1. Mention the skills required to be an entrepreneur.
2. Explain the different types of control and the various steps in the control process.
3. Define the main business forms in tourism industry and their advantages and disadvantages.
4. Discuss the major responsibilities of a financial manager.
5. What are the different steps required to formulate a project.
6. What are the different components of Marketing Mix in Tourism? Explain.
7. Differentiate between tour operators and travel agent. What are the linkages in travel trade?
8. Discuss the importance of Public Relation in Tourism.
9. What are the managerial tasks involved in organising conventions? Comment.
10. Write notes on **Two** of the following:
    (क) लाभ-हानि पत्रक
    (ख) बलेस-शीट
    (ग) लाभ-विश्लेषण
    (घ) ब्रेक-एवें व्हाइट
    Profit and Loss statement
    Balance-Sheet
    Profitability Analysis
    Break Even Point
1. Discuss "Cultural involution" in the case of Bali and Toraja. What significance can it have in Indian case?

2. Give an account of the main features of Bhakti and Sufi movements in India.

3. Analyse the essential elements that constitute Indian music.

4. Account for the various forms of Indian Theatre. Examine the contribution of theatre in the promotion of tourism.

5. Write an essay on the stupa and rock-cut architecture in Ancient India.

6. Mention the roles and importance of the Museum in the promotion of Tourism.

7. Differentiate between Hindi Cinema and regional cinema. Analyse in brief the achievements of Indian Cinema.

8. Throw light on the salient features of north Indian cities in the 6th century B.C.

9. Describe the role of mass media in the development of Tourism.

10. Define customs and rituals. Discuss their roles and functions in Indian society.
Nalanda Open University  
Annual Examination - 2011  
B.A. Tourism (Honours), Part-III  
Paper-VII (Ecology, Environmental and Tourism) TS-5  

Time: 3.00 Hrs.                                                                                         Full Marks: 80/70

Answer any *Five Questions*. All questions carry equal marks.

किन्हीं पाँच प्रश्नो के उत्तर लिखिए। सभी प्रश्नों के अंक समान हैं।

1. What is an ecosystem? Give an account of its components.  
   परिस्थितिकी तनब क्या है? इसके घटकों का विवरण दीजिए।

2. Account for the effect of tourism on environment and suggest a few solutions for any adverse  
   impacts.  
   पर्यावरण पर पर्यटन के प्रभावों का वर्णन कीजिए एवं दुर्भाग्यों की दूर करने का सुझाव  
   दीजिए।

3. Define the word "Conservation and give a brief history of conservation in modern time.  
   “संरक्षण” को परिभाषित कीजिए एवं आधुनिक काल में संरक्षण का एक संक्षिप्त इतिहास  
   लिखिए।

4. Discuss the concept of responsible tourism. Elaborate its benefits.  
   उत्तरदायी पर्यटन की अवधारणा की विविधता कीजिए। इसके कार्य को सशक्त समझाइए।

5. Write an essay on the politics of Environment.  
   पर्यावरण की राजनीति पर एक निबंध लिखिए।

6. Analyse the role of visitor behaviour in environmental tourism.  
   पर्यटन में पर्यटकों के व्यवहार का भौतिक का विश्लेषण कीजिए।

7. Give an account of the impact of wildlife in India.  
   पर्यटन के भारत के वन्य जीवन पर प्रभाव का विवरण प्रस्तुत कीजिए।

   भारतीय पर्यटन नीति, 1982 एवं 1988 की संदर्भ योजना के विशेष अभिलक्षणों का वर्णन  
   कीजिए।

9. Examine the importance of islands and beaches for promoting tourism in India.  
   भारत में पर्यटन प्रोत्साहन के लिए दीवां एवं समुद्र तटों के महत्त्व का परीक्षण कीजिए।

10. Write any two notes of the following:  
    निम्नलिखित में से किन्हीं दो पर टिप्पणी लिखिए:  
    (a) Aquatic Biomes : जलीय वाणी  
    (b) Multiplier Effect : गुणात्मक प्रभाव  
    (c) Acts and Laws : अधिनियम तथा कानून
Answer any Five Questions. All questions carry equal marks.
किन्ही पाँच प्रश्नों के उत्तर लिखिए। सभी प्रश्नों के अंक समान हैं।

1. Define and distinguish between marketing and selling. Explain the importance of marketing in tourism industry.

2. How can you analyse the competitiveness of a market? Explain the strategic options to face competition.

3. Elucidate the importance of local bodies in implementing a tourism project.

4. Discuss the importance of society responsible marketing.

5. Explain the factors that need to be considered in product designing in tourism.

6. Analyse the importance of familiarization in tourism promotion.

7. Review the importance of technology in tourism marketing.

8. Write an essay on airlines marketing.

9. Account for the role of intermediaries in tourism industry.

10. Discuss the role of seasonality in tourism marketing.
1. Critically explain Harrod-Domar model.
   हर्ड-डोमर मॉडल की आलोचनात्मक व्याख्या करें।

2. Describe the characteristics of less developed countries. How can these be removed?
   अरुप-विकसित देशों के लक्षणों का वर्णन करें। इन्हें कैसे दूर किया जा सकता है?

3. Discuss the growth model of Adam Smith.
   एडम सिथ के विकास मॉडल की विविधता करें।

4. Analyse the objectives and achievements of land reforms programmes in India.
   भारत में भूमि सुधार कार्यक्रमों के उद्देश्यों एवं उपलब्धियों का विश्लेषण करें।

5. What is tariff? Describe different types of tariff.
   प्रातुलक क्या है? विभिन्न प्रकार के प्रातुलकों का वर्णन करें।

6. Throw light on the importance of external resources for economic development and explain its merits and demerits.
   आर्थिक विकास के लिए बाह्य संसाधनों के महत्व पर प्रकाश डालें तथा इसके गुण-विपरीतों की व्याख्या करें।

7. Throw light on the need for planning.
   नियोजन की आवश्यकता पर प्रकाश डालें।

8. Throw light on the importance of environment. Discuss the impact of population explosion on environment.
   पर्यावरण के महत्व पर प्रकाश डालें। जनसंख्या विस्फोट का पर्यावरण पर पड़ने वाले प्रभावों का विवेचन करें।

9. Write notes on any two of the following:
   निम्नलिखित में से किसी दो पर टिप्पणी लिखेंः
   (a) Measures for control of water pollution?
      जल-प्रदूषण नियंत्रण के उपाय?
   (b) Measures for control of air pollution
      वायु-प्रदूषण नियंत्रण के उपाय?
   (c) Sources of land pollution
      भूमि-प्रदूषण के स्रोत?

10. Describe the objectives of International Monetary Fund (IMF) and mention the effects of this institution on developing countries.
    अंतर्राष्ट्रीय मुद्रा कोष के उद्देश्यों का वर्णन करें तथा विकासशील देशों पर इस संस्था के प्रभावों का उल्लेख करें।
1. Explain the meaning of international economics and throw light on its importance.
   अन्तर्राष्ट्रीय अर्थशास्त्र का अर्थ स्पष्ट करें तथा इसके महत्व पर प्रकाश डालें।
2. Discuss the opportunity cost theory of international trade.
   अन्तर्राष्ट्रीय व्यापार के अवसर लागत सिद्धांत की विवेचना करें।
3. Explain the impact of international trade on economic development.
   अन्तर्राष्ट्रीय व्यापार का आर्थिक विकास पर पड़ने वाले प्रभावों का स्पष्ट करें।
4. What is terms of trade? Discuss its impact on underdeveloped countries.
   व्यापार की शर्त क्या है? अन्तर्राष्ट्रीय व्यापार के आर्थिक विकास पर पड़ने वाले प्रभावों की विवेचना करें।
5. What is quota? What are its different types? Explain its merits and demerits.
   कोटा क्या है? इसके विभिन्न रूपों की व्याख्या करें।
6. What is balance of payments? Explain the causes of disequilibrium in balance of payments.
   व्यापार का संतुलन क्या है? व्यापार का संतुलन के कारणों की व्याख्या करें।
7. What are the objectives and functions of World Bank? What benefits India has derived from World Bank.
   विश्व बैंक के उद्देश्य एवं कार्य क्या हैं? भारत की इससे क्या लाभ हुआ है?
8. What steps have been taken by the government of India in recent years for import substitution and export promotion? Explain.
   आयात प्रतिस्थापन और निर्यात संस्थापन के लिए हाल के वर्षों में भारत सरकार द्वारा क्या कदम उठाये गये हैं? व्याख्या करें।
   गुन्नर मर्डल, रूबल प्रेबिच और एच.डब्ल्यू. सिंगर के अनुसार अन्तर्राष्ट्रीय व्यापार अन्तर्राष्ट्रीय व्यापार के आर्थिक विकास में बाधाओं का उत्पन्न करता है तथा उनके कारण का परीक्षण करें।
10. Write notes on any two of the following:
    निम्नलिखित में से किन्हीं दो पर मर्जी के लिखें:
    (a) Convertibility of Rupee
    रुपये की परिवर्तनीयता
    (b) Optimum Tariff
    अनुकूलतम प्रतिस्थापन
    (c) Visible and invisible-trade
    दृश्य एवं अदृश्य व्यापार
Answer any Five Questions. All questions carry equal marks.

किन्हीं पाँच प्रश्नों के उत्तर लिखिए । सभी प्रश्नों के अंक समान हैं।

1. Describe economic and social infrastructure in rural areas.

2. What do you mean by regional disparity? Explain the efforts made by the government to reduce it.

3. Examine the progress and policy of land reforms in India.


5. Evaluate the progress of agriculture in India.

6. Describe main sources of agricultural credit in India.

7. What is meant by food security? What steps have been taken by the government to ensure food security?

8. Describe the drawbacks of public distribution system in India. How these drawbacks have been removed by targeted Public distribution system?

9. Throw light on the objectives and need for agricultural price policy.

10. What programmes have been implemented by the government of India to reduce rural unemployment? Explain.

नालंदा खुला विश्वविद्यालय का फैस्त दीक्षावार्त समारोह, दिनांक-21.02.2011 को निर्धारित
है, इसलिए आपके सिर्फ़ 8वें पत्र की परीक्षा अव दिनांक-22.02.2011 को 03.30 बजे से 06.30 बजे तक सम्पन्न होगी । सिर्फ़ आठवें पत्र की परीक्षा की तिथि एवं समय में परिवर्तन किया गया है । शेष परीक्षा पूर्व निर्धारित कार्यक्रम के अनुसार होंगी ।
1. Define industrialisation and describe its indicators. How would you classify industries?
2. What do you mean by public sector? Discuss its contribution to the economic development of India.
3. What is market structure? Explain the classification of market.
4. What is meant by regional imbalance? What efforts have been made by the government to remove it?
5. Explain the following: (निम्नलिखित की व्याख्या करें)
   (a) Agro-based industries  
   (b) Rural industrialization
6. What is industrial sickness? Throw light on its causes and suggest remedies.
7. What is institutional finance? Describe its main sources.
8. What is globalisation? Analyse its impact on Indian industries.
9. Evaluate economic reforms in India.
10. Give your acquaintance with industrial legislation. What are its objectives? Describe in brief the industrial legislations in India.
फिन्ही पाँच प्रश्नों के उत्तर लिखिए। सभी प्रश्नों के अंक समान हैं।

1. हिन्दी साहित्य के काल विभाजन पर प्रकाश दालिए।

2. आदिकाल की वीरगाथा काल कहना कहाँ तक उचित है। विचार कीजिए।

3. खुसरों के साहित्यिक अवदान पर प्रकाश दालिए।

4. ‘रामभक्ति शाखा’ से आप क्या समझते हैं? रामभक्ति शाखा की विशेषताओं पर प्रकाश दालिए।

5. रीतिमुक्त काव्यधर्म की विशेषताओं का परिचय दीजिए।

6. द्विवेदी युग की सामान्य प्रवृत्तियों पर प्रकाश दालिए।

7. छायावाद में निराला का स्थान निर्धारित कीजिए।

8. हिन्दी कहानी के उद्भव एवं विकास पर संक्षिप्त आलेख लिखिए।

9. नाटक की परिभाषा देते हुए उसके प्रमुख तत्त्वों पर प्रकाश दालिए।

10. संक्षिप्त टिप्पणी लिखिए:
    (क) भारतेन्दु
    (ख) प्रेमचंद
    (ग) अशोक
किन्हीं पाँच प्रश्नों के उत्तर दीजिए। सभी प्रश्नों के अंक समान हैं।

1. साधारणकरण की प्रक्रिया की स्पष्ट कीजिए।

2. शब्दालंकार किसे कहते हैं? उसके भेदों की चर्चा कीजिए।

3. अभिभा, लक्षणा एवं व्यंजना शब्द-शक्तियों में अंतर बताइये।

4. महाकाव्य एवं खंडकाव्य सम्बन्धी मान्यताओं को प्रस्तुत कीजिए।

5. मूल्य सिद्धांत की समीक्षा कीजिए।

6. “प्राणहीन आवृत्ति से नवीनता कहीं अच्छी है!” - इलियट के परम्परा वेध के संदर्भ में इस उद्धरण की समीक्षा कीजिए।

7. काव्यभाषा में “चन्द” से क्या समझते हैं? संक्षेप में उत्तर दीजिए।

8. भारतीय आलोचना पद्धति का संक्षेप में विश्लेषण कीजिए।

9. बालौसी जी के समीक्षा-सिद्धांतों की विवेचना कीजिए।

10. आचार्य रामचन्द्र शुक्ल ने आलोचना सम्बन्धी दृष्टिकोणों की व्याख्या कीजिए।

कोहोर
कुल पाँच प्रश्नों का उत्तर लिखिए जिनमें खंड-क से तीन एवं खंड-ख और खंड-ग से एक-एक प्रश्न का उत्तर देना अनिवार्य है। सभी प्रश्न के अंक समान हैं।

खंड-क
1. भाषा की उत्पत्ति के सम्बन्ध में अबतक जितने मत या वाद प्रचलित हैं, उनमें आप क्या मत समझते हैं और क्यों?
2. भाषा के स्वरूप पर विस्तार से चर्चा कीजिए।
3. भाषा विज्ञान की गौरव शाखाओं को रेखांकित कीजिए।
4. टिप्पणी लिखिए:
   श्रृंगि, प्रयल्ल, स्थान तथा बलात्काल
5. वाक्य में स्वरावस्था तथा पद-लेख के स्वरूप को उद्धारित कीजिए।
6. रूप परिवर्तन किसे कहते हैं? रूप-परिवर्तन के कारणों की सारणीबद्ध कीजिए।

खंड-ख
7. “हिंदी के विकास में क्षेत्रीय बोलियों का योगदान” विषय पर एक नीतिविश्वास आलेख लिखिए।
8. रचनात्मक भाषा किसे कहते हैं? उसकी क्या-क्या विशेषताएँ हैं?

