University of Kalyani
Directorate of Open & Distance Learning
Kalyani – 741235, Nadia, West Bengal, India
Phone: 033-2502-2212/13, E-mail: db.ku@rediffmail.com
Website: www.dodlklyuniv.ac.in

From
Professor Dibyendu Bhattacharyya, *Ph.D.*
Director

Ref. No. KU/DODL/34/21
Date: 01.03.2021

Notification

This is for information to the students of M.A/M.Sc. Semester-IV (2018-20) in different subject under Directorate of Open & Distance Learning, University of Kalyani that as per the revised syllabus prescribed under the CBCS mode, are hereby directed to write and submit **Internal Assignments** for each paper on or before **15/03/2021**. The detail guidelines for submission of assignment are given below:

1. The given Assignments will carry 20% weightage of the total marks in each paper. The students are advised to carefully abide by all the instructions given in their Assignment Questions.

2. The students will write and submit the papers from their respective residences. They are strictly advised to write the Assignments in their own words. Moreover, the Assignments have to be hand-written.

3. The students have to use A4 size blank sheets to write the Assignments. They must mention their **Subject, Semester, Enrolment Number in the very first page of the Assignments for each paper**. Secondly, they need to write the individual Enrolment Numbers as well as the Page Numbers in all the pages.

4. The Students of the **Kalyani University (KU) Main Campus (Head Quarter)** are directed to submit the assignments, prepared only in **PDF format or document Cloud** (paper-wise separately), to the subject/enrolment no. wise official e-mail id (s) which is given below` and any other kind of submission will be summarily rejected.
5. The **"Subject"** of the e-mail will be the **Enrolment Number and the Name of the Subject** (For example, KU/MA/ENG/0001/18_ENGLISH). The **"name"** of the individual PDF(s) will be the paper codes.

6. **The Students of the different study centres are directed to submit the assignments to their respective study centres as per the instructions of the authority of the respective study centres.**

7. **The last date of submission of Assignment is 15/03/2021.**

Sd/-
Director, DODL
University of Kalyani

The list of the subject-wise official E-mail Addresses, where the KU MAIN CAMPUS (Head Quarter) students will submit their Assignments, are given below:

Subject	Enrolment No.	E-Mail Address
M.A. in Bengali	KU/MA/BEN/0001/18 to KU/MA/BEN/0127/18	bengali1dodl@klyuniv.ac.in
	KU/MA/BEN/0128/18 to KU/MA/BEN/0254/18	bengali2dodl@klyuniv.ac.in
M.A. in English	KU/MA/ENG/0003/18 to KU/MA/ENG/0033/18	english1dodl@klyuniv.ac.in
	KU/MA/ENG/0035/18 to KU/MA/ENG/0079/18	english2dodl@klyuniv.ac.in
M.A. in History	All Students of M.A. in History of KU Main Campus	history3dodl@klyuniv.ac.in
M.A. in Education	KU/MA/EDN/0001/18 to KU/MA/EDN/0085/18	education1dodl@klyuniv.ac.in
	KU/MA/EDN/0086/18 to KU/MA/EDN/0173/18	education2dodl@klyuniv.ac.in
M.Sc. in Zoology	All Students of M.Sc. in Zoology	zoology1dodl@klyuniv.ac.in
M.Sc. in Botany	All Students of M.Sc in Botany	botany1dodl@klyuniv.ac.in
M.Sc. Mathematics	All Students of M.Sc. in Mathematics	mathematics1dodl@klyuniv.ac.in
M.A. in Geography	All Students of M.A in Geography	geography1dodl@klyuniv.ac.in
M.Sc. in Geography	All Students of M.Sc in Geography	geography2dodl@klyuniv.ac.in

(Prof. Dibyendu Bahttacharyya)
Director, DODL
University of Kalyani

Director
Directorate of Open & Distance Learning
University of Kalyani

কল্যাণী বিশ্ববিদ্যালয়

মুক্ত ও দূরবর্তী শিক্ষা অধিকরণ

২০২১

স্নাতকোত্তর চতুর্থ সেমেস্টার

বিষয় : বাংলা (Assignment)

