Splicing** 2) Describe cause of Rabies and its precaution. 3) Q.5 Describe IR-Spectroscopy and its applications. 10 a) Write short notes. (Any Two) 10 b) 1) Morphology of Leishmania donovani Cholesterol as biomolecule 2) 3) Paper chromatography and its applications

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Set P

Ph.D. Course Work Examination March-2021 Geography (Paper – II) RECENT TRENDS IN GEOGRAPHY

Day & Time:	Date 11.00	e: Tuesday, 23-03-2021 D AM to 02.00 PM	Max. Marks: 100
Instru	ctior	ns: 1) All questions are compulsory.2) All questions carry equal marks.	
Q.1	a) b)	 Describe the trends in development of modern geography. Write short answers. (Any Two) 1) Ancient period 2) Medieval period 3) Geography as a scientific discipline 	10 10
Q.2	a) b)	 Write different approaches to the study in geography. Write short answers. (Any Two) 1) Concept of 'Region' 2) Concept of 'Space' 3) Significance of models in geography 	10 10
Q.3	a) b)	 State the stages of regionalization. Write short answers. (Any Two) 1) Importance of Models in geography 2) Concept of 'Area' 3) Importance of Scaling in geography 	10 10
Q.4	a) b)	 Explain the laws and theories in geography. Write short answers. (Any Two) 1) Application of geography in Industrial 2) Importance of geography in human welfare 3) Application of geography in Tourism development 	10 10
Q.5	a) b)	 Write in details on Human Resource Development (HRD). Write short answers. (Any Two) 1) Application of geography in planning of health care 2) Correlation between geography and management 3) Application of geography in Spatial inequality 	10 10

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		Ph.D. Course Work Examination March-2021 Statistics (Paper – II) MODERN TOPICS IN STATISTICS	
Day & Time: 7	Date 11.00	: Tuesday, 23-03-2021 Max. Marks: 7) AM to 02.00 PM	100
Instru	ction	s: 1) All questions are compulsory.2) All questions carry equal marks.	
Q.1	a)	Define maximum likelihood estimator (<i>mle</i>). Let $X_1, X_2 X_n$ are independent r.v.'s each $N(\mu, \sigma^2)$. Obtain <i>mle</i> of 1) μ when σ^2 is known 2) σ^2 when μ is known	10
	b)	 Attempt any two questions. 1) Explain the concept of unbiasedness and consistency. 2) Let X₁, X₂ X_n be independent and identically distributed passion r.v.'s with parameter λ. Show that T_n = X ²_n - X ²_n is a biased estimator of λ². 3) Let X₁, X₂, X_n be a random sample of size <i>n</i> from the geometric distribution with pmf p(x p) = pqx⁻¹ x = 1, 2 = 0 otherwise Find the MME of <i>p</i>. 	10
Q.2	a) b)	 State and prove Rao - Blackwell Theorem. Attempt any two questions. 1) Define sufficient statistic and discuss the concept of sufficient statistic with suitable example. 2) Let X₁, X₂ X_n be independent r.v.'s each uniform on (0, θ). Let Y_n = max(X₁, X₂, X_n) and Y₁ = min(X₁, X₂, X_n). Show that Y_n is sufficient for θ but Y₁ is not sufficient for θ. 3) Show that UMVUE is unique with probability unity. 	10 10
Q.3	a)	Let $X_1, X_2 \dots X_n$ be a sample of size <i>n</i> from normal population with mean μ and variance σ^2 . Obtain a likelihood ratio test of size \propto for testing	10
	b)	 H₀: σ² = σ₀² against H₁: σ² ≠ σ₀² when population mean in known. Attempt any two questions. 1) Write a brief note on 'Chi-square test of goodness of fit'. 2) Distinguish between a) Simple and composite hypotheses b) Type I and Type II error. 3) State generalized Neyman - Pearson lemma. Explain with illustration how this can be used to obtain UMPU test. 	10
Q.4	a)	Let $X_1, X_2 \dots X_n$ be a random sample of size <i>n</i> from the pdf $f(x \beta) = \frac{\boxed{(\beta+3)}}{2 \ \beta} x^2 (1-x)^{\beta-1}, 0 \le x \le 1$ Use the pivotal quantity method to construct a 100 $(1-\alpha)$ % confidence	10
	b)	 Attempt any two questions. 1) Define the term UMA confidence interval. How they are obtained from UMP-Test? 	10

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- 2) Let $X_1, X_2 \dots X_n$ be a random sample of size *n* from a normal distribution with known μ and unknown variance σ^2 . Obtain 100 $(1-\infty)$ % confidence interval for σ^2 and compute expected length of this interval.
- 3) Describe the procedure for construction of confidence interval in large sample.
- **Q.5** a) Describe sigh test and signed rank test.

b) Attempt any two questions.