खंड-ग
9. देवनागरी लिपि के विकास का संक्षिप्त रेखांकन प्रस्तुत कीजिए।
10. देवनागरी लिपि की विशेषताओं का उल्लेख कीजिए।

2011
किन्हीं पाँच प्रश्नों के उत्तर दीजिये। सभी प्रश्नों के अंक समान हैं।

1. प्रयोजनमूलक हिन्दी के बिविध स्वरूपों का विवेचन कीजिये।
2. प्रथम राजभाषा अधिनियम की महत्वपूर्ण व्यवस्थाएँ क्या हैं?
3. बिहार में विभागीय तथा न्यायपालिका में राजभाषा हिन्दी के प्रयोग की आयतन स्थिति का विवेचन कीजिये।
4. विवेचन क्या है? इसके प्रमुख अंगों का परिचय दीजिये।
5. निम्नलिखित दस्तावेज का प्रारूप प्रस्तुत कीजिये:–
   (i) विक्रय-पत्र (सेल डॉक्ट), इतिहास-पत्र (वृत्तियल), हस्त-पत्र (हैडनोट)
6. अनुशासनहीनता के लिए किसी कर्मचारी से स्पष्टीकरण पूछना है। स्पष्टीकरण पूछे जाने वाले ज्ञान का प्रारूप कीजिये।
7. राजपत्र निदानकारों के रूप में अपने भाषागत भी एक दिशा प्रस्तुत करें जिसमें कार्यालयों में कार्यों के सत्तर ओर सम्पूर्ण सम्पादन के लिए सुझाव दिया गया हो।
8. अनुवाद की प्रक्रिया पर प्रकाश दालिये।
9. निम्नलिखित अंग्रेजी शब्दों का हिन्दी पर्याय लिखिये:–
   (i) Labour (ii) Land-ceiling (iii) List
   (iv) Loan (v) Lock-up (vi) Plan
   (vii) Pass (viii) Power (ix) Media
   (x) Minimum (xi) Pension (xii) Net
   (xiii) Nominee (xiv) Nation (xv) Note
   (xvi) High Court
10. निम्नलिखित अवतरण का हिन्दी अनुवाद कीजिये:–
    There are a lot of divine virtues in this world and truthfulness is perhaps, the greatest divine virtue. Strict adherence to truth and truthfulness elevates a man to the height of divinity and enables him to reach the white throne of God. Saints and sages have spoken very highly of this great divine virtue which raises a man from the region of degeneration and glom to the height of godliness. The value of truthfulness is greater than riches and worldly possession. Its fragrance is sweetest.
Nalanda Open University
Annual Examination - 2011
B.A. History (Honours), Part-III
Paper-V (History of India 1757-1950)

Time: 3.00 Hrs.                                    Full Marks: 80/70

Answer any Five Questions. All questions carry equal marks.
किन्हीं पैंच प्रश्नों के उत्तर लिखिए। सभी प्रश्नों के अंक समान हैं।

1. "The battle of Buxar was more conclusive than the battle of Plassey". How far do you agree with this statement?
“बुक्सर का युद्ध प्लासी के युद्ध की तुलना में अधिक निर्णायक था”। इस कथन से आप कहां तक सहमत हैं?

2. Delineate the causes and consequences of the first Anglo-Maratha War.
प्रथम अंग्ल-मराठा युद्ध के कारणों और परिणामों की विविधता कीजिये।

3. Review the circumstances leading to the annexation of Sindh.
सिंध के अवसर की सर्वस्तितियों का पुनरावलोकन कीजिये।

अंग्ल-नेपाल सम्बन्ध पर एक निबन्ध लिखिये।

5. Examine the various reforms introduced by Lord William Bentick.
लोड विलियम बेंटिक के विभिन्न सुधारों का परीक्षण कीजिये।

6. Analyse the causes of failure of the revolt of 1857 and its effects.
1857 का विद्रोह की असफलता के कारणों एवं परिणामों का विश्लेषण कीजिये।

7. Give an estimate of the works of Lord Curzon.
लोड कर्ज़न के कार्यों का विवरण दीजिये।

8. What do you understand by the word "Dyarchy"? How did it work under the Government of India Act of 1919?
"डायर्चरी" का मतलब क्या हैं। इसका संचालन 1919 एक के भारत सरकार अधिनियम के अन्तर्गत किस प्रकार हुआ?

9. Give an account of the contributions of Dayanand Saraswati and Arya Samaj.
दयानंद सरस्वती और आर्य समाज के योगदानों का विवरण दीजिये।

10. Write short notes on any two of the following:
निम्नलिखित में किन्हीं दो पर विषयों लिखिये:–
(a) Advent of European Trading Companies in India.
भारत में यूरोपीय व्यापारिक कंपनियों का आगमन

(b) Ranjeet Singh
रणजीत सिंह

(c) Theosophical Society
थियोसफिकल सोसाइटी

(d) Act of 1935.
1935 एक के अधिनियम
Answer any Five Questions. All questions carry equal marks.

1. Account for the Anglo-French rivalry in India.
   भारत में आँग्ल-फ्रांसीसी संघर्ष का विवरण कीजिये।
2. Analyse the life and achievements of Hyder Ali.
   हेदर अली की जीवनी एवं उपलब्धियों का विश्लेषण कीजिये।
3. Describe the achievements of Ranjeet Singh.
   रणजीत सिंह की उपलब्धियों का वर्णन कीजिये।
4. Briefly discuss the Anglo-Burmese relations during the 19th century.
   19वीं शताब्दी में आँग्ल-बर्मा सम्बन्धों की संक्षिप्त समीक्षा करें।
5. Give an account of the reforms of Warren Hastings.
   वॉरेन हेस्टिंग्स के सुधारों का वर्णन कीजिये।
6. Examine the causes and consequences of the Revolt of 1857.
   1857 के विद्रोह के कारणों एवं परिणामों का परीक्षण कीजिये।
7. Review the domestic policy of Lord Curzon.
   लॉर्ड कर्जन की गृह नीति की समीक्षा कीजिये।
8. Delineate the main features of the constitution of India.
   भारतीय संविधान के मुख्य विशेषताओं को रेखांकित कीजिये।
9. Throw light on the development of Modern Education in India from 1854 to 1904.
   1854 से 1904 तक भारत में आधुनिक शिक्षा के विकास पर प्रकाश दालिये।
10. Write short notes on any two of the following:
    निम्नलिखित में किन्ही दो पर टिप्पणी लिखिये:–
    (a) Annexation of Sindh
        सिंध विलय
    (b) Act of 1935
        1935 का अधिनियम
    (c) Lord Lytton
        लॉर्ड लिटन
Answer any **Five** Questions. All questions carry equal marks.

किन्ही पाँच प्रश्नों के उत्तर लिखिए । सभी प्रश्नों के अंक समान हैं ।

1. भारतीय राष्ट्रीय कैरियर की स्थापना और उसकी स्थापना से सम्बन्धित विभिन्न विचारों का वर्णन कीजिये ।

   Describe establishment of Indian National Congress and various theories regarding its establishment.

2. भारतीय राष्ट्रीय आंदोलन में उग्रवादियों के उद्देश्य कार्य पड़ति एवं उपलब्धियों की रेखांकित कीजिये ।

   Trace out the aims, methods and achievements of The Extremists in the National Movement of India.

3. भारतीय राजनीति में कृतिकारी राष्ट्रवादी आंदोलन के उदय के कारण एवं 1906 ईठ से 1916 ईठ तक उनके कार्य प्रणाली पर प्रकाश डालिये ।

   Throw light on the causes of The Rise of Revolutionary Nationalist Movement in Indian Politics and their methods form 1906 to 1916.

4. होम स्ल आंदोलन में तिलक एवं एनी बेसेंट के योग्यांकों का मूल्यांकन कीजिये ।

   Give an evaluation of the contributions of Tilak and Annie Besant in Home Rule Movement.

5. भारतीय राजनीति में गांधी जी के प्रवेश का वर्णन कीजिये ।

   Discuss the emergence of Gandhiji in Indian Politics.

6. सविनय अवज्ञा आंदोलन के कारणों एवं महत्त्व का विश्लेषण कीजिये ।

   Analyse the causes and significance of Civil Disobedience Movement in India.

7. 1930 ईठ में 1947 ईठ के मध्य मुस्लिम लोग की मुस्लिम राजनीति पर निबन्ध लिखिये ।

   Write an essay on Muslim Politics between 1930 to 1947 by Muslim League.

8. आजाद हिंद फोर्म के गठन एवं उसकी भूमिका की व्याख्या कीजिये ।

   Explain the formation of Indian National Army and its functions.

9. कैबिनेट मिशन के महत्त्व का वर्णन कीजिये ।

   Discuss the importance of Cabinet Mission.

10. निम्नलिखित में किन्ही दो पर टिप्पणी लिखिये :-

    Write any two short notes of the following:-

    (a) बाल गंगाधर तिलक

    Bal Gangadhar Tilak

    (b) स्वराज दल

    Swaraj Party

    (c) क्रिप्स योजना

    Cripp’s Plan

    (d) मुस्लिम लीग

    Muslim League
1. Discuss the establishment of different political organizations which proved helpful in the establishment of Indian National Congress in 1885.
2. Discuss the role of extremists in the freedom struggle of India.
3. Trace the causes and consequences of the Partition of Bengal in 1905.
4. Assess the role of Mahatma Gandhi in the National Movement of India.
5. Review the causes and consequences of the Civil Disobedience Movement.
6. Give an account of the Quit India Movement of 1942.
7. Throw light on the causes of the genesis of the Socialist Movement in India and its significance.
8. Write an essay on Cripp's Mission.
9. Analyse the causes of the Partition of India.
10. Write any two short notes of the following: -
    (a) Non-Cooperation Movement
    (b) Establishment of Muslim League
    (c) Cabinet Mission
    (d) Causes of the Independence of India.
Answer any *Five* Questions, Selecting at least two question from each group "A" and "B". All questions carry equal marks.

प्रत्येक खंड "अ" एवं "ब" से कम से कम दो प्रश्नो का चयन करते हुए, किन्तु पाँच प्रश्नों के उत्तर लिखिए। सभी प्रश्नों के अंक समान हैं।

खंड-"अ" Group "A"

1. हजरत मोहम्मद की जीवनी एवं उपदेशों का विवरण ।
   Give an account of the life and teachings of Prophet Mohammad.

2. अब्बासी काल की स्थापनाकाल क्यों कहा जाता है? व्याख्या करें।
   Why is Abbasids period is known as "Golden Period"? Explain.

3. सऊदी अरबिया के आधुनिकीकरण में इन सऊद की भूमिका का परीक्षण कीजिये।
   Examine the role of Ibn Saud in the modernization of Saudi Arabia.

4. पश्चिमी एशिया में इंग्लिश तथा फ्रांस की संरक्षण की नीतियों का मूल्यांकन कीजिये।
   Evaluate the Mandatory system of England and France in western Asia.

5. उन्नीसवीं शताब्दी में चीन ब्रिटेन के सम्बन्धों की समीक्षा कीजिये।
   Review the relations between China and Britain during 19th century.

6. जापान के द्वार-भेदन के कारणों और परिणामों का वर्णन करें।
   Describe the causes and consequences of the opening of Japan doors of Japan.

खंड-"ब" Group "B"

7. सुवर्णदीप में भारतीय उपनिवेशों की स्थापना एवं विस्तार को रखावक कीजिये।
   Trace the establishment and expansion of Indian colonies in Suvarn-Dvip.

8. प्राचीन कम्बोडिया के समाज,धर्म एवं संस्कृति पर एक निबंध लिखिये।
   Write an essay on society, Religion and culture of ancient Cambodia.

9. इंडोनेशिया पर इंग्लिश की स्थापना का विवरण ।
   Account for the Dutch supremacy on Indonesia.

10. बर्मा के राष्ट्रीय आंदोलन पर प्रकाश डालिये।
    Throw light on the national movement of Burma.
Nalanda Open University  
Annual Examination - 2011  
B.A. History (Honours), Part-III  
Paper-VII [Brief History of Asia]  

Time: 3.00 Hrs.  
Full Marks: 80/70

Answer any Five Questions, Selecting at least two question from each group "A" and "B". All questions carry equal marks.

Group "A"

1. Elucidate the teachings and principles of Islam and role of prophet Mohammad in the spread of Islam in Arabian Peninsula.
2. Examine the contributions of Abbasids in the development of culture of Arab.
3. Assess the achievements of Razashah Pahalvi.
4. Throw light on the development of Arab-Nationalism between two world-Wars.
5. Explain the causes and effects of the modernization of Japan.

Group "B"

7. Analyse the political History of different Hindu dynasties in Java.
8. Examine the social, economic and cultural life of ancient Cambodia.
9. Describe different aspects of Indonesian National Movement.
10. Point out the American-Vietnamese War. Throw light on its importance.
Answer any *Five* Questions. All questions carry equal marks.

किन्ही पाँच प्रश्नों के उत्तर लिखिए | सभी प्रश्नों के अंक समान हैं |

1. जॉर्ज वाशिंगटन की जिन्हीं एवं उपलब्धियों का मूल्यांकण कीजिए.
   Assess the career and achievements of George Washington.

2. संयुक्त राज्य अमेरिका के लोकतन्त्र पद्धति के विकास में राष्ट्रपति जेक्सन के योगदानों का वर्णन कीजिए.
   Describe the contributions of President Jackson in the development of democratic system in U.S.A.

3. अमेरिका के राष्ट्रपति के रूप में अब्राहम लिंकन की भूमिका का आकलन कीजिए.
   Assess the role of Abraham Lincoln as the president of America.

4. पॉपुलिस्ट आंदोलन के स्वरूप और महत्व पर प्रकाश दालिये.
   Throw light on the nature and significance of Populist Movement.

5. थियोडोर रूजवेल्ट की जीवनी एवं उपलब्धियों का मूल्यांकन कीजिए.
   Give an evaluation of the life and achievements of Theodore Roosevelt.

6. विश्व शक्ति के रूप में संयुक्त राज्य अमेरिका के उदय के कारणों का परीक्षण कीजिए.
   Examine the causes of the emergence of U.S.A as World power.

7. 1914 ईंदो तक संयुक्त राज्य अमेरिका की विदेश नीति का वर्णन कीजिए.
   Discuss the foreign policy of United States of America till 1914.

8. 1929 ईंदो की आर्थिक मंदी पर निबंध लिखिये.
   Write an essay on the Economic Depression of 1929.

9. द्वितीय विश्व-युद्ध अमेरिका के प्रवेश के कारणों तथा इसके परिणामों का विश्लेषण कीजिए.
   Analyse the causes and consequences of the America's entry into the Second World War.

10. निम्नलिखित में किन्ही दो पर लघु टिप्पणी लिखिये.
    Write any two short notes of the following:
    (A) अमेरिकी क्रांति के कारण:
    Causes of the American Revolution.
    (B) अमेरिकी संविधान का महत्व:
    Significance of the American constitution.
    (C) अमेरिका की दास प्रथा:
    Slavery system in America.
    (D) नागरिक अधिकार आंदोलन:
    Civil Right Movement.
Nalanda Open University  
Annual Examination - 2011  
B.A. History (Honours), Part-III  
Paper-VIII [History of U.S.A. 1776-1945]

Time: 3.00 Hrs.  
Full Marks: 80/70

Answer any _Five_ Questions. All questions carry equal marks.

1. Examine the causes and effects of the war of American Independence.
2. Discuss the salient features of American Constitution.
3. Describe the reforms of George Washington.
5. What do you understand by American slave problem? Write an essay on the solution of this problem.
7. Examine the causes and consequences of the Spanish-American War.
8. Explain the Fourteen-point programme of President Wilson.
9. Discuss the role of U.S.A. in the Second World War.
10. Write short notes on any two of the following:
    (A) Economic Policy of Hamilton.  
    (B) Civil-war of America.  
    (C) Industrial Development of U.S.A.  
    (D) Populist Movement.
Nalanda Open University  
Annual Examination - 2011  
B.A. Political Science (Honours), Part-III  
Paper-V (Public Administration)  

Time: 3.00 Hrs.                                                                                  Full Marks: 80/70

Answer any *Five* Questions. All questions carry equal marks.