প্রতিটি পত্র থেকে দুটি করে প্রশ্নের উত্তর দাও : **প্রতি পত্রের পূর্ণমান - ২০**

পঞ্চম পত্র

১। নন্দনতত্ত্বের সঙ্গে ভারতীয় আলংকারিকদের সম্পর্ক বুঝিয়ে দাও। ১০

অথবা

অবনীন্দ্রনাথের শিল্পভাবনার মূল সুর কী – নন্দনতত্ত্বের আলোকে আলোচনা করো।

২। হোরেসের নন্দনতাত্ত্বিক দৃষ্টিভঙ্গি বিশ্লেষণ করো। ১০

অথবা

টলস্টয়ের শিল্পভাবনা আলোচনা করে বুঝিয়ে দাও।

ষষ্ঠ পত্র

১। কালিদাসের 'মেঘদূত' কাব্যের পূর্বমেঘ অবলম্বনে চিত্র-সৌন্দর্য রচনায় কবির নৈপুণ্যের পরিচয় দাও । ১০

অথবা

উপমা সৃষ্টিতে কালিদাসের অনন্যতা কোথায় তা 'উত্তরমেঘ' অনুসরণে বুঝিয়ে দাও ।

২। 'অভিজ্ঞানশকুন্তলম্' নাটকের চতুর্থ অঙ্কে বর্ণিত শকুন্তলা-বিদায়দৃশ্যের রসসৌন্দর্য পরিস্ফুট করো । ১০

অথবা

19/02/21.

Director
Directorate of Open & Distance Learning
University of Kalyani

অ্যারিস্টটলের 'পোয়েটিকস্'-অনুসারে অ্যারিস্টটল কথিত প্রথম নটি অধ্যায় সংক্ষিপ্তভাবে বিশ্লেষণ করো ।

বিশেষ পত্র – বাংলা নাট্যসাহিত্য

সপ্তম পত্র

১। শখের নাট্যশালাগুলির বাংলা নাট্যজগতে ভূমিকা বিশ্লেষণ করো। ১০

অথবা

গণনাট্য ও নবনাট্য বলতে কী বোঝ ? বাংলা নাট্যজগতে এর ভূমিকা বিশ্লেষণ করো।

২। নাটকের সংজ্ঞা দিয়ে নাটকের ঘটনা ও গতি বিশ্লেষণ করো। ১০

অথবা

সংস্কৃত নাটকের শ্রেণিবিচার করে তার সংক্ষিপ্ত ইতিবৃত্ত রচনা করো।

অষ্টম পত্র

১। বাংলা নাট্যশালার ইতিহাসে 'মিনার্ভা থিয়েটার' সম্পর্কে আলোচনা করো । ১০

অথবা

আধুনিক নাট্য প্রযোজনায় মঞ্চস্থাপত্যের স্থান নির্ণয় করো ।

২। 'নাট্যপরিচালনাঃ শতবর্ষ'– অতিক্রান্ত ইতিহাস বিষয়ে একটি নাতিদীর্ঘ প্রবন্ধ রচনা করো। ১০

অথবা

বঙ্কিম-উপন্যাসের নাট্যরূপ ও তার মঞ্চ সাফল্য নিয়ে সংক্ষিপ্ত পরিচয় দাও ।

Director
Directorate of Open & Distance Learning
University of Kalyani

19/02/21.

বিশেষ পত্র – রবীন্দ্রসাহিত্য

সপ্তম পত্র

১। কবিগুরু রবীন্দ্রনাথ ঠাকুরের বাল্যশিক্ষা ও কবিজীবনের সূচনাপর্ব নিজের ভাষায় বিবৃত করো। ১০

অথবা

রবীন্দ্রনাথের জীবনে শেষ পর্বের (১৯৩০-১৯৪১) সাহিত্যসৃষ্টির স্বাতন্ত্র্য ও বৈশিষ্ট্যগুলি নির্দেশ করো।

২। উপনিষদ কীভাবে রবীন্দ্রজীবন দর্শনকে প্রভাবিত করেছে তা বিশ্লেষণ করো। ১০

অথবা

'গীতাঞ্জলি' রবীন্দ্রনাথের আধ্যাত্মিক চিন্তার উন্মেষের পরিচয় দাও।

অষ্টম পত্র

১। অভিনেতা রবীন্দ্রনাথ বিষয়ে একটি সংক্ষিপ্ত নিবন্ধ রচনা করো । ১০

অথবা

'দর্শন' শব্দটির প্রেক্ষিতে কবি ও দার্শনিক রবীন্দ্রনাথের জীবনচেতনার পরিচয় দাও ।

২। মানুষের ধর্ম সম্পর্কে রবীন্দ্রনাথের উপলব্ধ সত্যের মূল কথাগুলি সংক্ষেপে বিবৃত করো। ১০

অথবা

'মহাভারত' কিভাবে ও কোথায় রবীন্দ্রমানসে প্রেরণা সঞ্চার করেছে তা নিজের ভাষায় বুঝিয়ে দাও ।