- 1) Explain U statistic with illustration.
- 2) Describe the jack knife technique and state its properties.
- 3) Write note on 'Bootstrap Technique'.

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Ph.D. Course Work Examination March-2021 Microbiology (Paper – II) RECENT TRENDS IN MICROBIOLOGY

Day & Date: Tuesday, 23-03-2021 Max. Marks: 100 Time: 11.00 AM to 02.00 PM Instructions: 1) All questions are compulsory. 2) All questions carry equal marks. Q.1 Explain various types of centrifugation techniques. 10 a) Write notes on (Any Two) 10 b) 1) Principle and applications of UV Spectroscopy 2) RFLP 3) Basic concepts of IR Q.2 What is radioisotope? Explain methods for measurements of radioactivity. a) 10 Write short notes on (Any Two) 10 b) 1) NMR 2) Gel filtration 3) PAGE Q.3 Explain principle, working and applications of agarose gel electrophoresis. 10 a) Explain in shorts. (Any Two) 10 b) 1) Principle and applications of gas chromatography 2) Principle and working of fluorescence spectroscopy 3) Applications of TLC Write an essay on DNA sequencing. Q.4 10 a) Write in brief. (Any Two) 10 b) 1) Principle and applications of HPLC 2) Applications of PCR 3) Dot blotting Q.5 Write an essay on DNA fingerprinting. 10 a) Write in brief. (Any Two) 10 b) 1) LTRR analysis 2) Principle of X-ray crystallography 3) FAME analysis

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Ph.D. Course Work Examination March-2021 Botany (Paper – II) RECENT TRENDS IN BOTANY

Day 8 Time:	Date 11.0	e: Tuesday, 23-03-2021 0 AM to 02.00 PM	Max. Marks: 100
Instru	uctior	ns: 1) All questions are compulsory.2) Figures to the right indicate full marks.	
Q.1	a) b)	 Explain principles and applications of phase contrast microsc Attempt any two of the followings. 1) Describe fixatives used in cytological techniques. 2) Describe density gradient separation. 3) Explain Beer-Lamberts law. 	opy. 10 10
Q.2	a) b)	 Describe microbial staining techniques. Attempt any two of the followings. 1) Describe methods of sterilization. 2) Explain NMR spectrometry. 3) Explain gel electrophoresis. 	10 10
Q.3	a) b)	 Describe different types of algal and fugal culture media. Attempt any two of the following. 1) Describe applications of microphotography. 2) Describe role of isotopes in biochemistry. 3) Describe applications of micrometry. 	10 10
Q.4	a) b)	 Describe the methodology of Herbarium preparation. Attempt any two of the followings. 1) Explain dark field microscopy. 2) Describe affinity chromatography. 3) Describe MASS spectrometry. 	10 10
Q.5	a) b)	 Explain Giger-Muller and Liquid scintillation counter. Attempt any two of the followings. 1) Explain basic principles of centrifugation. 2) Describe principles and application of Camera Lucida. 3) Explain scanning electron microscopy. 	10 10

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Ph.D. Course Work Examination March-2021 Chemistry (Paper – II) RECENT TRENDS IN ORGANIC CHEMISTRY

Day & Date: Tuesday, 23-03-2021 Time: 11.00 AM to 02.00 PM

Instructions: 1) All questions are compulsory.

2) All questions carry equal marks.

Q.1 a) Give an account of the stereochemistry of ring fusion in "Yohimbine'.
 b) Answer the following. (Any Two)

CH₂

1) Predict the product(s) and outline the mechanism for the following



-CH=CH-

 Three C₃H₆O isomers have the spectroscopic properties given below. Select the most likely structure for each from the compounds in the following group:



i) One ¹H NMR peak; infrared absorption at 2900 and 1715 cm⁻¹

- ii) Three ^{13}C NMR peaks (two at $\delta > 100$ ppm); infrared absorption at 3100, 2900, 1650 & 1100 cm 1
- iii) Three ¹³C NMR peaks (one at δ 200 ppm); Three ¹H NMR peaks (one near δ 9.0 ppm)
- 3) A compound with molecular formula C₉H₁₀O gives a positive test with cold dilute KMnO₄. It has following PMR values:

δ 3.5(s, 3H) δ 5.2 (d, J = 16Hz, 1H) δ 6.0 (d, J = 16Hz, 1H) δ 7.0 - 7.5 (m, 5H) Deduce the structure

Q.2 a) Discuss the chemical shift values in ppm of ¹³C NMR for different types of **10** compounds and factor affecting it.

b) Answer the following. (Any Two)

- 1) Discuss the solvent used in NMR spectroscopy in detail.
- 2) Discuss McLafferty rearrangement with suitable examples.
- 3) How will you distinguish between primary, secondary and tertiary alcohol by using mass spectroscopy? Explain with fragmentation pattern.