1. Discuss the role of Public Administration in a developing country like India.  
2. Discuss the Behavioral Approach to the study of Public Administration.  
3. Discuss the Human Relation theory of organization.  
4. Discuss Max Weber's theory of Bureaucracy.  
5. Explain the thought of Herbert Simon on Decision Making.  
6. Discuss different types of communication.  
7. What is training? What are their main objectives? Discuss.  
8. Discuss the methods of recruitment in civil services.  
9. Discuss the various stages of Budget making in India.  
10. What is Administrative Adjudication? Discuss its merits and demerits.
1. Explain Kautilya's views on kingship.
   राजतंत्र पर कौटिल्य के विचारों की व्याख्या कीजिए।

2. Write an essay on Kautilya's Council of Ministers.
   कौटिल्य के मंत्रिपरिषद पर एक निबंध लिखिए।

3. Critically examine Plato's theory of Education.
   प्लेटो के शिक्षा सिद्धांत का आलोचनात्मक परीक्षण कीजिए।

4. Discuss Plato's concept of Philosopher king.
   प्लेटो के दार्शनिक शासक की विवेचना कीजिए।

5. Discuss Aristotle's theory of Citizenship.
   अरिस्टटल के नागरिकता संबंधी सिद्धांत की विवेचना कीजिए।

   अरिस्टटल की दासता संबंधी अवधारणा का परीक्षण कीजिए।

7. Discuss the individualistic elements in Hobbes' political thought.
   होब्बस के राजनीतिक चिंतन में व्यक्तिवादी तत्वों की विवेचना कीजिए।

8. Why is Loke regarded as the founder of Liberalism?
   लॉक को उदारवाद का संस्थापक कौन कहा जाता है?

9. Examine individualist and socialist elements in Rousseau's political philosophy.
   रूसूस के राजनीतिक में व्यक्तिवादी तथा समाजवादी तत्वों का परीक्षण कीजिए।

10. Discuss J.S. Mill's theory of Liberty.
    जे.एस. मिल के राजनीतिक संबंधी विचारों की विवेचना कीजिए।
Nalanda Open University
Annual Examination - 2011
B.A. Political Science (Honours), Part-III
Paper-VII (Political Sociology)

Time: 3.00 Hrs.                                                                                  Full Marks: 80/70

Answer any Five Questions. All questions carry equal marks.

1. Define Political Sociology and describe its scope.
   राजनीतिक समाजशास्त्र की परिभाषित कीजिए तथा इसके क्षेत्र का वर्णन कीजिए।

2. Write an essay on Political Elite.
   राजनीतिक आभिज्ञ पर एक निबंध लिखिए।

3. Define Political Culture and discuss its different dimensions.
   राजनीतिक संस्कृति की परिभाषित कीजिए तथा इसके विभिन्न आयामों का विवेचन कीजिए।

4. Describe the nature and importance of Political Modernization.
   राजनीति आधुनिकीकरण की प्रकृति तथा महत्व का वर्णन कीजिए।

5. Describe the main stages of Political Development.
   राजनीति विकास के विकास की प्रमुख अवस्थाओं का वर्णन कीजिए।

6. Define Political Socialization and describe various agencies of Political Socialization.
   राजनीतिक सामाजीकरण की परिभाषित कीजिए तथा इसके विभिन्न आयामों का वर्णन कीजिए।

   राजनीतिक भर्ती का अर्थ अध्ययन कीजिए। राजनीतिक भर्ती के तरीके का वर्णन कीजिए।

8. Describe the meaning and importance of Political Communication.
   राजनीतिक संचार के अर्थ एवं महत्व का वर्णन कीजिए।

9. Discuss the social bases of Indian Politics.
   भारतीय राजनीति के सामाजिक आधारों की परिभाषा कीजिए।

10. Explain the characteristics of Bureaucracy.
    नीतिकर्ता की विशेषताओं की व्याख्या कीजिए।

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: सिर्फ 8वें पत्र की परीक्षा की लिथि में परिवर्तन की सूचना :

नालंदा खुला विश्वविद्यालय का अप्रूव दीर्घकालीन समारोह, दिनांक-21.02.2011 को निर्धारित है, इसलिए आपके सिर्फ 8वें पत्र की परीक्षा अब दिनांक-22.02.2011 को 03.30 बजे से 06.30 बजे तक सम्पन्न होगी। सिर्फ आठवें पत्र की परीक्षा की लिथि एवं समय में परिवर्तन किया गया है। शेष परीक्षा पूर्व निर्धारित कार्यक्रम के अनुसार होगी।
Nalanda Open University  
Annual Examination - 2011  
B.A. Political Science (Honours), Part-III  
Paper-VIII (Indian Political Thought)  

Time: 3.00 Hrs.  
Full Marks: 80/70

Answer any Five Questions. All questions carry equal marks.

1. Discuss Kautilya's 'Mandal' theory.
कौटिल्य के ‘मंडल’ सिद्धांत की विवेचना कीजिए।

2. Discuss Tilak's idea on 'Swaraj'.
‘स्वराज’ पर तिलक के विचारों का विवेचन कीजिए।

3. Describe political ideas of Swami Vivekanand.
स्वामी विवेकानन्द के राजनीतिक विचारों का वर्णन कीजिए।

4. Explain M.N.Roy's ideas on new Humanism.
नरेन्द्र मानववाद संबंधी नए मनोरंजन के विचारों की व्याख्या कीजिए।

5. Why is Raja Ram Mohan Roy regarded as the 'Father of Modern India'?
राजा राम मोहन राय को ‘आधुनिक भारत का जनक’ क्यों कहा जाता है?

6. Examine Raja Ram Mohan Ray's religious, social, economic and political ideas.
राजा राम मोहन राय के धार्मिक, सामाजिक, आर्थिक तथा राजनीतिक विचारों का परीक्षण कीजिए।

7. Describe social and political ideas of Mahatma Gandhi.
महात्मा गांधी के सामाजिक तथा राजनीतिक विचारों का वर्णन कीजिए।

8. Examine Jawaharlal Nehru's contributions to Indian political thought.
भारतीय राजनीतिक चिंतन के प्रति जवाहरलाल नेहरू के योगदानों का परीक्षण कीजिए।

9. Discuss Lohia's contributions to Indian political thought.
भारतीय राजनीतिक चिंतन के प्रति लोहिया के योगदानों का परीक्षण कीजिए।

10. Examine 'Six-Fold Policy' of Kautilya.
कौटिल्य के षड्गुण सिद्धांत का परीक्षण कीजिए।

इसमें शामिल हैं:  
- Kautilya's 'Mandal' theory.  
- Tilak's ideas on 'Swaraj'.  
- Swami Vivekanand's political ideas.  
- M.N.Roy's ideas on new Humanism.  
- Raja Ram Mohan Roy's religious, social, economic and political ideas.  
- Mahatma Gandhi's social and political ideas.  
- Jawaharlal Nehru's contributions to Indian political thought.  
- Lohia's contributions to Indian political thought.  
- Kautilya's 'Six-Fold Policy'.
Answer any Five Questions. All questions carry equal marks.

1. What do you mean by Psychological Research? Discuss its Characteristics.
2. What is data analysis? Explain its various operations.
3. Distinguish between research problem and research hypothesis.
4. What do you mean by variable? Distinguish between quantitative variables and qualitative variables.
5. Discuss the nature and characteristics of corelational research design.
6. Discuss the nature and types of observation as tools of data collection.
7. Write an essay on techniques of Sampling.
8. Explain the concept of psychological Test. Describe with main types.
9. What is survey research? Discuss types of Survey research.
10. Write short notes on any Two of the following:

(a) Sources for locating research problem
(b) Dependent variables
(c) Quota Sampling

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Nalanda Open University
Annual Examination - 2011
B.A. Psychology (Honours), Part-III
Paper-V

Time: 3.00 Hrs.                                                                                         Full Marks: 80/70
Nalanda Open University
Annual Examination - 2011
B.A. Psychology (Honours), Part-III
Paper-VI

Time: 3.00 Hrs.                                                                                         Full Marks: 80/70

Answer any Five Questions. All questions carry equal marks.

1. Discuss the relation between clinical psychology and counseling psychology.
   नैदानिक मनोविज्ञान एवं परामर्श मनोविज्ञान में सम्बन्ध का वर्णन करें।

2. Discuss the role of clinical psychologists in clinics.
   उपचार गृहों में नैदानिक चिकित्सकों की भूमिका का वर्णन करें।

3. Discuss the critical appraisal of psychodynamic model and behavioural mode.
   मनोगत्यात्मक एवं व्यवहारात्मक मॉडलों का आलोचनात्मक मूल्यांकन करें।

4. Distinguish between structured and unstructured interview.
   संरचित तथा असंरचित साक्षात्कार साक्षात्कार में अंतर करें।

5. Describe the merit and demerits of Thematic Apperception Test (TAT)
   विषय आत्मशक्ति परीक्षण के गुण तथा देशों की व्याख्या करें।

6. Discuss the psychoanalytical treatment method of freud.
   फ्रैड का मनोविश्लेषणात्मक उपचार विधि का वर्णन करें।

7. Discuss the Joseph Wolpe's method of systematic desensitization.
   जोसेफ वोल्प के क्रमबद्ध असंवेदनशील विधि वर्णन करें।

8. Describe the merit and demerit of Rational Emotive theory.
   रेशमल इमोटिव चिकित्सा के गुण तथा देशों की व्याख्या करें।

9. Write an essay on Humanistic existential therapies.
   मानवतावादी अनुभावात्मक चिकित्सा पर एक निबंध लिखें।

10. Discuss the merit and demerits of Group Therapy.
    समूह चिकित्सा के गुण तथा देशों का वर्णन करें।

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Nalanda Open University
Annual Examination - 2011
B.A. Psychology (Honours), Part-III
Paper-VII

Time: 3.00 Hrs.                                                                                         Full Marks: 80/70

Answer any Five Questions in all. Selecting atleast two questions from each Group.

"Group-A" (खण्ड-अ)

1. Discuss the role of psychologists in Industrial organization.
2. What is psychological Test? Discuss its different types.
3. Discuss the measures to prevent accident.
4. Discuss the nature and characteristics of Fatigue.
5. Describe the principles of Time and Motion Study.

"Group-B" (खण्ड-ब)

6. What re the different problems of Educational Psychology? Discuss.
7. Discuss the role of Reward and Punishment in learning.
8. Discuss the Educational Implications of Transfer of Training.
9. What do you mean by Exceptional Children? Discuss the different types of exceptional children.
10. Discuss the functions of educational guidance.

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<td>2 बजे से 6 बजे काउंसिलिंग वर्ग</td>
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<td>पटना महाविद्यालय का मनोविज्ञान विभाग</td>
<td>2 बजे से 6 बजे प्रयोगिक परीक्षा</td>
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</tbody>
</table>
1. Explain the concept of Social Problem. Elucidate the main causes of social problem?
2. Explain the concept of poverty. Describe the causes of poverty in India.
3. Discuss measures for the removal of problems of women in India.
4. What is caste-based conflict? Give your opinion on caste based conflict in India.
5. What is the custom of Dowry? Give its sociological analysis.
6. Discuss the historical trend of Regional disparity in India.
7. What do you understand by Inter-generation and intra-generation conflict? Discuss its causes.
8. What is white collar crime? Describe its characteristics.
9. What are Natural Disasters and what are their types? Describe.
10. Write notes on any two of the following:-

(a) Problem of pollution
(b) Corruption
(c) Divorce
(d) Ethnic Diversity
1. Discuss the definition, subject matter and scope of Rural Sociology.

2. Discuss the approaches to the study of Rural and Urban Sociology.


4. Discuss the scope of Urban Sociology.

5. Describe the empirical studies on family in India. What are their emerging trends?

6. What is Jajmani system? Analyse its characteristics.

7. Write a note on Rural Urban continuum.

8. What is meant by Slum? Discuss its causes and Ill-effects.

9. Explain the concept of rural power structure. What are the bases of rural power structure?

10. Write notes on any two of the following:
- Urban society
- Tradition Rural Family
- Migration
- Rural Society
Answer any Five Questions. All questions carry equal marks.

किन्ही पाँच प्रश्नों के उत्तर लिखिए। सभी प्रश्नों के अंक समान हैं।

1. Explain the difference between Directive Principles of State Policy and Fundamental Rights.
   राज्य नीति के निर्देशक तत्त्व एवं मूल अधिकार में अंतर स्पष्ट कीजिए।

   भारतीय समाज पर सामाजिक विधान के प्रभाव का विश्लेषण कीजिए।

3. What is Liberalisation? How are Liberalisation and Globalisation related to one another.
   उदारीकरण क्या है? उदारीकरण एवं विश्वव्यापीकरण एक दूसरे से किस प्रकार सम्बन्धित है?

4. What do you understand by Health Care? Describe the importance of Public Health Care Schemes.
   स्वास्थ्य सुरक्षा क्या समझते हैं? जन स्वास्थ्य योजनाओं के महत्व का वर्णन कीजिए।

5. What do you understand by Scheduled Tribes? Illuminate the constitutional provisions meant for them.
   अनुसूचित जनजाति से क्या समझते हैं? उनसे संबंधित संविधानिक प्रावधानों पर प्रकाश डालिए।

6. Analyse the problems of Indian women.
   भारतीय महिलाओं की समस्याओं की विवेचना कीजिए।

7. What is Fundamental Right? Describe its importance.
   मूल अधिकार क्या है? इसके महत्व की चर्चा कीजिए।

8. Discuss the main provisions of Employees State Insurance Act 1948.
   कर्मचारी राज्य बीमा अधिनियम 1948 की मुख्य प्रावधानों का उल्लेख कीजिए।

9. Write a note on the condition of children in India.
   भारत में बच्चों की परिस्थिति पर टिप्पणी लिखिए।

    बिहार में राज्य स्तर के सरकारी समाजकल्याण संगठनों का विवरण दीजिए।

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: सिर्फ़ 8वें पत्र की परीक्षा की लिंक में परिवर्तन की सूचना :

नालंदा खुला विश्वविद्यालय का फटका दीदान्त समारोह, दिनांक-21.02.2011 को निर्धारित है, इसलिए आपके सिर्फ़ 8वें पत्र की परीक्षा अब दिनांक-22.02.2011 को 03.30 बजे से 06.30 बजे तक सम्पन्न होगी। सिर्फ़ आठवें पत्र की परीक्षा की लिंक एवं समय में परिवर्तन किया गया है। शेष परीक्षा पूर्व निर्धारित कार्यक्रम के अनुसार होगी।
Define Industrial Sociology. Discuss its importance in India.


Discuss the main characteristics of Indian Industrial Labour.

What is work? Examine different viewpoints towards work.

Define motivation. Analyse the importance of Motivation.

What is meant by Management? Discuss its organization and functions.

Industrial conflict is a natural characteristics of Industrial Organization. Discuss.

Describe merit-demerits of various methods of settlement of Industrial disputes.

Give a brief account of the growth of collective Bargaining in India.

Analyse the main provisions of Factories Act, 1948.
1. Explain the concept of Marriage. Describe the historical evolution as well as major functions of marriage.

2. What do you understand by Mate (life partner) selection? Describe the major determinants of selection of mate (Life Partner)

3. Describe the elements of value structure in family.

4. Define Marital Roles. What changes are taking place in roles of male-female today?

5. What do you understand by family life cycle and development functions of family? Discuss.

6. Describe the family welfare policies in different five year plans.


8. Describe definition and types of Abortion.

9. What is Divorce? Analyse the causes of divorce.

1. Describe the regional scene of HIV/AIDS.
   एच.एच.वाई.एच.एस. के क्षेत्रीय परिदृश्य का वर्णन करें।

2. Discuss the stages of growth of HIV/AIDS.
   एच.एच.वाई.एच.एस. के विकास के चरणों का विवरण करें।

3. Describe the traditional idea related with HIV/AIDS.
   एच.एच.वाई.एच.एस. से सम्बन्धित पारम्परिक धारणाओं का वर्णन करें।

4. Describe the history of HIV/AIDS in India.
   भारत में एच.एच.वाई.एच.एस. के इतिहास का वर्णन करें।

5. Describe the work plan for the prevention of transmission of HIV/AIDS from mother to child.
   माँ से शिशु में एच.एच.वाई.एच.एस. संचरण के रोकथाम की कार्यनीतियों का वर्णन करें।

6. Evaluate the efforts of the Indian Govt. for the prevention of HIV/AIDS.
   एच.एच.वाई.एच.एस. की रोकथाम के लिये भारत सरकार के प्रयासों का मूल्यांकन करें।

7. Describe the necessity for precaution in the prevention of HIV/AIDS.
   एच.एच.वाई.एच.एस. में संचरण की आवश्यकता का वर्णन करें।

8. What is the need of monitoring in HIV/AIDS? Discuss.
   एच.एच.वाई.एच.एस. में सतत देखभाल की क्या आवश्यकता है? विवरण करें।

9. Describe the role of medical system in HIV/AIDS.
   एच.एच.वाई.एच.एस. में चिकित्सा प्रणाली की भूमिका का वर्णन करें।

10. Write notes on any two of the following:
   निम्नलिखित में से किसी दो पर नोट लिखें।
   (i) एच.एच.वाई.वाई. में परामर्श (Counselling in HIV)
   (ii) एच.एच.वाई. और कानून (HIV and law)
   (iii) हीमोफिलिया (Hemophilia)
Nalanda Open University  
Annual Examination - 2011  
B.A. Social Work (Honours), Part-III  
Paper-VI (Substance Abuse & Counselling)  

Time: 3.00 Hrs.  
Full Marks: 80/70

Answer any Five Questions. All questions carry equal marks.