Director
Directorate of Open & Distance Learning
University of Kalyani

19/02/21

বিশেষ পত্র – ভাষাবিজ্ঞান

সপ্তম পত্র

১। প্রাচীন গ্রীসের ভাষাতত্ত্বচর্চার পরিচয় দাও। ১০

অথবা

ভারতে তুলনামূলক ভাষাতত্ত্বচর্চার পটভূমি আলোচনা করো।

২। পাণিনি পরবর্তী যুগে ভাষাতত্ত্ব চর্চার বিকাশ কীভাবে হয়েছিলো তা আলোচনা করো। ১০

অথবা

নোয়াম চমস্কির সঞ্জননী ব্যাকরণের প্রধান সূত্রগুলি আলোচনা করো।

অষ্টম পত্র

১। বঙ্গদেশে ভাষাতত্ত্বচর্চার সংক্ষিপ্ত পরিচয় দাও । ১০

অথবা

ভাষাচর্চায় বিশ্বভাষা সম্পর্কে একটি প্রবন্ধ রচনা করো ।

২। বিজ্ঞাপনে বাংলা ভাষার প্রয়োগ বিষয়ে একটি নিবন্ধ রচনা করো । ১০

অথবা

অভিধানের শ্রেণিবিভাগ করে তার বৈশিষ্ট্যাবলী আলোচনা করো ।

- ০-

Director
Directorate of Open & Distance Learning
University of Kalyani

19/02/21

UNIVERSITY OF KALYANI
DIRECTORATE OF OPEN AND DISTANCE LEARNING

M.A. in ENGLISH

SEMESTER: IV
INTERNAL ASSESSMENT – 2021

CC - 10: TWENTIETH CENTURY: FICTIONAL AND NON-FICTIONAL PROSE

Full Marks: 20

Attempt any ONE question from each group

Group –A

1. a) "Didn't you hear what the pilot said? About the atom bomb? They're all dead" – William Golding situates the action of the novel *Lord of the Flies* directly after the detonation of an atomic bomb. How does Golding's narrative offer a powerful critique of the atrocities committed during World War II? Substantiate your answer.

Or,

1. b) In what way do the stories included in Joyce's *Dubliners* reflect the overarching social and moral decay in the contemporary Ireland? Discuss with reference to the stories prescribed in your syllabus.

Group – B

2. a) According to Salman Rushdie "Commonwealth literature" is, therefore, an unreliable face of
historicity."

i. The concept of "Commonwealth" was first introduced by Oliver Cromwell in 1649. Trace the
history of the metamorphosis that the term has gone through in the following centuries.

ii. What are Salman Rushdie's particular reservations against the label of "Commonwealth
Literature"?

Or,

2. b) Whoinspired Naipaul to become a writer in his early years? Describe Naipaul's epic journey from being the eldest son of a second-generation Indian diaspora in Trinidad to a distinguished writer, with reference to his essay "Reading and Writing: A Personal Account."

18/2/21.
Director
Directorate of Open & Distance Learning
University of Kalyani

A. Chattopadhyay
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

19/2/21
Head
Department of English
University of Kalyani

UNIVERSITY OF KALYANI
DIRECTORATE OF OPEN AND DISTANCE LEARNING

M.A. in ENGLISH

SEMESTER: IV

INTERNAL ASSESSMENT – 2021

CORE COURSE - 11: TWENTIETH CENTURY LITERARY CRITICISM

Full Marks: 20

Attempt any ONE question from each group (10x2=20)

Group –A

1. a) Investigate into the development of Russian Formalism as a school of literary criticism and critically discuss its distinctive features.

Or,

1. b) Define Postcolonialism. Comment on the major concerns of Postcolonialism with reference to any *TWO* theorists.

Group – B

2. a) Would you agree with the proposition that the reader plays a central role in the entire process of meaning-making? Discuss with reference to Wolfgang Iser's take on the "Act of Reading".

Or,

2. b) Attempt a survey of the Marxist critical theory in the Soviet. Focus on the works of some of the prominent Russian Marxists.

Director
Directorate of Open & Distance Learning
University of Kalyani

Head
Department of English
University of Kalyani

A. Chattopadhyay
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

UNIVERSITY OF KALYANI
DIRECTORATE OF OPEN AND DISTANCE LEARNING

M.A. in ENGLISH

SEMESTER: IV
INTERNAL ASSESSMENT – 2021

OPTIONAL COURSE - 04: WOMEN'S WRITING: LITERATURE AND THEORY

Full Marks: 20

Attempt any ONE question from each group: (10×2=20)

Group – A

1. a) What does Charlotte Mew's poem "The Farmer's Bride" reveal about the status of women in England in the nineteenth-century?

