

TRIPURA UNIVERSITY

(A Central University)
Suryamaninagar- 799022
West Tripura

Four Years Undergraduate Programme (As per NEP- 2020)

Vocational Courses:

1. Electronics Technology
2. Tourism Transport and Travel Management
3. Company Law and Practice
4. Office Procedure and Practice
5. Desktop Publishing
6. Mushroom Biology and Production
7. Vermiculture and Vermicomposting



Prof. B.K. Datta
संकाभाध्यक्ष / Dean
विज्ञान संकाय
Faculty of Science
त्रिपुरा विश्वविद्यालय
Tripura University

**Syllabus for Vermiculture and Vermicomposting
(UG Course)**

**Unit – I
(Vermiculture)**

1. About Earthworm:
Basic body structure of earthworm (General body plan, Prostomium, Peristomium, Metamerism, Cuticle, Setae, Different body pores, Clitellum, Digestive system).
2. Earthworm Ecology:
Distribution; Food habit and habitat; Ecological requirements: moisture, temperature, pH, organic matter etc.; Ecological categories: Epigeic, Endogeic and Anecic earthworms; Ecosystem services i.e. role played by earthworms in soil ecosystem.
3. Reproduction:
Hermaphroditism, Copulation and cocoon formation, Cocoon structure, Incubation period of cocoon in vermicomposting earthworm, Fecundity in surface dwelling (epigeic) and soil dwelling (endogeic and anecic) earthworm.
4. Vermiculture:
Definition, Difference between vermiculture and vermicomposting, Selective features of earthworms for vermiculture and vermicomposting, Method of vermiculture of phytophagous and geophagous earthworm, Utility of vermiculture (protein source for pisciculture, poultry farming, piggery etc., application in vermicomposting).

**Unit – II
(Vermicomposting)**

1. Vermicomposting:
Definition, Habitat of vermicomposting earthworms, Scientific names of native and exotic vermicomposting earthworms (Native Indian earthworms: *Perionyx excavatus*, *Perionyx ceylanensis*, European earthworms: *Eisenia fetida*, *Eisenia andrei*, South African earthworms: *Eudrilus eugeniae*), Selective features of earthworm species for vermicomposting.

2. Principle of vermicomposting, Components of the vermicomposting system (Appropriate species of earthworms with suitable population characteristics, proper substrate, optimum environmental factors under Indian condition, Design and operations to be implemented).
3. Methods of vermicomposting – (a) Low cost floor beds, (b) Tank system; Management during vermicomposting; Products of vermicomposting: earthworm biomass (vermiprotein) and vermicompost.
4. Definition of vermicompost; Physicochemical features of vermicompost; Role of earthworm and vermicompost in growth of plants; Vermiwash and its utility in agriculture.

References:

- i. Chaudhuri, P.S. (2005). Vermiculture and vermicomposting as biotechnology for conversion of organic wastes into animal protein and organic fertilizer. *Asian Jr. of Microbiol. Biotech. Env. Sc.*, 7(3): 359-370.
- ii. Chaudhuri, P.S. (2006). *Kenchor Jeevan Baichitra: Kencho Projukti*. Jyan Bichitra Prakashani, Tripura, ISBN: 81-8266-088-2, 128 pages.
- iii. Das, M.C. (2012). *Charles Darwin's Plough: Tools for Vermitechnology*. I K International Publishing House, ISBN: 978-93-81141-27, 182 pages.
- iv. Ismail, S.A. (1997). *Vermicology - The Biology of Earthworms*. Orient Longman, 92 pages.
- v. Kale, R.D. (1998). *Earthworms: Cinderella of organic farming*. Prism Books Pvt. Ltd., Bangalore.

SEMESTER III
Mushroom Biology and Production
Theory and Practical Syllabus
PAPER CODE BOT-BT 901 C/E
Total Marks: 100
Credit-4

Theory:50

Unit-I: History of Mushrooms Factual record on mushroom occurrence, Basic concept on mushrooms, Mushrooms in India.

Unit- II: Mushroom Morphology: Different parts of a typical Mushroom and variations in mushroom morphology, Key to differentiate Edible and Poisonous mushrooms.