1. Analyse the relationship between HIV/AIDS and drug Abuse.  
2. What do you understand by toxic Drug? Describe the wrong notional about Drug abuse.  
3. Analyse the causes of illegal trade of Toxic Drug.  
4. Describe the national scene of Drug abuse.  
5. Examine the effect of drug abuse on reproductive health.  
7. What is the impact of Drug abuse on community? Discuss.  
8. Describe the role of Non governmental Organizations in the prevention of drug abuse.  
9. What do you understand by communication? Narrate the functions of communication.  
10. Write a note on the history of communication.
Answer any Five Questions. All questions carry equal marks.

1. What is Disaster? Evaluate the different views on the nature of disaster.

2. What do you understand by national perspective of disaster? Describe.

3. Give a brief account of disaster-situations in the Indian subcontinent.

4. How can ill-effects of floods be minimised? Discuss.

5. What do you understand by Disaster warning system? Analyse in detail.

6. Discuss the concept and importance of leadership in disaster-situation.

7. Discuss the importance of stock-piling in disaster management.

8. What do you understand by community participation? Why is it needed in disaster management?

9. Write an essay on need of relief and rehabilitation in disaster.

10. Write a note on the role of air force, army and navy in disaster management.
Answer any Five Questions. All questions carry equal marks.

1. Describe the damages caused to buildings, infrastructural facilities and bridges by the Uttarakashi earthquake.

2. State the objectives of measures initiated by the Govt. to provide relief to earthquakes affected people.

3. Describe the specific problems that arise on account of floods in India.

4. What measures for relief should be arranged during post-land slide situations? Explain.

5. Discuss the plans of relief and rehabilitation programme in relation to earthquake.


7. What is Area mapping? Describe the use of zoning of accident area.

8. What is Dengue? What are the causes for the spread of Dengue in India?

9. Define Rehabilitation. Why is Rehabilitation Package required in various disasters?

10. Describe the main programmes of Social Rehabilitation Plan.
Nalanda Open University  
Annual Examination - 2011  
B.A. /B.Sc. Geography (Honours), Part-III  
Paper-V (Geographical thought and Applied Geography)

Time: 3.00 Hrs.                                                                Full Marks: 80/75

Answer any Five Questions in all, selecting three from section 'A' and two from section 'B'. All questions carry equal marks.

Section-'A' (खण्ड 'अ')

1. Discuss the contributions of Karl Ritter in the development of modern Geography. आधुनिक भूगोल के विकास में कार्ल रिटर के योगदानों का वर्णन करें
2. Discuss the contribution of Blache towards geographical thought. मौलिक विचार के विकास में ब्लाल के योगदानों की चर्चा कीजिए
3. 'Ratzel was an environmental-deterministic'. Justify the statement. 'रात्सेल एक पर्यावरणीय निर्धारी' था। इस कथन की पुष्टि कीजिए
4. Explain the dualism of determinism and possibilism. निर्धारण एवं संभवनाओं के द्वितीय भाग भी व्याख्या कीजिए
5. Explain various types of models with examples. विभिन्न प्रकार के मॉडल्स का उदाहरण सहित व्याख्या कीजिए
6. Critically explain the agriculture location theory of von-Thunen. वॉन थूनेन की कृषि अवस्थिति सिद्धांत की आलोचनात्मक विवेचना कीजिए

Section-'B' (खण्ड 'ब')

7. What do you mean by applied Geography? Clarify the meaning of Applied Geography. आवंतिक भूगोल से आप क्या समझते हैं? आवंतिक भूगोल का अर्थ समझ कीजिए
8. Explain the quality of agricultural land. What are its impact on agricultural production? कृषि भूमि की गुणवत्ता की व्याख्या कीजिए। कृषि के उत्पादन पर इसका क्या प्रभाव पड़ता है
9. Write an essay on man-environment relationship. मानव-विश्वव्यवस्था सम्बन्ध पर एक निबंध लिखिए
10. Throw light on industrial situation in India. भारत में विद्युत प्रकाश डालिए

कृपया
Answer any Five Questions in all, selecting three from section 'A' and two from section 'B'. All questions carry equal marks.

Section-'A' (खण्ड ‘अ’)
1. Explain the economic and social activities of man in the mountainous region.
2. Give an account of the main physical, economic and cultural features of the monsoon or the desert region.
3. Discuss the pattern of the growth of population in the world.
4. Throw light on the causes and consequences of international migration.
5. Describe briefly the main cultural regions of the world.
6. Describe the habitation, economic and social conditions of Bushman.

Section-'B' (खण्ड ‘ब’)
7. Give an account of the evaluation of rural settlement in the Ganga valley.
8. Discuss the causes and consequences of rural-urban migration.
9. Present a geographical account of the evolution and growth of urbanisation in India.
10. Describe urban functions and its classification.
Nalanda Open University  
Annual Examination - 2011  
B.A. / B.Sc. Geography (Honours), Part-III  
Paper-VII (Population Geography & Bio-Geography)

Time: 3.00 Hrs.  
Full Marks: 80/75

Answer any **Five** Questions in all, selecting **three** from section 'A' and **two** from section 'B'. All questions carry equal marks.

Section-'A' (खण्ड ‘अ’)

1. Define population geography and throw light on its scope.

2. Discuss the population growth pattern in the developed and developing nations.

3. Discuss different types of population projection.

4. What do you mean by population dynamics? How do fertility and mortality influence it?

5. Throw light on the problems arising out of growing urban population.

Section-'B' (खण्ड ‘ब’)

7. Give an account of the meaning and scope of bio-geography.

8. Classify Indian soils and discuss their salient features.


10. What is the impact of social forestry on local ecology? Explain in detail.

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Programme for B.A/ B.Sc. (Geography) Hons.
Counselling Class & Practical Exam, 2011

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Venue: Department of Geography, Patna College, Patna (Patna University)
Nalanda Open University  
Annual Examination - 2011  
B.A. /B.Sc. Geography (Honours), Part-III  
Paper-VIII (Environmental Geography)  

Time: 3.00 Hrs.                                                                Full Marks: 80/75  

Answer any Five Questions in all, selecting three from section 'A' and two from section 'B'. All questions carry equal marks.

खण्ड ‘अ’ से तीन तथा खण्ड ‘ब’ से दो प्रश्नो को चुनकर कुल पाँच प्रश्नो के उत्तर लिखिए। सभी प्रश्नो के अंक समान हैं।

Section-'A' (खण्ड ‘अ’)

1. Describe the scope of study of ecology.
   पारिस्थितिकी के अध्ययन क्षेत्र का वर्णन कीजिए।

2. Explain the causes of air and water pollution and describe their adverse effects.
   वायु प्रदूषण तथा जल प्रदूषण के कारणों को स्पष्ट करते हुए उनके प्रतिकूल प्रभाव का वर्णन कीजिए।

3. What are the impact of human activities on environment? Describe them.
   मानवीय क्रिया कलापों का पर्यावरण पर क्या प्रभाव पड़ता है? उनका वर्णन कीजिए।

   प्राकृतिक पारिस्थितिकी तंत्र और कृतिम पारिस्थितिकी तंत्र में क्या अंतर है? वर्णन कीजिए।

5. Give an account of various aspects and causes of environmental degradation.
   पर्यावरण के हास के विभिन्न पक्षों तथा कारणों का विवरण दीजिए।

6. What are the causes of global warming? What is essential for controlling it?
   ग्लोबल वॉर्मिंग के क्या कारण हैं? इसके नियंत्रण के लिए क्या करना आवश्यक है?

Section-'B' (खण्ड ‘ब’)

7. Critically examine the concept of region.
   प्रदेश की संकल्पनाओं का आलोचनात्मक परीक्षण कीजिए।

8. Discuss the sustainable development plan in the context of regional development.
   विकास के हाथ के विषय में विकास के नियंत्रण की व्यवस्थापन के सन्दर्भ में विवेचना कीजिए।

9. Define Multi-level planning and give a note on its evolution in India.
   सर्वेक्षण की संकल्पना को परिवर्तित कीजिए तथा भारत में इसके उद्वेद्य पर टिप्पणी दीजिए।

10. Make a comparative study of formal and functional regions.
    कार्यालयीय तथा कार्यालयीय प्रदेशों का तुलनात्मक अध्ययन प्रस्तुत कीजिए।

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"budleafboldnw/budleafboldnw/budleafboldnw"
किन्हीं पांच प्रश्नों के उत्तर लिखिए। सभी प्रश्नों के अंक समान है।

Answer any five Questions. All Questions carry equal marks.

1. वस्त्र विज्ञान की परिभाषित कीजिए तथा इसके वर्गीकरण का उल्लेख कीजिए।
   Define Textile and describe its classification.

2. कपास की भौतिक एवं रसायनिक विशेषताओं का विवेचन कीजिए।
   Discuss the Physical and Chemical property of Cotton.

3. पेलीमाइड क्या है? इसे 66 पेलिमाइड क्यों कहा जाता है? इसकी भौतिक विशेषताओं का वर्णन कीजिए।
   What is Polyamide? Why is it called 66-Polymer? Describe its physical properties.

4. धागा के निर्माण की प्रक्रिया का विवेचन कीजिए।
   Discuss the process of the making of yarn.

5. धागा क्रमांक प्रणाली से आप क्या समझते हैं? इसकी कार्य प्रणाली की व्याख्या कीजिए।
   What do you understand by yarn numbering system? Describe its working?

6. सिलाई मशीन की खाराईयों का उल्लेख कीजिए। उन्हें सुधारने के उपायों का वर्णन कीजिए।
   Enumerate the defects of sewing machine. Describe the measures for their eradication.

7. ड्राफ्टिंग का तात्पर्य क्या है? ड्राफ्टिंग की विधि का वर्णन कीजिए।
   What is the meaning of drafting? Describe the method of drafting?

8. पेपर पेट्न की उपयोगिता का उल्लेख कीजिए। इसे तैयार करने हेतु आवश्यक नियमों का परीक्षण कीजिए।
   Describe the utility of Paper Pattern. Examine the essential rules for preparing it.

9. आधोलिखित में से किसी दो पर संक्षिप्त टिप्पणियाँ लिखिए:—
   Write short notes on any two of the following:
   (क) एक्रिलिक रेशा (Acrylic Fibres)
   (ख) लिनेन (Linen)
   (ग) डेक्रॉन (Decron)

10. विशेष उद्देश्य के लिए वस्त्रों की परिष्कृति की प्रक्रिया एवं महत्व पर एक निबंध लिखिए।
    Write an essay on the process and importance of special purpose finishing of Textiles.
Nalanda Open University
Annual Exam-2011,
BA/ B.Sc., Home Science (Hons) Part-III
Paper-VI [बाल मनोविज्ञान]

Time: 3Hrs Full Marks: 80/70

किन्ही पाँच प्रश्नों के उत्तर लिखिए। सभी प्रश्नों के अंक समान है।

**Answer any five Questions. All Questions carry equal marks.**

1. बाल मनोविज्ञान के विषय-विस्तार को संक्षेप में बताएं।
   Describe briefly the scope of the child psychology.

2. बाल मनोविज्ञान की किंही दो विधियों की व्याख्या करें।
   Describe any two methods of child psychology.

3. बाल मनोविज्ञान की विधि के रूप में निरीक्षण विधि की आलोचनात्मक व्याख्या करें।
   Critically evaluate observation method as a method of child psychology.

4. विकास की प्रभावित करने तथा वंशानुगत या आनुवंशिक कारकों की भूमिका का विवेचन कीजिए।
   Discuss the role of heredity or genetic factor that influences development.

5. अधिग्रह की प्रभावित करनेवाले व्यविगत तथा वातावरण सम्बन्धी कारकों की विवेचन कीजिए।
   Discuss the personal and environmental related factors influencing learning.

6. सांख्यिक अनुक्रमण या अनुक्रम सिद्धांत की विवेचना कीजिये।
   Discuss the Operant conditioning theory of learning.

7. सामाजिक विकास की प्रमुख कसौटियों का वर्णन करें।
   Discuss the main criteria of social development.

8. तृढ़ की प्रभावित करने वाले कारकों पर एक विवरणात्मक टिप्पणी लिखें।
   Write a descriptive note on factors influencing learning.

9. खेल के किंही दो सिद्धांतों की आलोचनात्मक व्याख्या करें।
   Critically explain any two theories of play.

10. निम्नांकित में किंही दो पर संक्षिप्त टिप्पणियां लिखें:–
    Write short notes on any two of the following:-
    (a) Chain learning सीधा अधिग्रह
    (b) Trial Error theory प्रयाल त्रुटि सिद्धांत
    (c) Problem of learning अधिग्रह की समस्याएँ
Answer any five Questions. All Questions carry equal marks.

1. प्रसार शिक्षा के क्षेत्र पर एक निबन्ध लिखिये।
Write an essay on scope of extension education.

2. “प्रसार शिक्षा के दर्शन” पर एक निबन्ध लिखिये।
Write an essay on "Philosophy of Extension Education".

3. प्रसार शिक्षा के मूलभूत सिद्धांतों का स्पष्ट कीजिये।
Explain the basic principles of extension education.

4. प्रसार शिक्षण विधियों के वर्गीकरण का विवेचन कीजिये।
Discuss the classification of extension teaching methods.

5. श्रव्य-दृश्य साधन की परिभाषित कीजिये तथा प्रसार शिक्षा में इसके महत्व की विवेचना कीजिये।
Define Audio-Vidual Aids and discuss its importance in extension teaching.

6. दृश्य-श्रव्य साधनों के वर्गीकरण पर एक निबन्ध लिखिये।
Write an essay on classification of Audio-Visual Aids.

7. ग्रामीण समाजशास्त्र से आप क्या समझते हैं? इसके क्षेत्र की विवेचना कीजिये।
What do you understand by Rural Sociology? Discuss its scope.

8. एक समूह के नेता की भूमिका, कार्यों एवं गुणों का वर्णन कीजिये।
Describe role, function and merits of leader of a group.

9. मूलभूत की परिभाषित कीजिये तथा इसके सिद्धांतों की विवेचना कीजिये।
Define evaluation and discuss its principles.

10. कार्यरत नियोजन के सिद्धांत का वर्णन कीजिये।
Describe principles of programme planning.

Notice for B.A./B.Sc. Home Science (Hons.), Part-III
Counselling Classes cum Practical

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Venue: 12th Floor, Biscomaun Tower, Nalanda Open University' Comp. Lab.
Nalanda Open University
Kinky panch prashno ke uttar likhe | Sthi prashno ke andhy saman hai

Answer any five Questions. All Questions carry equal marks.

1. Pravara ke paribhagit kiiijet tatha pravara me sadvyo ka sthan evam sambandh nirmilpit kiiijet.

Define family and establish place and relationship of family members in the family.

2. Pravara me badlaav ke karaon par ek nivnbh likhe.

Write an essay on factors of changes in the family.