Or,

1. b) *A Serious Proposal to the Ladies* proposes the establishment of an all-female "religious retirement" – a monastery dedicated to women's education. Critically analyze this unique concept advocated by Mary Astell.

Group – B

2. a) Would you agree with Virginia Woolf's proposition that "a woman must have money and a room of one's own if she is to write fiction"? Justify your standpoint.

Or,

2. b) Do you consider the characters of Anna Wulf and Molly Jacobs as "free women"? Substantiate your answer with proper textual references from Doris Lessing's *The Golden Notebook.*

Director
Directorate of Open & Distance Learning
University of Kalyani

A. Chattopadhyay
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Head
Department of English
University of Kalyani

University of Kalyani
Directorate of Open and Distance Learning

Internal Assignments 2020 (Semester IV)
History

Answer any one question in each Group & Two in each Paper.

Paper-EC-13 **Full Marks-20(Each Paper)**

Group-A

1. Why European colonists came to America?

Or

2) Explain the salient features of the constitution of America.

Group-B

1) Write a note on Abraham Lincoln's life and Contributions.

Or

2) How did Capitalism emerge?

Paper-EC-14

Group-A

1) Write a short note on the Urban class of the Mughal period.

Or

2) Describe the impact of Shankardeva of Assam in Bhakti movement.

Group-B

1) Discuss Iqta as a land system of Medieval period.

Or

2) What do you know about Jagirdari crisis?

Paper-EC-15

Group-A

1) Who was Charaka? What was his contribution in the field of medicine?

Or

2) Write a short note on Health system of medieval India.

Group-B

1) Write a critical note on Kadambini and the Bhadrolok- an early debate over women's education in Bengal.

Or

2) Write a short note on Bhopal gas tragedy?

Paper-EC-16

Group-A

1) Write a short note on the rule of Rama III of Thailand.

Or

2) Write a note on the unification of Vietnam.

Group-B

1) Discuss about the decline of Sugar Industry of Java.

Or

2) What was the impact of colonial rule in Vietnam?

Anil Kr. Sarkar

Dr. Anil Kumar Sarkar
Professor
Department of History
University of Kalyani

Sukrit Mukherjee
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Director
Directorate of Open & Distance Learning
University of Kalyani

DIRECTORATE OF OPEN AND DISTANCE LEARNING (DODL)
UNIVERSITY OF KALYANI
KALYANI, NADIA

M.A. in Education 4th Semester Assignment Questions

Attempt *Two* question from each paper
Each question carries 10 Marks

Comparative Education (EDC –10)

1. What do you mean by Comparative Education? Discuss the different affective factors of Comparative Education. 2+8=10

Or

Describe briefly the Elementary education in United States of America (USA). 10

2. What is the importance of Adult Education in present session in India? 10

Or

Explain the Teacher Education system in U.K. Compare with that of Indian Teacher Education system. 5+5=10

Curriculum Development (EDC- 11)

1. What do you mean by educational management? Critically discuss the special features of educational management. 3+7=10

Or

Discuss needs and functions of educational supervision and give suggestion for modernizing our educational supervision system. 10

2. Give your ideas on human resources development in educational institution. Discuss different strategies personal to achieve institutional objectives. 10

Or

Describe the key features of Herzberg's theory of motivation. Explain importance of motivators and hygiene factors in education management. 5+5=10

28/02/2024

Sajal Chintapatra. 29/02/24
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Director
Directorate of Open & Distance Learning
University of Kalyani

Optional Paper

Educational Technology (EDE-03) ~~Optional Paper~~

1. How will you proceed for the development of a self- instructional programmed material in the teaching of a school subject? Answer in the light of the various phases of developing the programmed instructional material. 5+5=10

Or

What is a Teaching Machine? Describe the main features of teaching machine. 3+7=10

2. Distinguish between CRT and NRT. Which type of test should be preferred in educational measurement and why? 5+5=10

Or

Explain 'Hardware' and 'Software' approach to education and Give examples of hardware and software approaches used in educational system. 10

Teacher Education (EDE–04) ~~Optional Paper~~

1. Explain the role of various Professional Organizations of teachers at higher education. 10

Or

Discuss the role played by the Distance Education System in imparting teacher education in India. 10

2. Explain the significance of Orientation Programmes and Refresher Courses for development of teachers on higher education. 5+5=10

Or

Discuss importance of pre-service Teacher Education Programmes in our country. 10

23/02/2021

Shampa Sarkar. 23.02.2021
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Sajal Chattopadhyay 19/02/21
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Director
Directorate of Open & Distance Learning
University of Kalyani