Max. Marks: 100

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- **Q.3** a) Give synthesis and stereochemistry of ring systems incholestane.
 - b) Answer the following. (Any Two)
 - 1) Predict the product with proper stereochemistry, give mechanism and name the reaction.



- 2) A neutral compound of M.F. $C_{10}H_{12}O_2$ gave the following signal in its ¹³C NMR spectra (δ , ppm):22(q), 68(d), 128(d), 129(d), 131(s), 132(d), 166(s). Deduce the structure.
- 3) Explain the formation of an ion at m/e 222 in the mass spectrum of the steroid, and name the reaction involved during the fragmentation.



Q.4 a) Discuss DEPT spectra of sopentyl acetatein detail. 10

b) Answer the following. (Any Two)

- 1) With suitable examples, explain the terms homotopic, enantiotopic and diastereotopic groups and faces.
- 2) Differentiate following pair compounds:



(by ¹³C NMR)

(by Mass spectrometry)

3) Explain the factors affecting on IR absorptions with suitable examples.

Q.5 a) A compound having M.F. $C_6H_{12}O_2$ gave spectral data as follows:

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UV: λ_{max} 283 nm (ε = 27) IR: 3300, 1705 cm⁻¹ ¹H NMR: δ 1.25 ppm, s, 6H; δ 2.3 ppm, s, 3H; δ 2.7 ppm, s, 2H; δ 3.7 ppm, bs, exchange with D₂O, 1H.

M.S.: shows significant ions at m/z 99, 84, 58 and 43.

Deduce the structure and explain in detail.

10

b) Answer the following. (Any Two)

1) Predict the product(s) and outline the mechanism for the following reaction and name it



- 2) A compound of M .F. C₁₀H₁₄O gave the following signal in its ¹H NMR spectra:
 - δ 1.25 ppm (s, 9H)
 - δ 5.20 ppm (bs, exchange with D₂O, 1H)
 - δ 6.82 ppm (d, J= 8Hz, 2H)
 - δ 7.25 ppm (d, J= 8Hz, 2H) Deduce the structure.

Deduce the structure.

- 3) Discuss the fragmentations in:
 - i) straight chain hydrocarbon
 - ii) alkyl aryl hydrocarbon

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Ph.D. Course Work Examination March-2021 Pharmacy (Paper – II) PHARMACEUTICAL SCIENCES – I (NEW)

Day & Date: Tuesday, 23-03-2021 Time: 11.00 AM to 02.00 PM Max. Marks: 100

Instru	ction	s: 1) All questions are compulsory.2) Figures to the right indicate full marks.		
Q.1	a) b)	 Discuss the behavior of functional groups towards infrared radiations. Answer the following. (Any Two) 1) What is ICH? Explain their categories. 2) Explain pre-clinical studies of drug development process. 3) What are the roles of regulatory affairs professional? 	10 10	
Q.2	a)	Why are cGMPs so important? Give guideline for building and facilities,	10	
	b)	 Answer the following. (Any Two) 1) What is clinical trial? Who can participate in a clinical trial? 2) Name different immunochemical techniques. Explain ELISA technique. 3) Explain IND, NDA and ANDA. 	10	
Q.3	a) b)	 Discuss various phases of clinical trial and their objectives. Answer the following. (Any Two) 1) Explain the procedures used for calculating the concentrations of the UV-vis absorbing substance from the measured absorbance. 2) Write short note on ethics committee, its constitution and role of each member. 3) Give basics and methodology of BA/BE studies. 	10 10	
Q.4	a) b)	 Discuss the steps involved in drug development process. Answer the following (Any Two) 1) Explain the analytical methods for drugs. 2) Give the co-relation between animal models and human situations. 3) Write short note on designing clinical trials. 	10 10	
Q.5	a) b)	 What is the goal of CPCSEA guidelines? Give the guidelines for functional area, anaesthesia and euthanasia as per CPCSEA. Answer the following (Any Two) 1) What is the purpose of clinical trials? 2) What is HPLC? Give its application? 	10 10	

Give the drug regulatory agencies of developed countries.