3. Syutak evam ekaki pravara ka tulanatmak vivarana prastut kiiijet.

Present a comparative statement of joint family and Nuclear family.

4. Vivah ke prakaraon par ek nivnbh likhe.

Write an essay on types of marriage.

5. Vaivahik samayojan ka abhavaran ki vibichana kiiijite.

Discuss the concept of Matrimonial Adjustment.

6. Vivah vishved par ek nivnbh likhe.

Write an essay on divorce.

7. Pravaraik sambandho ke vibhinn prakaraon ki vibichana kiiijet tatha pravaraik sambandho me giravat ke karaon ki vyakhya kiiijet.

Discuss the various forms of family relationships and explain the causes of deterioration of family relationships.


Discuss the determinants of parent-child relationship.

9. Pah me aynuusasan ko prabhaavit karne wale karaon ki vibichana kiiijet.

Discuss factors influencing discipline in home.


Discuss the factors influencing adjustment during old age.
Answer any Five Questions. All questions carry equal marks.

1. Use power service solution method to solve Legendre's differential equation. What is the compact form of Legendre's polynomial of \( l \)th order.
2. What is Dirac delta function. Give all its properties. Also, prove that \( x \delta(x) = 0 \).
3. What is analytic function? Derive Cauchy-Riemann conditions for analytic function.
4. State and prove Cauchy's Integral theorem.
5. State and prove Laurent's theorem.
6. Describe the algebraic properties of tensors of arbitrary rank using both covariant and contravariant indices.
7. Write down the Hamilton Function for (a) a simple harmonic oscillator & (b) a spherical pendulum. Then, set up the Hamilton's canonical equations and find expressions of time periods.
8. What are poisson's brackets? State and prove some of its important properties.
9. Discuss the free rotation of a symmetrical rigid body using Lagrangian method. Find the angular velocity for uniform precession and the frequency of small nutations about the uniform precession.
10. Apply the theory of action-angle variables to find the time period of small oscillations of a simple pendulum.

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Nalanda Open University  
Annual Examination - 2011  
B.Sc. Physics (Honours), Part-III  
Paper-VI (Quantum Mechanics & Statistical Mechanics)

Time: 3.00 Hrs.                                                                                         Full Marks: 80/75

Answer any Five Questions. All questions carry equal marks.

1. State and explain correspondence principle in quantum mechanics. What are the 3 important postulates of quantum mechanics?

2. Show that if any two quantum mechanical Hermitian operators corresponding to Classical observables do not commute, then the simultaneous measurement of these observables is subject to an uncertainty. Deduce an expression for the uncertainty relation known as Heisenberg's Uncertainty relation.

3. Solve the Schrödinger's equation for one dimensional infinite square well. Find expressions for eigen values and normalized eigenfunction in this case.

4. Solve the problem of one dimensional harmonic oscillator in quantum mechanics to obtain eigenvalues and eigen functions.

5. If $\sigma_x$, $\sigma_y$ and $\sigma_z$ are the 3 Pauli spin matrices and $\vec{A}$ is an arbitrary vector, evaluate $\vec{\sigma} \cdot \vec{A}$ and express it in the form of a 2 x 2 matrix.


7. Find the entropy of a classical ideal gas and explain what is meant by Gibb's paradox. Also, explain how the paradox is resolved.

8. Deduce Box-Einstein statistics for bosons and obtain Planck radiation formula using it.


10. Write short notes on any two of the following:
    (i) Microcanonical ensemble
    (ii) Maxwell-Boltzmann Statistics
    (iii) 1st and 2nd order phase transition
    (iv) Bose-Einstein Condensation.
Answer any Five Questions. All questions carry equal marks.

1. Obtain electric and magnetic field intensity due to a uniformly moving charge using Lienard-Wiechardt potentials.

2. Obtain transformations of electric and magnetic field under Lorentz transformation.

3. Discuss the microscopic and macroscopic properties of plasma. What do you mean by 'plasma oscillations'?

4. Write note on any two of the following:
   (i) Debye screened potential
   (ii) Pinch effect
   (iii) Covariance of Maxwell’s equations under Lorentz transformation.

5. State and explain Paschen-Beck effect.

6. State and explain Moseley’s law. Discuss the importance of Moseley’s observations of x-ray spectra of different elements.

7. Obtain rotational spectra due to a diatomic molecule treated as a rigid rotator.

8. Discuss angular momentum, magnetic moment and electric quadrupole moment associated with an atomic nucleus. What is the importance of these properties of a nucleus?

9. Explain the shell model of nucleus. How is this model used to explain the angular momentum of ground state of nucleus?

10. Describe fine structures and hyper fine structures in ESR spectrum.
Nalanda Open University
Annual Examination - 2011
B.Sc. Physics (Honours), Part-III
Paper-VIII

Time: 3.00 Hrs.                                                                                         Full Marks: 80/75

**Answer any *Five* Questions. All questions carry equal marks.**

1. What are Miller indices? Show that in a crystal of cubic structure, the distance between the planes with Miller indices $h, k, l$, equal to $d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$.

2. Deduce the Laue's equation of diffraction of X-ray by a crystal. Show how Bragg's law follow from that equation.

3. Calculate the binding energy of ionic crystal. Prove that the value of Madeling constant for an infinite line of ion is $2\log 2$.


5. Discuss Kronig - Penny model for energy band structure of solids. Distinguish clearly between a metal, semiconductor and insulators on the basis of energy bands in solids.

6. State and explain, 'Superposition theorem' & 'Maximum power transfer theorem'.

7. Discuss the functions of low pass filter with a neat circuit diagram.

8. What is Zener diode? Explain its working and show, with a neat circuit diagram, its use as a 'voltage stabilizer'.

9. What is an amplifier? Discuss the working of an R. C. Coupled amplifier with a neat circuit diagram. Give the expression for voltage gain.

10. What do you mean by logic gate? Explain De Morgan's theorem with the help of schematic diagram.

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**B.Sc. Physics (Hons.) Part-III, Programme for Practical Counselling.**

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**B.Sc. Physics (Hons.) Part-III, Programme for Practical Counselling.**

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Nalanda Open University  
Annual Examination - 2011  
B.Sc. Chemistry (Honours), Part-III  
Paper-V (Physical Chemistry)  

Time: 3.00 Hrs.  
Full Marks: 80/75

Answer any Five Questions. All questions carry equal marks.

1. What is Half life period of reaction? What is mean by third order reaction? Derive an expression for the rate constant of Third order reaction.

2. Discuss the radius ratio rule and its relation with co-ordination number. Also discuss the structure of NaCl and CsCl.

3. What are different types of adsorption? Derive Langmur adsorption isotherm explaining the basic assumptions on which the derivation depends. Discuss its Limitation.

4. Find the number of phases, number of components and degree of freedom in the following system:
   (i) \( \text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O} (S) \rightleftharpoons \text{Na}_2\text{SO}_4 (S) + 10\text{H}_2 (g) \)
   (ii) \( \text{NH}_4\text{Cl} (g) \rightleftharpoons \text{NH}_3 (g) + \text{HCl} (g) \)
   (iii) \( \text{CaCO}_3 (s) \rightleftharpoons \text{CaO} (s) + \text{CO}_2 (g) \)

5. Write short notes on any three of the followings:
   (a) Heterogeneous catalyst
   (b) Importance of Dipole moment
   (c) Bond moment
   (d) Mill indices or Bravias lattice

6. What are the postulates of Collision theory? Write an expression for rate constant in terms of parameter of Collision theory.

7. What is meant by "Viscosity and Coefficient of Viscosity" of a liquid? What is effect of temperature on viscosity of liquid? How viscosity is related to the structure of molecule.

8. Distinguish between primary and secondary process of photochemical process. Discuss photo chemical reaction between hydrogen and chlorine or hydrogen and bromine.

9. State and explain phase rule and use it to discuss the phase diagram of sulphur system.

10. What is Catalysis? State and explain characteristic feature of catalysed reaction. Discuss the mechanism of enzyme catalysed reaction.

*****
Answer any *Five Questions*. All questions carry equal marks.

1. What are the basic postulates of valence bond theory for the formation of complex compounds? How does this theory account for the fact: (i) [Ni (CN)₄]²⁻ is diamagnetic and squar planar (ii) [NiCl₄]²⁻ is tetrahedral and para-magnetic.

2. What is molecular orbital theory of chemical bonding? Describe bonding and antibonding molecular orbital and bond order. Arrange O⁺², O²⁻, O₂⁻ and O₂ in order of increasing bond order.

3. (i) Explain the following:
   (a) Acetic acid is a weak base in aqueous medium but shows strong acidic property in liquid ammonia.
   (b) Alkali metal - ammonia solution are good electrolytic conductor.
   (ii) What are protic and aprotic solvents? Give examples.

4. Discuss the main postulates of quantum mechanics. What is the significance of ψ and ψ²?

5. What is meant by low spin and high spin complexes? Which complex has the large value of Δ₀ in the following pair of complexes? Assign reason for your answer.
   (i) [Co (CN)₆]³⁻ and [Co(NH₃)₆]³⁺
   (ii) [Fe(CN)₆]⁴⁻ and [Fe(CN)₆]³⁻
   (iii) [Rh(NH₃)₆]¹⁺ and [Co(NH₃)₆]¹⁺

6. What are important ores of Molybdenum? Extract molybdenum from one of its important ore. Why does Molybdenum exhibit different oxidation states?

7. (a) Calculate free ion ground term for v⁺⁺ Cr³⁺, Co³⁺ and Ni²⁺
    (b) Free ion term of d⁵ are 1G, 3F, 3P 1S and 1D. Arrange these terms in increasing order of energy according to Hund’s rule.

8. What is the position of Uranium in the periodic table? Describe one method of extraction of uranium from pitch Blende. What are its important properties and uses?

9. Explain the following:
   (a) Magnetic permeability
   (b) Spin magnetic moment
   (c) Paramagnetic and diamagnetic substances

10. Write short notes on any two of the following:
    (a) Platinum black
    (b) aufbau principle
    (c) Hole formulism
    (d) Spongy Platinum
1. Give one example of each the following class of dyes. Furnish one method of synthesis and one application of each of them:
   (a) Azo dye  (b) Triphenyl methane dye
   (c) Phthalein dye (d) Indigoid dye
2. Discuss the mechanism, preparation and application of any two of the following regents:
   (a) nitrous acid (b) N-Bromosuccinimide
   (c) Aluminium Isopro-poxide
3. Explain the following:
   (a) Why uric acid is called acid when it does not contain carboxylic acid group
   (b) Benzene does not decolourise bromine water though it has three double bonds
   (c) The hydrolysis of ethyl chloride by aqueous sodium hydroxide is accelerated by the addition of potassium iodide.
   (d) Salicylic acid is more acidic than benzoic acid
   (e) Furane is less aromatic than both pyrrole and thiophene.
4. (i) What are polynuclear hydrocarbon and how are they classified? Give examples.
   (ii) How would you bring about the following conversions:
       (a) napthenelene to anthranilic acid
       (b) Benzene to Napthalene
       (c) Anthracene to 9-Acetylanthracene
       (d) Napthalene to phenanthrene
5. (a) What do you understand by term Orientation?
   (b) Illustrate with two examples how in aromatic compounds further substitution is governed by the nature of substituent present in the ring.
   (c) How would you determine the position of the substituents in a disubstituted benzene with help of Korner's rule.
6. Describe the molecular structure of pyrrole. Discuss its resemblance with phenol. How would you obtain pyrrole from (a) furan and (b) succinamide.
7. How will you convert the following:
   (a) Urea into uric acid
   (b) Uric acid into parabanic Acid
   (c) Uric acid into purine
   (d) Uric acid into xanthine
8. Write notes on any two of the following
   (a) Electrophilic reagent
   (b) Inductive Effect
   (c) SN₁ and SN₂ reaction
9. (a) What do you mean by the term anthoxanthins? Discuss general methods for ascertaining structure of anthoxanthins.
   (b) Write short notes on
       (i) Kostanecki’s synthesis
       (ii) Baker-Venkataraman synthesis
10. Define the term aromaticity making a special mention of Huckel Rule. Discuss Modern theory of Aromaticity? Does this rule apply strictly in case of pyridine & pyrrole?

*****
Answer any Five Questions. All questions carry equal marks.

1. Synthetic rubber is misnomer. How? What is difference between natural rubber and artificial rubber? What is Vulcanization of rubber? Mention the use of Vulcanization.

2. (i) Give the total range of electromagnetic wave and mark the region of I.R. UV and visiable spectra.
   (ii) Explain the term:
   (a) $H_2$ molecule does not give I.R. Spectra where as $HCl$ molecule give.
   (b) I.R. Spectra of $CO_2$ molecule has two spectral line but I.R. Spectra of $H_2O$ molecule has three spectral line.

3. What are chemical fuel? What is meant by calorific value of fuel? Describe one method by which calorific value of solid fuel is determined.

4. What is difference between infra red, ultraviolet and visible - absorption spectra. Discuss basic principle involved in each case for various application.

5. Discuss the various methods employed for primary waste water treatment and also explain the objective of secondary waste water treatment. Describe any one of the biological waste water treatment process.

   Or

6. Write on the following:
   (a) Water treatment for municipal purposes.
   (b) Sewage treatment.

7. Describe clearly what do you know about coupling constant. How will you distinguish between cis and trans isomers with the help of n m r spectroscopy.

8. What is meant by air pollution. Describe main effect of air pollution to living kingdom as well to atmosphere. Discuss methods through which air pollution can be controlled.

9. Define electronic spectroscopy and also explain the following electronic transition in ultraviolet spectroscopy.
   (a) $\sigma \rightarrow \sigma^*$ transition
   (b) $n \rightarrow \sigma^*$ transition
   (c) $\Pi - \Pi^*$ transition
   (d) $n \rightarrow \Pi^*$ transition

   Or

   Write an essay on uv absorption spectra and its application. Why absorption bands are formed instead of sharp line in the spectra.

10. Define and explain soil pollution. What are the causes of soil pollution? What are the effects of soil pollutants. What is importance of soil biosphere?

11. What do the following terms means? Explain any two of the following:
    (a) Acid - Rain
    (b) Green House effect
    (c) Ozone Layer

*****
Answer any Six Questions, selecting at least one question from each group.

**Group-A**

1. (a) Define a metric space. Let \( X \) be a non-empty set and \( d \) be a map defined as:
   \[
   d(x, y) = \begin{cases} 
   1, & \text{if } x \neq y \\
   0, & \text{if } x = y 
   \end{cases}
   \]
   Then, show that 'd' is a metric on \( X \).

   (b) Introduce an open sphere in a metric space. Let \( X \) be a non-empty set and 'd' be a metric on \( x \). Let \( \sigma : X \to \mathbb{R} \) be defined as:
   \[
   \sigma(x, y) = \begin{cases} 
   1, & \text{if } d(x, y) < 1 \\
   0, & \text{if } d(x, y) \geq 1
   \end{cases}
   \]
   Show that \( \sigma \) a is a metric on \( x \).

2. (a) Show that the intersection of a finite number of open sets in a metric space \((X, d)\), is open in \( x \).

   (b) Let \((X, d)\) be a metric space and \( F \subseteq X \). Then, \( F \) is closed iff \( F \) contains each of its accumulation points. Prove this statement.

3. (a) Define a Cauchy sequence. Prove that every convergent sequence in a metric space is a Cauchy sequence.

   (b) Let \((X,d)\) be a metric space and \( x_0 \) be a fixed point in \( X \). Show that the real valued function \( f_{x_0} \) defined by
   \[
   f_{x_0}(x) = d(x, x_0),
   \]
   is continuous.

4. (a) Define a sub-space of a topological space \((X , T)\) and \((Y, T_y)\) be a sub-space of \((X, T)\). Then show that a sub-set \( E \) of \( Y \) is relatively closed in \( Y \), where \( E = Y \cap F \) for some closed sub-set \( F \) of \( X \).

   (b) Show that every discrete space is a Hausdorff space.