UNIVERSITY OF KALYANI
DIRECTORATE OF OPEN AND DISTANCE LEARNING (DODL)
SEMESTER-IV
INTERNAL ASSESSMENT, 2021
SUBJECT-ZOOLOGY

Candidates are directed to write the answer in A4 sheets

ZHT 411

Answer ***any two*** questions (10×2=20):

1. Define ethology. What do you mean by innate and learned behaviour? Describe the life cycle of *Wuchereria bancrofti* with diagram. 1+3+6=10
2. Write down the mode of transmission of tick born bacterial disease. Name the causative agent of leishmaniasis. What is reciprocal altruism? Give example 6+1+3=10
3. Differentiate between intersexual selection and intrasexual selection. What is impulsive aggression? Describe the life cycle of horse fly with suitable diagram. 3+1+6=10

ZHT-412

Answer ***any two*** questions (10×2=20):

1. Differentiate *lac* operon and *trp* operon. How *lac* operon is induced in the presence of lactose. What is the role of glucose in *lac* operon? 3+ 4 +3=10
2. How 70S initiation complex is formed during prokaryotic translation? What are the post transcriptional modifications of eukaryotic mRNA? 7+3 =10
3. Write down the different steps of Southern blotting with suitable diagram. Differentiate Southern and Western Blotting. What is RNA editing? 6+3+1 =10

ZST-409

Answer ***any one*** question (5X1=5):

1. Write down the causes of male infertility? What is GIFT and ZIFT? 3+1+1 = 5
2. Write down main symptoms of Down syndrome. What is the genetic cause of Fragile X syndrome? 3+2 =5

Sudeshna Banerjee 19/2/21
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Sukhabrata Ghosh 19.02.21
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

19/02/2021
Professor
Department of Zoology
University of Kalyani
Kalyani-741235

ZST-412

Answer ***any one*** question (5X1=5):

1. Name the causative organism of Primary amoebic meningoencephalitis (PAM). Name a species of *Proteocephalus* found in river water. Write short note on diagnosis of filariasis. 1+1+3=5
2. Name the infective stage of *Proteocephalus* sp. Name the causative agent of whirling disease. Why this disease is named so? How can you treat the bed bug bites? 1+1+2+1=5

ZET-403

Cytogenetics and Molecular Biology

Answer any one question (10×1=10):

1. What are Homoplasmy and Heteroplasmy? Describe inheritance of kappa particles in *Paramaecium* sp. Define infectious heredity. 3+6+1= 10
2. Write down general characters of transposable elements. What is composite transposons and describe their transposition. What is retrotransposons? 4+5+1 =10

ZET-404

Cytogenetics and Molecular Biology

Answer any one question (10×1=10):

1. Differentiate orthologous and paralogous genes. Give examples of each type. Write down the principle of DNA Microarray. What is spotted DNA arrays, how it is different from oligonucleotide arrays? Define codon degeneracy. 4+3+2 =10
2. Write down the principle of Yeast two hybrid systems. What are the applications of Yeast two hybrid systems? Write Down the Hardy Weinberg Principle. The frequency of an allele in a large randomly mating population is 0.2. What is the frequency of the heterozygous carrier? 3+1+2 +4 =10

Sudeshna Banerji
19/2/21
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Subhabrata Ch
19.02.21
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

19.02.2021
Professor
Department of Zoology
University of Kalyani
Kalyani-741235

ZET-403

Cell and Developmental Biology

Answer any one question (10×1=10):

1. What is regeneration? What do you mean by morphallaxis? Give example. Write down the properties of haemoglobin. 2+3+5=10
2. What do you mean by morphogen? Describe the regeneration of a limb of a newt or salamander with proper diagram. What is lens crystalline? Write short note on alfa (α) crystalline. 1+5+1+3=10

ZET-404

Cell and Developmental Biology

Answer any one question (10×1=10):

1. What is neurosecretory cell? Discuss neurosecretion in insect. Write short note on tight junction with diagram. 2+5+3=10
2. Classify chemical carcinogens with examples. Discuss the nerve impulse transmission along neuron with proper diagram. 3+7=10

Sudeshna Banerjee
19/2/21

Subhabrata Ghosh
19.02.21

Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

19.02.2021

Professor
Department of Zoology
University of Kalyani
Kalyani-741235

UNIVERSITY OF KALYANI
DIRECTORATE OF OPEN & DISTANCE LEARNING
SEMESTER- IV INTERNAL ASSIGNMENT, 2021
Botany

Candidates are required to give their answers in the A_4 Sheet

ELECTIVE THEORY

Paper : BOET 4.1
Genetics & Molecular Genetics (Course-I)

[20 Marks]