Unit- III: Mushroom Ecology and collection- Epigenous and Hypogenous, Natural Habitats- Humicolous, Lignicolous and Coprophilous. Wild mushroom collection, Spore print, Drying and preservation techniques.

Unit-IV: Biology of Mushrooms: General characters of mushroom with reference to general Morphology and distinguishing characteristics, Life cycles of Mushrooms. Diseases of mushrooms. Nutraceutical properties of mushrooms.

Unit-V: Spawn Preparation Facilities required for spawn preparation, Preparation of spawn substrate, Preparation of pure culture, media used in raising pure culture, Culture maintenance, and storage of spawn.

Unit-V: Mushroom Cultivation Introduction to cultivable mushrooms of India. Cultivation techniques of Oyster mushroom/Paddy straw mushroom.

Practical: 50

1. Practical for Mushroom Cultivation
2. Study of external characters of mushroom.
3. Study of the internal structure of mushroom.
4. Study of different species of mushrooms.
5. Identification of edible and poisonous mushroom.
6. Preparation of the record of different types mushroom of your locality.
7. Methods of preservation of mushrooms.
8. Field survey /fieldwork.
9. Experimental evaluation of medicinal properties.
10. Cultivation technique of mushroom.

Syllabus for Under Graduate Studies under NEP-2020
Vocational Course
Desktop Publishing (DTP)

Course outcomes (CO):

Credit: 3

After studying this Course the Student will be able to:

- Understand basics of computer and its related terminology.
- Write, Edit & Print documents using MS-WORD & EXCEL.
- Understand and Using PageMaker & Photoshop and used for Desktop Publishing and would be able to create and design documents with text and graphics like newspaper, brochure, wedding cards, visiting cards, greeting cards etc.

Course Title : Desktop Publishing

Course Type : Vocational

Max Marks : 100 Total No. Of Lectures per week (in hours per week): 3

Content of Course

Unit - I

11 Hours

Fundamentals of Computer & MS Paint: Introduction to Computer, Introduction to MS Paint, Presentation and setup of user interface and help, Open and save an image, Knowledge of available file types (JPG, TIFF, ICO, PNG, GIF...), Set opened image as desktop wallpaper, Display options (zoom, miniature, grid, etc.), Define or resize the size of an image (non functional transparency), Drawing tools overview, Colors selection with right click/left click in the palette, Copy/Paste from selection with or without transparency, Insert an extern

Unit - II

11 Hours

MS Office: Introduction to MS Office, Word Processing Software, Creating and opening a document, Saving and printing a given document, Insertion of text and graphics in a given document from external source, Using various fonts and styles to make a document more beautiful, Formatting and editing a document, Creating and editing Electronic Spreadsheet,

Unit - III

12 Hours

Photoshop : All Tools (Marquee Tool, Magnetic Tool, Slice Tool, Patch Tool, Clone Stamp Tool, Gradient Tool, Smudge Tool, Blur Tool, Text Tool etc.) Fill, Stroke Option Histogram, Group, Ungroup Lock Object, Color Range Feather, Modify, Grow, Filter Liquify, Artistic Blur, Video Option etc.

Unit - IV

11 Hours

PageMaker : Type Settings for Publication, Page Layout, Word Wrapping, Grouping, Merging two or more files, Creating columns, Tab settings, Paragraph settings, Hyphenation, Paper Style, Index & Table of Contents, Fonts, Mixing Text & Graphics, Linking objects, Printing facility

Suggested Reading:

1. Desk Top Publishing From A to Z by Bill Grout and Osborne; McGraw Hill
2. ADOBE PAGEMAKER 6.5 - Shashank Jain & Satish Jain — First Edition 2001, BPB Publications.
3. DESKTOP PUBLISHING ON PC — M.C. Sharma, BPB Publications
4. The complete Reference Getting Started with Page Maker , McGraw-Hills
5. Adobe Photoshop CS2 Classroom In A Book (2020) , Adobe Press.

TRIPURA (CENTRAL) UNIVERSITY
SYLLABUS FOR UNDER GRADUATE PROGRAMME UNDER NEP 2020
OFFICE PROCEDURE AND PRACTICE (Vocational Course)

Total Credit- 3

Total Marks-100

Total hours – 60 hours (15 hours for each unit)

Unit-I

Office Management: - Meaning of Office, Functions and Importance. Paperless Office and Virtual Office, Forms and Types of organization, Centralization and Decentralization of office services - advantages and disadvantages.