**Group-B**

5. (a) State and prove a necessary and sufficient condition for R-integrability of a bounded function on an interval \([a,b]\).

   (b) If \( f \) is a Continuous function on \([0,1]\), show that
   \[
   \lim_{n \to \alpha} \int_0^1 \frac{n f(x)}{1 + n^2 x^2} \, dx = \frac{\pi}{2} f(0)
   \]

6. (a) Prove that a bounded function on a closed interval \([a,b]\), is Riemann integrable if it has only a finite number of points of discontinuity in \([a,b]\).

   (b) Define a function \( f \) on \([0,1]\) as follows:
   \[
   f(x) = \frac{1}{n} \text{ for } \frac{1}{n+1} \leq x < \frac{1}{n}, \quad n \in \mathbb{N}.
   \]
   Show that \( f \in R[0,1] \) and
   \[
   \int_0^1 f \, dx = \frac{\pi^2}{6} - 1
   \]

**Group-C**

7. State and prove Cauchy's integral test.

8. (a) If \( \sum y_n \) Converges and \((x_n)\) is a Convergent monotonic sequence, then show that \( \sum x_n y_n \) Converges.

   (b) Prove that the infinite product
\[
\left(1 + \frac{1}{2}\right) \left(1 + \frac{1}{3}\right) \left(1 + \frac{1}{4}\right) \left(1 + \frac{1}{5}\right) \left(1 + \frac{1}{6}\right) \left(1 + \frac{1}{7}\right) \ldots \ldots \ldots \rightarrow +\alpha.
\]

**Group-D**

9. (a) Let \(N\) be a non-zero normed linear space. Show that \(N\) is a Banach space iff \(\{x: \|x\| = 1\}\) is complete.
   (b) Prove that a normed linear space is a Banach space iff every absolutely summable series, is summable.

10. (a) A linear transformation from a normed linear space \(N\) to a normed linear space \(N'\), is Continuous if and only if \(T\) is bounded in the sense that there exists a real number \(k \geq 0\) with the property that \(\|T(x)\| \leq k \|x\|\), for every \(x \in N\). Prove this.
   (b) If \(M\) is a closed linear sub-space of a normed linear space \(N\) and if \(T\) is the mapping of \(N\) onto \(N/M\) defined by \(T(x) = x + M\). Show that \(T\) is a continuous linear transformation for which \(\|T\| \leq 1\).

11. (a) Give definition and example of an inner product space with full justification.
   (b) By taking \(\mathbb{R}^2\) to be real normed linear space given by \(\|x\| = \sqrt{x_1^2 + x_2^2}\) where \(x = (x_1, x_2)\), show that \(T\) is a continuous linear transformation, where \(T: \mathbb{R}^2 \rightarrow \mathbb{R}\) defined by \(T(x_1, x_2) = x_1\)

12. (a) Define Hilbert space. Show that the space \(l^2\) with the inner product of two vectors \(x = (x_1, x_2, \ldots, x_n)\) and \(y = (y_1, y_2, \ldots, y_n)\) defined \((x, y) = \sum_{i=1}^{n} x_i \bar{y}_i\), is a Hilbert space where \(l^2 = \{(x_1, x_2, \ldots, x_n): x_1, x_2, \ldots, x_n \in \mathbb{C}\}\).
   (b) Consider the linear space \(P[0,1]\) of all real valued polynomials on \([0,1]\) with the inner product given by \((f, g) = \int_0^1 f(t)g(t)\,dt\), where \(f, g \in P[0,1]\). Show that its is an inner product space but not a Hilbert space.

******
1. (a) Define an automorphism of a group. Let \( x \in G \), then prove that the function \( f \) defined by 
\[ f(g) = g^{-1}xg \text{, for } g \in G \], is an automorphism of \( G \).
(b) Let \( C(G) \) denote the centre of a group \( G \) and \( I(G) \) be the set of all inner automorphism on \( G \). Then, prove that 
\[ G/C(G) \cong I(G) \]

2. (a) Let \( G \) be a finite group and \( |G| = p^n, n > 0, p \) a prime. Show that \( G \) has a non-trivial centre of order at least \( p \).
(b) If \( f: R \rightarrow T \) be a homomorphism of a ring \( R \) onto a ring \( T \). Then, show that \( f \) is an isomorphism iff kernel \( f = \{0\} \)

3. State and prove the fundamental theorem of Homomorphism of rings.
4. (a) Let \( F \) be a field, then prove that \( f[x] \) is a principal ideal ring and more over it is a principal ideal domain.
(b) Give an example of an ideal which is prime but not maximal (supported by full logic).

5. State and prove Schroder - Bernstein Theorem.
6. Define addition and multiplication of cardinality. Hence, establish distributive laws of multiplication over addition.
7. Prove that \( 2^{\lambda_0} = C \), where the symbols used have their usual meaning.

8. (a) Define a partition on a non-empty set. Show that the equivalent classes under equivalence relation, the equivalent classes are either mutually disjoint or equal.
(b) Show that every partition of a set introduces an equivalence relation.
9. (a) Define probability distribution and determine the mean and variance of Binomial Distribution.
(b) Find the solution of the recurrence relation \( a_n = a_{n-1} + 2a_{n-2} \) where \( a_0 = 2 \) and \( a_1 = 7 \).

10. (a) If \( f(Z) \) is an analytic function of \( Z \), show that 
\[ \left( \frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2} \right) |f(Z)|^2 = 4 |f'(Z)|^2. \]
(b) Obtain the Taylor's and Laurent's series which represents the function \( \frac{Z^2 - 1}{(Z + 2)(Z + 3)} \) in the regions (I) \( |Z| < 2 \), (II) \( 2 < |Z| < 3 \) respectively.
11. State and prove Taylor's Theorem.
12. (a) If \( f(Z) \) is an analytic and single valued function in \( |Z - a| < R \), prove that 
\[ f^{-1}(a) = \frac{1}{2\pi} \int_0^{2\pi} P(\theta)e^{i\theta} d\theta, \text{ where } P(\theta) \text{ is the real part of } \frac{f(a + re^{i\theta})}{r}. \]
(b) Explain the kind of singularities of the function \( \sin \left( \frac{1}{1-Z} \right) \) at \( Z=1 \).

*****
Answer any Six Questions, selecting at least one question from each group.

Group-A

1. (a) Define a feasible solution of a Linear Programming Problem (L.P.P.). Prove that the set of all feasible solutions of a linear programming problem form a convex set.

(b) Solve the following linear programming problem graphically.
\[
\text{Max } Z = 4x_1 + 7x_2 \\
\text{Subject to } x_1 + 2x_2 \leq 20, \\
x_1 + x_2 \leq 15, \\
x_2 \leq 8, \\
\text{where } x_1 \geq 0, x_2 \geq 0.
\]

2. Apply Simplex Method to find the solution of the following linear programming problem:
\[
\text{Max } Z = 5x_1 + 7x_2 \\
\text{Subject to } 2x_1 + 3x_2 \leq 13, \\
3x_1 + 2x_2 \leq 12, \\
\text{where } x_1 \geq 0, x_2 \geq 0.
\]

3. Use matrix minima method to obtain an initial basic feasible solution of the following transportation problem.

<table>
<thead>
<tr>
<th></th>
<th>W₁</th>
<th>W₂</th>
<th>W₃</th>
<th>W₄</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>F₁</td>
<td>19</td>
<td>30</td>
<td>50</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>F₂</td>
<td>70</td>
<td>30</td>
<td>40</td>
<td>60</td>
<td>9</td>
</tr>
<tr>
<td>F₃</td>
<td>40</td>
<td>8</td>
<td>70</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Requirement</td>
<td>5</td>
<td>8</td>
<td>7</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

Group-B

4. Find a necessary and sufficient condition for the integrability of the total differential equation.
\[ Pdx + Qdy + RdZ = 0 \]

5. (a) Solve the differential equation
\[ Z(Z-Y)dx + Z(Z+x)dy + x(x+y)dZ = 0 \]

(b) Apply charpit's method to find the complete integral of
\[ px + qy = pq \]

6. (a) Solve
\[ \frac{\partial^2 Z}{\partial x^2} - 2 \frac{\partial^2 Z}{\partial x \partial y} - 15 \frac{\partial^2 Z}{\partial y^2} = 12 \chi' \]

(b) Construct the general solution of the Lag range's linear equation
\[ p\chi(y^2 - Z^2) - qy(Z^2 + \chi^2) = Z(\chi^2 + y^2), \text{ by forming its auxilliary equation.} \]

7. (a) Use Monge's method to find the complete solution of the equation
\[ 2x^2r - 5xys + 2y^2t + 2(px + qy) = 0 \]

(b) Find the orthogonal projection on the \( \chi - Z \) plane of the curves which lie on the paraboloid
\[ 3Z = \chi^2 + y^2 \text{ and satisfy the equation } 2dZ = (\chi + Z)d\chi + y dy. \]
Group-C

8. (a) Find the attraction of a uniform solid sphere at an external point.
   (b) A frustum of a uniform thin hollow Cone attracts a particle placed at the vertex. Show that the attraction is $2\Pi r \rho \sin \alpha \cos \alpha \log \frac{R}{r}$, where $R$ and $r$ are the radii of circular ends, $\alpha$ the semi vertical angle and $\rho$ the surface density of the cone.

9. (a) State and establish Laplace theorem in Cartesian form.
   (b) Prove that the half of the potential of a uniform spherical shell at an external point $0$, is due to that portion of the sphere which is nearer to $0$.

Group-D

10. (a) Prove that the difference between the pressures at two points of a homogeneous fluid varies as the depth of one point below the other.
   (b) A hemi-spherical vessel filled with water, is placed in an inverted position on a horizontal table. Find the resultant thrust of the water on the vessel.

11. (a) Find the depth of the centre of pressure of a circular area of radius $a$ immersed vertically in a homogeneous liquid with its centre at a depth $h$ below the free surface.
   (b) A rod of small cross section and of density $\rho$ has a small portion of a metal of weight $\frac{1}{n}$th that of the rod attached to one extremity. Prove that the rod will float at any angle (inclination) in a liquid of density $\sigma$ if $(n+1)^2 \rho = n^2 \sigma$.

12. (a) Establish the standard formula $dp = \rho (X dx + Y dy + Z dz)$, where the symbols used have their usual meanings.
   (b) If components of the forces, parallel to the axes of Co-ordinates respectively, acting on the elements of fluid at $(x, y, z)$ are given by
      \[
      X = y^2 + yz + z^2, \\
      Y = z^2 + zx + x^2, \\
      Z = x^2 + xy + y^2
      \]
      proportionally. Find the curves of equipressure and equidensity.
Nalanda Open University
Annual Examination - 2011
B.Sc. Mathematics (Honours), Part-III
Paper-VIII

Time: 3.00 Hrs.                                                                                         Full Marks: 80/75

Answer any Five Questions. All questions carry equal marks. Calculator are Allowed.

1. (a) Prove that the Identify
\[ u_1x + u_2x^2 + u_3x^3 + \ldots \ldots = \frac{x}{1-4} \Delta u_1 + \frac{x^2}{(1-x)^2} \Delta^2 u_1 + \ldots \ldots \]

(b) If fn(x) is a polynomial of degree n in x then Prove that \( \Delta^n fn(x) \) is a constant.

2. (a) State and Prove Lagrange's Interpolation formula for unequal Intervals.
(b) Find the cubic Polynomial Interpolation which takes on values
\[ f_0 = 5, f_1 = 1, f_2 = 9, f_3 = 25, f_4 = 55 \]
find \( f_5 \)

3. (a) Find the first and second derivatives of the function \( y = f(x) \) tabulated below at the point \( x = 1.1 \)

<table>
<thead>
<tr>
<th>x</th>
<th>1</th>
<th>1.2</th>
<th>1.4</th>
<th>1.6</th>
<th>1.8</th>
<th>2.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>f(x)</td>
<td>0.00</td>
<td>0.1280</td>
<td>0.5440</td>
<td>1.2960</td>
<td>2.4320</td>
<td>4</td>
</tr>
</tbody>
</table>

(b) Using the following table find \( f(5) \)

<table>
<thead>
<tr>
<th>x</th>
<th>0</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>7</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>y=f(x)</td>
<td>4</td>
<td>26</td>
<td>58</td>
<td>112</td>
<td>-</td>
<td>466</td>
<td>922</td>
</tr>
</tbody>
</table>

4. (a) Derive Simpson's \( \frac{3}{8} \) th Rule for numerical evaluational integrals.
(b) Find by Wseddle's rule the value of \( I = \int_4^{5.2} \log_e x \) dx

5. (a) Solve the equations
\[ 16u_{x+2} - 8u_{x+1} + u_x = 0 \]
(b) Solve
\[ 2u_{x+2} - 5u_{x+1} + 2u_x = 0 \]
find the particular solution when \( u_0 = 1, u_1 = 1 \)

6. Explain Euler's method. Hence find approximately y for x = 0.1 by Euler's method.

Given \( \frac{dy}{dx} = \frac{y-x}{y+x} \) with y = 1 for x = 0

7. Use Runge - Kuttal method of fourth order to solve \( y^1 = xy \) for x = 1.4 and initially x = 1, y=2 h = 0.2

8. (a) Solve it by Gauss - Jordan's method
\[ x_1 + 2x_2 + x_3 = 8 \]
\[ 2x_1 + 3x_2 + 4x_3 = 20 \]
\[ 4x_1 + 3x_2 + 3x_3 = 16 \]
(b) Explain Gauss Seidel Method

9. (a) Solve the equations by Relaxation Method.
\[ 9x_1 - 2x_2 + x_3 = 50 \]
\[ x_1 + 5x_2 - 3x_3 = 18 \]
\[ -2x_1 + 2x_2 + 7x_3 = 19 \]
(b) Explain Reguli-Falsi Method.

10. (a) Explain Newton - Raphson method.
(b) Solve the Equation \( x^4 - 8x^3 + 39x^2 - 62x + 50 = 0 \) using Bairstow's method with initial condition \( p = q = 0 \)

****

Nalanda Open University
Answer any **Five** Questions. **Question No. 1 is compulsory.** All questions carry equal marks.

1. Multiple choice questions.
   (i) In a fully turgid cell, which one of the following is correct?
      (a) O.P. is greater than T.P. (b) T.P. is greater than O.P.
      (c) O.P. is equal to T.P.  (d) None of the above.
   (ii) The Cytoplasm of a cell shrinks in a solution. The phenomenon will be called as.
      (a) Plasmolysis (b) Osmosis
      (c) Both of these (d) None of these
   (iii) A membrane will allow the solvent as well as a little amount of some solute to pass' is called
      (a) Impermeable (b) Selectively permeable
      (c) Semi permeable (d) Permeable
   (iv) VAM stands for
      (a) Vascular Areolar Mycorrhizae  (b) Vascular Aerial mycorrhizae
      (c) Vascular Alveolar mycorrhizae (d) Vascular Arbuscular mycorrhizae
   (v) Transpiration would be most rapid when.
      (a) Atmosphere is fully humid  (b) Air is still
      (c) Weather is cloudy  (d) Weather condition is very dry
   (vi) Opening of stomata is due to
      (a) Turgidity of guard cell (b) Size of guard cell
      (c) Number of guard cells (d) Amount of CO₂ in atmosphere
   (vii) In C₃ pathway of CO₂ fixation, the first stable product is
      (a) Ribulose biphosphate  (b) Phosphoglyceric acid
      (c) Phosphoglyoxylic acid (d) None of these
   (viii) In green cells photolysis of water is linked to
      (a) PS I  (b) PS II
      (c) Both PS I and PS II (d) Cytochrome
   (ix) Photosynthesis takes place chiefly in
      (a) Blue light  (b) Red light
      (c) Green light  (d) Indigo
   (x) Krebs cycle takes place in
      (a) Chloroplast  (b) Ribosome
      (c) Mitochondria (d) ER
   (xi) How many ATP will be produced during the production of one molecule of Acetyle CoA from one molecule of Pyruvic acid?
      (a) 3 (b) 6
      (c) 8 (d) 38
   (xii) Growth is a
      (a) Permanent Change (b) Reversible Change
      (6) Temporary Change (d) None
   (xiii) Elongation of genetically dwarf plant is brought about by the application of
      (a) cytokinin  (b) Gibberellins
      (c) x-ray (d) Vitamin
   (xiv) Stimulation of cell division is mainly associated with
      (a) Auxin  (b) Gibberellins
      (c) Cytokinins (d) Florigen
   (xv) Free living N₂ fixing bacteria are found in
      (a) Air  (b) Soil
      (c) Root nodule (d) None of these

2. Explain the mechanism of stomatal regulation.
3. Discuss the mechanism of photophosphorylation.
4. Give an account of Krebs cycle.
5. What are Auxins? Describe the mechanism of action of auxins.
6. What are cytokinins? Discuss their importance in plants.
7. Give an account of phytochrome system and flower initiation.
8. What are the various elements necessary for the healthy growth of green plants? From which sources these are obtained?