Answer any two questions

1. What is Inverse PCR? A PCR reaction that continues for 30 cycles will produce approximately how many PCR products from a single template DNA molecule? Enumerate the steps of Sanger sequencing with suitable diagram. [2+2+6=10]
2. What is meant by disarming of T-DNA? Mention the genes associated with flower colour development and golden rice. How might DNA methylation affect gene regulation? [2+3+5=10]
3. State the properties of cancerous cells. How does mutant Ras gene causes cancer? What do you mean by chromosome walking? [2+5+3=10]

Paper: BOET 4.2
Plant Breeding & Biometry (Course II)

[20 Marks]

Answer any two questions

1. List the main features of gametophytic system of self incompatibility. Indicate the compatibility of following crosses: (i) $S_1S_2 \times S_1S_2$, (ii) $S_1S_2 \times S_1S_3$ and (iii) $S_1S_2 \times S_3S_4$. Can the genotype S_1S_2 be recovered from them? Give a schematic representation of molecular mechanism of self incompatibility in papaveraceae. [2+4+4=10]
2. What are the barriers for successful distant hybridization? Mention the essential properties of ideal DNA markers for efficient use in marker-assisted breeding. Enumerate the scheme for the transfer of a dominant gene for disease resistance through the backcross method in a self-pollinated species. [2+3+5=10]
3. What is residual effect? Using four yield related traits and yield, set-up path diagram and equations. [2+8=10]

Director
Directorate of Open & Distance Learning
University of Kalyani

Sudipta Roy

DR. SUDIPTA ROY
Professor
Department of Botany
University of Kalyani
Kalyani, 741235

Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Paper: BOET4.3
[Microbiology Course - I]

[20 Marks]

1. Why *E. coli.* is considered as indicator microorganism for determination of portability of water? How coliform are detected from a water body. (3+7)

Or

What is the role of DNA hybridization in bacterial taxonomy? Discuss about the advantage and disadvantage of this methods. (6+4)

2. Short Note (2X5)

a) Biofertilizer
b) Role of 16SrDNA in bacterial taxonomy
c) Biopesticides

Paper: BOET4.4
[Microbiology Course – II]

[20 Marks]

1. Describe the role of sex factor in bacterial conjugation with reference to F+ factor and Hfr strains. (10)

Or

Describe the general structure of immunoglobulin. Mention the roles of T-cells and B-cells in the immunological activity in human body. (4+6)

2. Short Note (2X5)

a) Penicillin enrichment
b) COVID19
c) ELISA

SOFT CORE THEORY

Paper: BOSCT 4.1
Evolution

[10 Marks]

Answer any one question

1. When did first living cells appear on Earth? Who first experimentally synthesized essential amino acids in laboratory and how? What condition makes earth unique? [1+1+5+3=10]
2. What is geological time scale? Why is it necessary? Mention the important periods in evolutionary history of plant life. [2+2+6=10]

Director
Directorate of Open & Distance Learning
University of Kalyani

DR. SUDIPTA ROY
Professor
Department of Botany
University of Kalyani
Kalyani, 741235

Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Paper: BOSCT4.2
[Immunology]

[10 Marks]

Answer any one question

1. Illustrate the structural modification of major histocompatibility complex (MHC) and their role in in antigen presentation. (4+6)
2. **Short Note (Any two)** (2X5)
   a) Clonal selection theory
   b) Complement system
   c) Vaccine

Director
Directorate of Open & Distance Learning
University of Kalyani

DR. SUDIPTA ROY
Professor
Department of Botany
University of Kalyani
Kalyani, 741235

Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Date :→ 19/02/2021

UNIVERSITY OF KALYANI
DIRECTORATE OF OPEN AND DISTANCE LEARNING (DODL)
SEMESTER- IV
INTERNAL ASSESSMENT, 2021
SUBJECT - GEOGRAPHY

GROUP – GEO413T.1: REGIONAL PLANNING AND DEVELOPMENTAL ISSUES IN INDIA

Attempt any one question

1. Explain Spread & Backwash effect of Myrdal theory and the stages of Core-periphery model. 5+5=10

OR

2. Describe the causes and consequences of regional disparities in India. 10

GROUP – GEO413T.2: REGIONAL GEOGRAPHY OF WEST BENGAL

Attempt any one question

3. Divide West Bengal into different geographical regions. Describe the characteristic features of each region in details. 2+8=10

OR

4. Give an account of the major industries of West Bengal. Highlight the role of industries in regional development of West Bengal. 2+8=10

Ayan Rudra
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Director
Directorate of Open & Distance Learning
University of Kalyani

Date :→ 19/02/2021

UNIVERSITY OF KALYANI
DIRECTORATE OF OPEN AND DISTANCE LEARNING (DODL)
SEMESTER- IV
INTERNAL ASSESSMENT, 2021
SUBJECT - GEOGRAPHY

Paper – GEO414T (EG)
Special Paper Theory (Environmental Geography)

Attempt any two questions from group 1
GROUP – 1

5 x 2 = 10

1. Explain the important environmental problems in India.
2. What are the main causes of biodiversity loss? Explain them.
3. What is crime? What are the major characteristics of crime?
4. What id absolute poverty and relative poverty?

Attempt any one question from group 2
GROUP – 2

10 x 1 = 10

5. "Leave no one behind"- Explain this on the basis of Sustainable Development.
6. Briefly describe wetland and waste land management in India.

Ayan Rudra.
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Director
Directorate of Open & Distance Learning
University of Kalyani

Date:→ 19/02/2021

UNIVERSITY OF KALYANI
DIRECTORATE OF OPEN AND DISTANCE LEARNING (DODL)
SEMESTER- IV
INTERNAL ASSESSMENT, 2021
SUBJECT - GEOGRAPHY

Paper – GEO414T (FG)
Special Paper Theory (Fluvial Geomorphology)
Attempt any one question from each group

GROUP – GEO414T (FG).1: CHANNEL MORPHOLOGY

1. What is a flow regime? Discuss in details the boundary conditions that influence channel adjustment. 2+8=10

OR

2. Highlight the difference between Indus delta and the Ganga delta. Give an account of the Bhagirathi – Hugli River System. 2+8=10

Group – GEO414T (FG).2: Fluvial hazards and its Management

3. What is flood? Discuss the parameters that influence flood size. 2+8=10

OR

4. Discuss the process of flood plain formation. Give an account of the geomorphic units of floodplain. 2+8=10

Ayan Rudra.
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Director
Directorate of Open & Distance Learning
University of Kalyani

University of Kalyani

Directorate of Open and Distance Learning

Internal Assessment

Subject: Mathematics

Semester: IV

Session-2018-20

Director
Directorate of Open & Distance Learning
University of Kalyani

Biswajit Mallick
24.02.2021

Audrija Choudhury
24.02.2021

Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

MATC 4.1

Answer any ONE of the following questions: **20**

1. (a) Does there exist a simple graph having degree sequence $3, 3, 3, 3, 4$?

   (b) Express the following function in conjunctive normal form

   $$x'yz + xy'z' + x'y'z + x'yz' + xy'z + x'y'z'$$

   (c) Consider the Markov chain with three states, $S = \{1, 2, 3\}$, that has the following transition matrix

   $$\begin{bmatrix} \frac{1}{4} & \frac{1}{2} & \frac{1}{4} \\ \frac{1}{2} & 0 & \frac{1}{2} \\ \frac{1}{2} & 0 & \frac{1}{2} \end{bmatrix}.$$

   i. Draw the state transition diagram for this chain.

   ii. Find $P(X_4 = 3|X_3 = 2)$ and $P(X_3 = 1|X_2 = 1)$.

   iii. If $P(X_0 = 1) = \frac{1}{3}$ find $P(X_0 = 1, X_1 = 2)$. Also find $P(X_0 = 1, X_1 = 2, X_2 = 3)$.

   (d) Find the maximum likelihood estimate of the parameter λ for the Weibul distribution

   $$f(x) = \lambda\alpha x^{\alpha-1}e^{-\lambda x^{\alpha}}, \quad (x > 0)$$

   using a sample of size n assuming that α is known.

2. (a) Draw the Hasse diagram of D_{36} with respect to the usual divisibility relation. Also, find the complement of each of the elements of D_{36}, if it exists.

   (b) Construct the truth table for $(p' + qr)'(pq + q'r)$.

   (c) Is the sample variance is a biased estimator of the population variance? Justify. If yes, calculate the bias.

   (d) Consider the Markov chain with three states, $S = \{1, 2, 3\}$, that has the following transition matrix

   $$\begin{bmatrix} \frac{1}{2} & \frac{1}{4} & \frac{1}{4} \\ \frac{1}{3} & 0 & \frac{2}{3} \\ \frac{1}{2} & \frac{1}{2} & 0 \end{bmatrix}.$$

   i. Draw the state transition diagram for this chain.

   ii. If $P(X_1 = 1) = P(X_1 = 2) = \frac{1}{4}$, then find $P(X_1 = 3, X_2 = 2, X_3 = 1)$.