OR

Write notes on any two of the following:
(a) Plasmolysis
(b) Non-cyclic photophosphorylation
(c) Alcoholic fermentation
(d) Electron transport system.

9. Explain the different stages of Nitrogen cycle.
10. Differentiate between the terms of any two pairs of the following.
(a) Diffusion and osmosis
(b) Photophosphorylation and oxidative phosphorylation
(c) Gibberellin and Auxin
(d) Geotropism and phototropism.
1. Multiple choice questions. Question No. 1 is compulsory. All questions carry equal marks.

(i) In which category you will place the phytoplankton?
   (a) Consumers  (b) Producers  (c) Decomposer  (d) None of these

(ii) The pyramid of number is inverted when the producer is
   (a) Grass  (b) Tree  (c) Both of these  (d) None

(iii) Net primary productivity is equal to
   (a) Gross primary productivity-organic matter lost in respiration
        (b) Total amount produced by photosynthesis
        (c) Both of these  (d) None of these

(iv) Snake can be placed as
   (a) Secondary consumer  (b) Tertiary consumer  (c) Top consumer  (d) All of these

(v) Nitrifying bacteria produce
   (a) NH₃ to NO₃  (b) Protein to NH₃  (c) NO₃ to N₂  (d) None of these

(vi) The largest reservoir of S and P in the biosphere is
   (a) Aerial atmosphere  (b) Rocks  (c) Organism  (d) River

(vii) Aggregation is
   (a) Increase in number of species so that they come close to each other
   (b) Establishment of Species on bare area
   (c) Reaching of propagules to bare area  (d) None of these

(viii) Eichhornia is a hydrophyte because
   (a) Its leaf is green  (b) Flowers are coloured  (c) Root has pocket  (d) All of these

(ix) Acid rain is formed due to union of water with
   (a) SO₂  (b) Dust  (c) N₂  (d) All of these

(x) Rhizophora occurs in
    (a) Central India  (b) Alpine Zone  (c) Assam  (d) Andaman and Nicobar

(xi) Black soil is found in
    (a) Haryana  (b) Rajasthan  (c) Maharashtra  (d) Orissa

(xii) The property of soil based on the size of particles is termed as
     (a) Texture  (b) Colour  (c) Field capacity  (d) Water holding capacity

(xiii) Which type of water is used by plants?
      (a) Hygroscopic  (b) Gravitational Water  (c) Capillary water  (d) Bound Water

(xiv) Hazaribagh National Park is located in
     (a) Jharkhand  (b) Utrakhand  (c) Andhra Pradesh  (d) Tamil Nadu

(xv) Arsenic in underground water comes from
     (a) Rock  (b) Pesticides  (c) Fume of automobiles  (d) Radioactive waste
2. Write an essay on plant community.

3. What is the productivity of ecosystem? Write the methods of its measurement.

4. What is succession? Describe the succession in a bare pond.

5. What are the morphological and anatomical features of plants growing in aquatic condition, submerged in and floating on surface of water?


7. Write short notes on any two of the following:
   (a) Biogeochemical Cycle
   (b) Non-conventional source of energy
   (c) Desertification
   (d) Forest ecosystem

8. What is social forestry? Give an account of social forestry. How it is beneficial to the society?
   Or
   Explain two of the following terms:
   (a) Plant indicator
   (b) Biosphere reserve
   (c) Threatened species
   (d) Protected area

9. Describe the different categories of natural resources.

10. Pass your comment on the following statements.
    (a) Washing of cloth in the river Ganga is a condemnable practice.
    (b) Defecation in the field is unhygienic practice.
    (c) Smoking in public place is injurious to large number of people.
    (d) Burning of crackers at many occasions is highly injurious.
1. Multiple choice questions. Out of four options, select only one as correct answer.

(i) Nucleolus was discovered by
(a) Fontana (b) Altmann (c) Crick (d) Nirenberg

(ii) Nuclear membrane disappears during
(a) Anaphase (b) Telophase (c) Early prophase (d) Late propase

(iii) A nucleosome consists of
(a) only DNA (b) Histone and linker DNA (c) RNA and histone (d) Histone with DNA wrapped around

(iv) DNA duplication occurs during
(a) S period (b) G\(_1\) period (c) G\(_2\) period (d) Propase

(v) The first stage of cell division is
(a) Prophase (b) Interphase (c) Metaphase (d) Anaphase

(vi) Budding in Yeast is an example of
(a) Brackymeiosis (b) Endomitosis (c) Normal mitosis (d) Amitosis

(vii) Double helix DNA model was given by
(a) Fisher and Heldane (b) Watson and Crick (c) Lamark and Darwin (d) Hugo de Vries

(viii) Two standards of DNA are attached by H-bond between
(a) A-G, G-C (b) A-C, G-T (c) A-G, T-C (d) AU - G-C

(ix) Chromosomes having almost equal arms are
(a) Metacentric (b) Acrocentric (c) Concentric (d) Telocentric

(x) Which is an example of cytoplasmic inheritance?
(a) Eye colour in Drosophila (b) Flower colour in pea (c) Height in pea (d) Sterile pollen

(xi) After crossing two plants, the progeny was found to be male sterile due to maternal inheritance. The gene for male sterility resides in
(a) Nucleus (b) Chloroplast (c) Cytoplasm (d) Mitochondria

(xii) Essential gene material is
(a) DNA (b) RNA (c) Fat and Protein (d) Protein

(xiii) Somatic cell division includes
(a) Karyokinesis only (b) cytokinesis only (c) cytokinesis followed by karyokinesis (d) karyokinesis followed by cytokinesis

(xiv) In meiosis, the chromatids separate during
(a) Anaphase I (b) Anaphase II (c) Metaphase I (d) Metaphase II

(xv) Number of mitotic division required to produce 128 cells from a single cell
(a) 7 (b) 14 (c) 16 (d) 32

2. Discuss in brief the structure of DNA and compare it with that of RNA.

3. Give an account of the cell division that occurs in the formation of pollen grain from pollen mother cell.
4. Define linkage? Give experimental proof of the linked genes.

5. What is nucleosome? Give an account of the structure of nucleosome.

6. Give an account of Mendelian Law of Independent assortment. Why is it sometimes not shown by some genes?

7. Describe the cell cycle in details.

8. Write short notes on any two of the following:
   (a) Deficiency
   (b) Nucleoside
   (c) β - chromosome
   (d) RNA

9. Define plant introduction and acclimatization. Discuss the process.

10. Write any two of the following:
    (a) Back cross method
    (b) Procedure for pure line selection
    (c) Emasculation
    (d) Pedigree method
1. Multiple choice questions. Out of four options, select only one as correct answer.

(i) A ratio of 9:3:3:1 is modified in complimentary genes to
   (a) 15:1  (b) 13:3  (c) 9:7  (d) 12:3:1

(ii) Inhibitory factors contain modified ratio as
   (a) 13:3  (b) 9:6:1  (c) 1:4:6:4:1  (d) 9:7

(iii) Duplicate factors show the ratio.
   (a) 9:7  (b) 15:1  (c) 12:3:1  (d) 9:6:1

(iv) Additive factor or polymerism contains modified ratio as
   (a) 1:4:6:4:1  (b) 9:6:1  (c) 9:3:4  (d) 12:3:1

(v) Variation in individual chromosome number of an organism is
   (a) Euploidy  (b) Polyploidy  (c) Aneuploidy  (d) Aberraton

(vi) A trisomic individual has a chromosome number of
   (a) 2n - 1  (b) 2n + 2  (c) 2n + 1  (d) 2n + 3

(vii) Turner's syndrome is due to
   (a) Monosomy  (b) Tetrasomy  (c) Nullisomy  (d) Trisomy

(viii) If haploid number of chromosome in a cell is 12, the monosomic number will be
   (a) 24  (b) 25  (c) 23  (d) 21

(ix) A very important method in plant breeding is
   (a) Transformation  (b) Hybridization  (c) Duplication  (d) Heterosis

(x) The credit for deciphering the genetic code goes to
   (a) Korenberg and Odhao  (b) Nirenberg, Holley and Khorana
   (c) Ochoa and Korenberg  (d) Nirenberg and Korenberg

(xi) The genetic information is coded in the form of
   (a) ATP  (b) DNA  (c) Histone  (d) Protein

(xii) Restriction enzymes are found in
   (a) Virus  (b) Bacteria  (c) Amoeba  (d) Liver cell

(xiii) Which of the following technique is used by forensic laboratory in crime detection?
   (a) DNA sequencing  (b) DNA nicking
   (c) Gene therapy  (d) DNA finger printing

(xiv) Genetic engineering aim at
   (a) Destroying wild gene  (b) Preserving wild gene
   (c) Curing human diseases by introducing new genes
   (d) None of the above

(xv) A bacteriophage is a
   (a) Bactrium  (b) Protozoa  (c) Virus  (d) Fungus

2. What is epistasis? Explain it with suitable example.

3. Write short notes on any two of the following:
   (a) Polyploidy  (b) Hypoploidy
   (c) Hyperploidy  (d) Allopolyploids

4. Describe different types and causes of chromosomal diseases in man.

5. Describe briefly the polyploidy and its role in plant breeding.

6. What is mutation? Discuss point mutation.
   Or
   Give an account of meiosis and explain its significance.

7. What is gene replacement therapy?

8. Discuss the methods of germplasm conservation in brief.

9. Write an essay on human genetics.

10. Write short notes on any two of the following:
    (a) Turner's syndrome  (b) DNA Bank
    (c) Polyploidy  (d) Duplicate genes
1. Multiple choice questions:
   (i) Essential amino acids come from:
       (a) Food  (b) Lipid  (c) Rice  (d) Carbohydrates
   (ii) Which are of these amino acids has two \( \text{NH}_2 \) groups?
        (a) Serine  (b) Valine  (c) Glycine  (d) Lysine
   (iii) Net gain of ATP during glycolysis is:
        (a) Two  (b) Four  (c) Six  (d) Eight
   (iv) Keratin Protein is found in:
        (a) Bone  (b) Hair  (c) Blood  (d) Brain
   (v) Collegen is a:
        (a) Simple protein  (b) Conjugated protein  (c) Derived protein  (d) Denatured protein
   (vi) Lipid is made up of:
        (a) Glycerol+Fatty acid  (b) Wax+fatty acid  (c) Glycerol+lactic acid  (d) fats+oils
   (vii) Which of the following is important in \( \beta \)-oxidation?
        (a) Pyruvic acid  (b) Glucose  (c) Acetyl-CoA  (d) Carbondioxide
   (viii) Which is a fat soluble vitamin?
        (a) Vit-A  (b) Vit-K  (c) Vit-D  (d) Vit-B complex
   (ix) Heart beat in vertebrate is:
        (a) Neurogenic  (b) Myogenic  (c) Both  (d) None of these
   (x) Ultrafiltration occurs in:
        (a) Glomerules  (b) Renal tubules  (c) Urinary bladder  (d) Blood Capillaries
   (xi) Ornithine cycle is concerned with:
        (a) Digestion  (b) Reproduction  (c) Excretion  (d) Respiration
   (xii) Excretory organs have evolved to excrete mainly
        (a) Water  (b) Urea & Water  (c) Salts  (d) Nitrogenous wastes
   (xiii) Pace maker influences:
        (a) Contraction of pelvis  (b) Heart beat rate  (c) Contraction of heart muscles  (d) Blood flow in heart
   (xiv) Urea is transported by
        (a) Blood  (b) Erythrocytes  (c) Plasma  (d) Leucocytes
   (xv) Vitamin E stored in:
        (a) Mitochondria  (b) Microsomes  (c) Both of above  (d) None of these

2. Define and classify carbohydrates and give their functions.
3. What are Vitamins? Give the main functions of different kinds of Vitamins.
4. Give an account of Krebs cycle.
5. Give an account of digestion and absorption of carbohydrates.
7. Give an account of the synaptic transmission of Nerve impulse.
8. Describe cardiac cycle.
9. What is lipids? Classify it write the biological functions of lipids.
10. Write notes on any two of the following:
    (a) ECG  (b) Pancreatic juice  (c) Bowman's capsule  (d) Blood clotting factors
1. Multiple choice questions:
   (i) Diffusion of dissolved substance through semi permeable membrane is called:
       (a) Dialysis   (b) Osmosis   (c) active transport  (d) facilitated diffusion
   (ii) The diffusion of gases:
       (a) depends upon partial pressure of each gas    (b) does not depend on type of gas
       (c) does not depend on partial pressure of each gas   (d) occurs only through pores.
   (iii) Enzymes are synthesized in the cell by
       (a) mitochondria   (b) lysosome  (c) Golgi complex  (d) ribosomes.
   (iv) Insulin is a
       (a) carbohydrates  (b) fat    (c) protein  (d) none
   (v) Mutation which is fatal for the organism is known as:
       (a) gene mutation   (b) point mutation (c) lethal mutation (d) reverse mutation.
   (vi) The Queen honeybee is:
       (a) diploid   (b) tetraploid  (c) haploid   (d) triploid
   (vii) Variation in the morphology of individual chromosome is :
       (a) haploidy    (b) polyploidy  (c) inversion   (d) chromosomal aberration.
   (viii) Polyploidy was discovered by:
       (a) De Bary   (b) Sann  (c) Lutz   (d) haberlandsdt
   (ix) Which is trisomic condition?
      (a) 2n-1  (b) 2n+1   (c) 2n+2  (d) 2n+3
   (x) Klinefelter's is syndrome is due to:
      (a) monosomy   (b) nullisomy (c) triploidy  (d) trisomy.
   (xi) A polypeptide is assembled on a:
      (a) DNA molecule   (b) Nuclear membrane (c) nuclear pore  (d) Ribosome
   (xii) Lysosome was discovered by:
      (a) Palade   (b) Robertson  (c) de duve   (d) de vries.
   (xiii) In DNA replication, the helix is unwound by which enzyme?
      (a) Topoisomerase   (b) Primase (c) DNA Polymerase (d) Helicase
   (xiv) Polyploidy means occurrence of:
      (a) Haploid set of chromosomes   (b) Diploid set of chromosomes
      (c) more than two sets of chromosomes.  (d) None of above.
   (xv) Male honeybee is :
      (a) Diploid   (b) Tetraploid  (c) Haplod  (d) Triploid.

2. Give an account of active transport.
3. Give an account of Linkage and crossing over.
4. Describe structure and functions of cytoskeletal elements.
5. What are functions of DNA? Write in brief.
6. Write an essay on Parthenogenesis.
7. Give an account of cell secretion of pancreas cell.
8. Differentiate between any of two:­
   (a) Ribosome and Dioxysriose Sugar.
(b) DNA and RNA.
(c) Lethal mutation and Point mutation.
9. Write an essay on Menobl's law.
10. Write notes on any two of the following:
   (a) Fertilization.              (b) Kappa Particles.
   (c) Genotype and Phenotype.
Nalanda Open University
Annual Examination - 2011
B.Sc. Zoology (Honours), Part-III
Paper-VII

Time: 3.00 Hrs.                                                                                         Full Marks: 80/75

Answer any Five Questions. Question No.1 is compulsory. All Questions are of equal value.