Director
Directorate of Open & Distance Learning
University of Kalyani

Biswajit Mallick
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani
24.02.2021

Audaya Choudhury
24.02.2021

Samares Pal
Samares Pal, Ph.D.
Professor
Department of Mathematics
University of Kalyani
Kalyani, Nadia-741235, W.B.

MATO 4.2

Answer any ONE of the following questions: **20**

1. (a) Define Entropy.

   (b) Write down the properties of entropy function.

   (c) Grapes in Kashmir are classified as either superior, average or poor. Following a superior harvest, the probabilities of having a superior, average and poor harvest in the next year are 0, 0.8 and 0.2. Following an average harvest, the probabilities of a superior, average and poor harvest are 0.2, 0.6 and 0.1. Following a poor harvest, the probabilities of a superior, average and poor harvest are 0.1, 0.8 and 0.1. Determine the probabilities of a superior harvest for each of the next five years if the most recent harvest was superior.

2. (a) Let $h(p)$ denote the amount of information received from the message stating that the event E with probability p has occurred. Then show that $h(p) = -k \log p$, where k is a positive constant.

   (b) Prove that if λ is an eigenvalue of a stochastic matrix P, then $|\lambda| < 1$.

   (c) Formulate the following process as a Markov chain:

   The manufacturer of Hi-Glo toothpaste currently controls 60% of the market in a particular city. Data from the previous year show that 88% of Hi-Glo's customers remained loyal to Hi-Glo, while 12% of Hi-Glo's customers switched to rival brands. In addition, 85% of the competition's customers remained loyal to the competition, while the other 15% switched to Hi-Glo. Assuming that these trends continue, determine Hi-Glo's share of the market

   (i) in 5 years and (ii) over the long run.

18/2/21

Director
Directorate of Open & Distance Learning
University of Kalyani

Biswajit Mallick
24.02.2021
Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

Arindam Choudhury
24.02.2021

Samares Pal
Samares Pal, Ph.D.
Professor
Department of Mathematics
University of Kalyani
Kalyani, Nadia-741235, W.B.

MATO 4.3 (Applied Stream)

Answer any ONE of the following questions: **20**

1. (a) Derive the basic system of equation for stochastic epidemic model without removal.

   (b) Describe Fahraeus-Lindqvist effect.

   (c) Considering Newtonian fluid model, calculate the velocities for blood flow in core and plasma layers under Fahraeus-Lindqvist effect.

2. (a) Solve the basic system of equation for stochastic epidemic model without removal if initially there are n susceptibles and one infective in the system.

   (b) Extend above epidemic model for multiple infection with removal and derive corresponding partial differential equation.

   (c) Find the volumetric flow rate during blood flow in cylindrical arteries under Fahraeus-Lindqvist effect .

18/2/21

Director
Directorate of Open & Distance Learning
University of Kalyani

Biswajit Mallick
24.02.2021

Srijit Chowdhury
24.02.2021

Director
Directorate of Open & Distance Learning
University of Kalyani

Samares Pal

Samares Pal, Ph.D.
Professor
Department of Mathematics
University of Kalyani
Kalyani, Nadia-741235, W.B.

MATO 4.3 (Pure Stream)

Answer any ONE of the following questions: 20

1. (a) State and prove Hadamard's three-circles theorem.

   (b) If $\Gamma(s)$ and $\zeta(s)$ are respectively the gamma and zeta functions, then show that for Re $s > 1$

   $$\Gamma(s)\zeta(s) = \int_0^\infty \frac{u^{s-1}}{e^u - 1} du.$$

   (c) Find the order of the following functions

   i. $e^{z^4} \cdot z^4$;

   ii. $\sum_{n=0}^{\infty} \left(\frac{z}{n}\right)^n$.

   (d) Suppose $f(z) = \sum_{n\geq 0} a_n z^n$ has radius of convergence 1, where $a_n \geq 0$. Show that $(f, \mathbb{D})$ has no direct analytic continuation to a function element (F, D) with $1 \in D$.

2. (a) State and prove Borel Caratheodory theorem.

   (b) Establish the relationship between the Riemann zeta function and the prime numbers.

   (c) Find the convergence exponent of the zeros of $\sin z$.

   (d) Suppose f be a function analytic at a point z_0 such that $f'(z_0) \neq 0$. Show that f is one-to-one in some neighbourhood of z_0.

   (e) State and prove the Schwarz reflection principle.

18/2/21

Director
Directorate of Open & Distance Learning
University of Kalyani

Biswajit Mallick
24.02.2021

Assistant Professor
Directorate of Open & Distance Learning
University of Kalyani

24.02.2021

Samares Pal

Samares Pal, Ph.D.
Professor
Department of Mathematics
University of Kalyani
Kalyani, Nadia-741235, W.B.