1. Multiple choice questions:
   (i) Sources of variation was explained by:
       (a) Darwin   (b) Lamark   (c) Hugo de Vries   (d) Weismann
   (ii) Discontinuous Variations are:
       (a) Acquired characters    (b) Mutation
       (c) Essential features     (d) Non-essential features.
   (iii) Over production of individuals will lead to:
       (a) Survival    (b) Struggle   (c) Great mutation   (d) Increase in fitness
   (iv) The expression "Survival of the fittest" was coined by:
       (a) Lamarck   (b) Oparin   (c) Darwin   (d) H.Speneer
   (v) The book "Origin of Species" was published in:
       (a) 1809    (b) 1858 (c) 1859 (d) 1956
   (vi) Lamarck was best known for his theory of:
       (a) Independent assortment of Chromosome.   (b) Evolution through natural selection
       (c) Inheritance of acquired characters.     (d) All of above
   (vii) The "Use and Disuse" principle was proposed by:
       (a) Hugo de vries    (b) Lamarck
       (c) Weismann       (d) Darwin
   (viii) Isolation of a segment of population may result in:
       (a) Their extinction   (b) Inbreeding
       (c) outbreeding   (d) Dominance
       (c) outbreeding     (d) Hybrid sterility
   (ix) Egg is fertilized but zygote is inviable due to:
       (a) Gametic mortality   (b) Zygote mortality
       (c) Hybrid inviability   (d) Hybrid sterility
   (x) Which was the smallest horse?
       (a) Hyracotherium  (b) Epihippus
       (c) Mesohippus   (d) miohippus.
   (xi) Human evolution originated in:
       (a) Africfa   (b) Java(c) France  (d) China.
   (xii) Which one is the closest relative of modern man today?
       (a) Orangutan   (b) Gorilla
       (c) Gibbon   (d) Sinanthropus.
   (xiii) Ramapithecus is a fossil recovered from:
       (a) Shivalik Hills of India
       (b) Desert of Africa
       (c) Germany
       (d) Java
   (xiv) The modern horse appeared in:
       (a) Eocene   (b) Oligocene
       (c) Pliocene  (d) Mesocene.
   (xv) The era in which man diversified is:
       (a) Coenozoic
       (b) Mesozoic
       (c) Palaeozoic
       (d) all.

2. Write an essay on fossil history of horse.

3. Give an account of Variation.

4. Write an essay on Darwin's concept of organic evolution.

5. What is isolation? Describe various premating and post-mating isolation mechanism.

6. What are different realnes of the world? Give an account of their boundries.

7. Describe the peculiarities and fauna of Ethiopian region.

8. Give an account of theories and principles pertaining to animal distribution.

9. Describe the characteristics and fauna of Oriental region.

10. Write notes on any two of the following:
    (a) Galapagos Island.   (b) Helena Island
    (c) Mutation     (d) Somatic variation.
Answer any Five Questions. All Questions are of equal value.

1. Describe the different functions of hormones secreted by pituitary gland.
2. Give an account of structure of Pancreas and add a note on the functions of hormone secreted by the Islets of Langer hangs.
3. Describe the functions of different hormones secreted from adrenal gland.
4. Describe the fauna of Mesozoicera.
5. Describe the Chi-square test.
6. Discuss the merits and demerits of arithmetic mean.
7. Give and account of student’s t-test.
8. Describe the different methods to determine the age of fossils.
9. Describe the hormones secreted from testes.
10. Write notes on any two of the following:
    (a) Radio-carbon method.  (b) Cushing’s disease
    (c) Cenozoic era.         (d) Standard error.

Practical Schedule:

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<th>Date</th>
<th>11 A.M. to 01 P.M.</th>
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<th>03.30 P.M. to 05.30 P.M</th>
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<td>Paper - II</td>
<td>Paper - II</td>
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<td>01.03.2011</td>
<td>Paper - IV</td>
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Practical Examination Programme of B.Sc. Part-III Zoology (Hons.), 2011

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<td>04.03.2011</td>
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Answer any FIVE questions. All questions carry equal marks.

1. (a) Explain which transmission mode (simplex, half duplex or full duplex mode) can be Compared to the following.
   (i) A conversation through a mobile phone
   (ii) Television/Radio
   (iii) Conversation on Walky – Talky

   (b) Which OSI layer is responsible for the following?
   (i) End to End reliable communication service
   (ii) WWW
   (iii) Fragmentation of a packet
   (iv) Error control
   (v) Compression/Decompression

2. Differentiate between the followings through examples.
   (i) Baseband and broadband communication
   (ii) Analog and Digital signal
   (iii) Circuit switching and packet switching.

3. Explain the operation of a selective repeat protocol with the help of a diagram.

4. Draw the diagram for Header format of user-network interface of ATM network. Also explain the use of each field in it.

5. Explain the operation of a switch with the help of a diagram.

6. Explain how multiplexing can be applied on physical and transport layer?

7. Explain ISDN. Briefly describe three applications of ISDN.

8. Explain services provided by Data Link layer & Transport Layer.

9. Explain the concept of a remote procedure call with the help of a diagram.

10. List and explain factors for occurrence of congestion in a Network. Which layer is responsible for controlling congestion? How congestion can be controlled?
1. (a) Name the address class of the following IPv4 addresses:
   - 191.106.031.10
   - 12.6.3.2
   - 160.3.2.1
   - 219.162.131.3

   (b) What is the maximum capacity of datagram that can be carried by Internet Protocol?
   Also, explain how IP datagram are deleted from the network.

2. Describe the mechanisms used by TCP for flow control.

3. Explain the working of DNS. Also, differentiate it with dynamic DNS.

4. What is meant by a Socket? Write the differences between active and passive sockets.

5. How does broadcasting differ with multicasting? What socket options need to be set to enable broadcasting and multicasting?

6. Which transport layer protocol ensures the reliability? Also, write the main mechanism that it uses to create a reliable connection.

7. What is HTTP? Explain any four methods used by HTTP for data transfer.

8. Explain the count-to-infinity problem related to distance vector routing with the help of an example.

9. Write the syntax along with parameters used by the following system calls:
   (i) send ( )
   (ii) accept ( )
   (iii) shut_down ( )
   (iv) inet_addr ( )
   (v) listen ( )

10. What is the purpose of byte ordering in network communication? Also, write any three functions used for byte ordering.

---

"Answer any FIVE questions. All questions carry equal marks."
Nalanda Open University  
Annual Examination - 2011  
BCA, Part-III  
Paper-[XVII (CS-70) - Introduction to Software Engineering]

Time: 3.00 Hrs.                                                                                      Full Marks: 80/75

Answer any FIVE questions .All questions carry equal marks.

1. Explain all the phases of SDLC. Does the role of System Analyst is confined to Analysis Phase. Comment.

2. Design a system for Insurance Company. Draw DFD’s for the system till level-2 and also prepare the SRS document for the same. Clearly mention the assumption made if any.

3. Design an ER diagram for above system. Make assumptions if any. List all the Entities along with their attributes and relationship.

4. What is testing? Explain different types of testing?

5. What is risk management? Further, discuss the areas of risk that a software project Manager must address.

6. What is an Object Oriented Design? Discuss its advantages in developing a Software system.

7. Differentiate between coupling and cohesion. What are the various types of coupling?

8. What are CASE tools? What are various types of CASE tools? Discuss its benefits?

9. Explain different types of teams structure? Which team structure is the best?

10. Write short notes on:
          (a) Validation and Verification.
          (b) Software Maintenance.
          (c) Principles of Software Engineering.

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\( \text{OLD Batch} \)

: सिर्फ 8वें पत्र की परीक्षा की लिखि में परिवर्तन की सुचना : 
नालंदा खुला विश्वविद्यालय का पद्म दीक्षान्त समारोह, दिनांक-21.02.2011 को निर्धारित है, 
इसलिए आपके सिर्फ 18वें पत्र (CS-71) की परीक्षा अब दिनांक-22.02.2011 को 03.30 बजे 
से 06.30 बजे तक सम्पन्न होगी । सिर्फ 18वें पत्र (CS-71) पत्र की परीक्षा की लिखि एवं 
समय में परिवर्तन किया गया है । शेष परीक्षा पूर्व निर्धारित कार्यक्रम के अनुसार होगी ।
Answer any FIVE questions. All questions carry equal marks.

1. Explain all the phases of SDLC. Does the role of System Analyst is confined to Analysis Phase. Comment.

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8. What are CASE tools? What are various types of CASE tools? Discuss its benefits?

9. Explain different types of teams structure? Which team structure is the best?

10. Write short notes on:
    (a) Validation and Verification.
    (b) Software Maintenance.
    (c) Principles of Software Engineering.
1. (a) Find the roots of the equation $2x^3 + 5x^2 + 5x + 3 = 0$ using Regula-falsi Method.
(b) Determine an approximate root of the Equations $\cos x - xe^x = 0$ using secant method.

2. Solve the system of equations
   \[16x_1 + 22x_2 + 4x_3 = -2\]
   \[4x_1 - 3x_2 + 2x_3 = 9\]
   \[12x_1 + 25x_2 + 2x_3 = -11\]
   using Gauss Elimination method.

3. Solve the system of Equations
   \[10x_1 - 2x_2 - x_3 - x_4 = 3\]
   \[-2x_1 + 10x_2 - x_3 - x_4 = 15\]
   \[-x_1 - x_2 + 10x_3 - 2x_4 = 27\]
   \[-x_1 - x_2 - 2x_3 + 10x_4 = -9\]

4. Define Interpolation and find Lagrange's Interpolating Polynomial for the data. Hence obtain $f(2)$

<table>
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<tr>
<th>x</th>
<th>0</th>
<th>1</th>
<th>4</th>
<th>5</th>
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<tr>
<td>f(x)</td>
<td>8</td>
<td>11</td>
<td>68</td>
<td>123</td>
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</table>

5. Using Newton's Backward Interpolation formula find the interpolating polynomial that approximates the function given by the following table:

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<tr>
<th>x</th>
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<th>5</th>
<th>7</th>
<th>9</th>
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<tbody>
<tr>
<td>f(x)</td>
<td>6</td>
<td>24</td>
<td>38</td>
<td>108</td>
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</table>

Hence find $f(7.5)$

6. Find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at $x = 1$ and $x = 0$ from the following data

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<tr>
<td>y</td>
<td>7</td>
<td>13</td>
<td>43</td>
<td>145</td>
<td>367</td>
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</tbody>
</table>

7. State and Prove Trapezoidal Rule.

8. Using the third order Taylor's series method find the solution of the differential equation $xy' = x - y$, $y = 2$ at $x = 2$ taking $h = 1$

9. Using Euler's method
   \[y' = 1 - 2xy, \ y(0.2) = 0.1948. \ \text{Find} \ y(0.4) \ \text{with} \ h = 0.2\]

10. Using Runge Kutta fourth order method
    \[y' = \frac{y - t}{y + t}, \ y(0) = 1\]
    Find $y(0.5)$ taking $h = 0.5$

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1. Create a class "My string". Write the following methods in this class to perform the actions mentioned:
   (i) Reverse(): To display the reverse of the given input string.
   (ii) String Len(): To display the length of the given string.

2. Write a program in C++, using recursion to find the factorial of a given number.

3. Write the syntax of the following in C++ and give an example for each:
   (i) Do...While
   (ii) Go To
   (iii) BREAK.

4. What are nested classes? Explain with an example.

5. Write a program in C++ to illustrate the multiple inheritance concepts.

6. How is exception handling performed in C++? Write a program-segment that throws an arithmetic exception as and when an input number is greater than 9999.

7. Write a program in C++ to count the occurrences of each vowel in a given string.

8. With the help of a suitable example for each, explain the visibility modes (private, Public and protected).

9. Explain the concepts of function overloading and operator overloading with the help of an example.

10. Explain the following with their usage in C++ programming:
    (i) Friend function.
    (ii) Arithmetic If operator
    (iii) Size of operator
    (iv) Scope resolution operator
    (v) Abstract class
1. Write a program in C++ to overload the '+' operator to concatenate two string variables using the simple expression \( x3 = x1 + x2 \) Where \( x1, x2 \) and \( x3 \) are three string objects. Make suitable assumptions, if any.

2. What is the difference between arguments passed by value or passed as reference? Explain the difference with the help of an example.

3. What are Templates? How are templates defined? Differentiate between class and function templates with the help of an example of each.

4. Explain different types of inheritance with example.

5. Write a program in C++ for implementing insertion in Linked List.

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1. Write a program in C++ to implement function over-riding.

2. What is the difference between abstract class and virtual class? Implement them using an example.

3. What is inline function? How is inline defined? Differentiate between simple function and inline function.

4. Explain different types of inheritance with example.

5. Write a program in C++ for implementing insertion in a queue.
1. Explain Regular expression with suitable examples. What are the rules for writing? Regular expression?

2. Explain Pushdown automata with suitable examples. Draw a PDA for an even Palindrome over \{a, b\}^*.

3. What is Pigeon hole Principle? How it is used in Pumping Lemma? Show that the Language L = \{a^n b^n | n>0\} is not regular using Pumping Lemma.

4. For the following regular expression, construct equivalent finite automata:
   (i) 11(01 + 10)*01.
   (ii) ab(ab* + ba*)bb
   (iii) (00+11+10+01)

5. Prove that regular languages are closed under Complementation, Intersection and Union with suitable examples.

6. Draw a Turing machine for sum function given as

   F(m,n)= \{ m+n 
   For m=0, n=0.
   m>0, n=0.
   m=0, n>0.
   m>0, n>0.\}


8. Write the production rule for the given Context Free Grammar:

   (i) L1={a^m b^n c^m | m, n>=0}
   (ii) L2={a^n | n>=0}

9. Write short notes on any three:

   (i) Decidable and Solvable problem.
   (ii) Complexity of Algorithm
   (iii) Mealy and Moore machine
   (iv) NULL NFA

10. Write and explain the applications of Theory of Computation with suitable examples.
1. Differentiate between nested and inner classes. Explain with an example.

2. Write a program for I/O operation using Buffered Input Stream and Buffered Output Stream that accepts user name, age and address from the user and displays it on the console.

3. Write an applet that reads two strings and displays the larger string among them.

4. What is run-time polymorphism? How does it differ from compile-time Polymorphism? Explain with an example.

5. What are threads? How can they be created?

6. Write a program in Java to generate the following output, using two-dimensional array:
   
   a 
   a b 
   a b c 
   a b c d 

7. What is the role of a default exception handler in Java? Differentiate between 'throw' and 'throws'.

8. Write a program that accepts two files as input and appends the content of first File to second file.

9. Write GUI Java application to simulate the simple calculator. The calculator should be able to do the basic operations.

10. Explain static methods and static variables in Java.
1. List and explain any 10 benefits of Intranet to any organization.

2. What is a centralized database? How does it differ from a distributed database?

3. What is an IP address? Explain its significance. What is Wireless Application Protocol (WAP)? Briefly explain its layered architecture.

4. Explain the differences between two tier and three tier architectures.

5. Explain the roles played by Servers and Clients in an Intranet.

6. Describe any two Intranet Authoring tools in detail.

7. Explain the basis for any organization to decide that there is need for Intranet for it. List any two ways of securing Intranet.

8. What is a digital signature? How is it useful to provide authentication on Intranet/Internet? Explain the process of creation and authentication of a digital signature using a suitable example.

9. How is the Distributed mail system protocol different from Simple mail transfer protocol? Give suitable examples for each.

10. If a LAN has a subnet mask of 255.255.255.128, how many hosts are there per subnet? What is the use of a 0.0.0.0 address? What is multicasting?