Objectives and Principles of office Management, Functions of office Manager, Qualities required for Office Manager. Duties of the office manager.

Office Operations: - Handling of MAIL (inward and outward) – Maintenance of Records –Filing and Indexing – objectives and importance. Office forms and Stationery: - Meaning, importance and advantages of Office forms and Stationery

Unit-II

Office Machines and Labour-Saving Devices: - Meaning, advantages and disadvantages of Mechanisation, Factors in selection of office machines, Kinds of modern Office Equipment/Machines. Meetings: definition-lawful and unlawful meeting-Notice, Agenda, quorum of the meetings, different kind of company meetings, minutes and resolutions, secretary's duty regarding different kind of company meetings.

Unit-III

Office communication: Nature- Process and Importance of Communication,

Types of Communication (verbal & Non Verbal), Different forms of Communication. Barriers to Communication: Linguistic Barriers, Psychological Barriers, Interpersonal Barriers, Cultural Barriers, Physical Barriers, Organizational Barriers.

Process of communication, Role, effects and advantages of technology in Business Communication like email, text messaging, instant Messaging and modern techniques like video conferencing, social networking, Strategic

Importance of e-communication.

Unit-IV

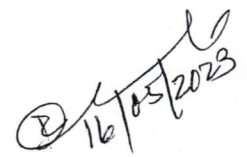
Business Correspondence : Essentials of business letter, letter Writing, presentation, Inviting quotations, Sending quotations, Placing orders, Inviting tenders, Sales letters, claim & adjustment letters and social correspondence. Memorandum, Inter -office Memo, Notices, Agenda, Minutes, Job application letter.

Drafting of Reports : preparation and drafting of reports, minutes, Resolutions.

Suggested Readings:

1. Bovee, and Thill: Business Communication Today, Pearson Education: New Delhi.
2. Shirley Taylor, Communication for Business, Pearson Education: New Delhi.
3. Locker & Kaczmarek: Business Communication: Building Critical Skills, McGraw Hill Education: New Delhi.

4. Ghosh, P. K.: Office Management, Sultan Chand & Sons: New Dehi


16/05/2023

Syllabus for Under Graduate Studies under NEP-2020

VOCATIONAL COURSE

Company Law & Practice

TOTAL -3 Credits

TOTAL MARKS-100

Unit-I

12 Hours

Companies Act, 2013: Definition, types of Companies, Formation of Companies, Memorandum of Association, Articles of Association, Prospectus,.

Government Companies: Meaning, registration, Annual Reports.

National Company Law Tribunal and Appellate Tribunal: Definition, Constitution of Company Law Tribunal & Appellate Tribunal, Qualification of Chairperson and member of the Tribunals, Registration, Remuneration and Removal of members.

Unit-II

12 Hours

Meetings of Board and its Powers: Meeting of Board, Quorum, Resolution, Audit Committee, Nomination and Remuneration Committee and Stakeholders Relationship Committee, Powers of Board, Restrictions on powers of Board, Related Party Transactions.

Appointment and Remuneration of Managerial Personnel: Appointment of managing director and key managerial person, whole time director, Remuneration of managing person and in case of absence or inadequacy of profits, Functions of Company Secretary, Secretarial Audit for bigger companies.

Unit-III

12 Hours

SEBI Act, 1992: Definition, Objectives, Powers & Functions of SEBI, Penalties, Adjudication, Establishment, Jurisdiction, Authority and Procedure of Appellate Tribunal.

The Foreign Exchange Management Act, 2000: Definitions, Regulation and Management of Foreign Exchange, Authorized Person, Contravention and Penalties, Adjudicator and Appellate Tribunal, Directorate of Enforcement.

Unit-IV

12 Hours

The Negotiable Instruments Act, 1881: Definition, Types and Negotiable Instruments, Negotiation Holder and holder in due course, Payment in due: endorsement and Crossing of Cheque, Presentation of negotiable instruments.

Policy Framework for Regulation of FDI: Meaning and Forms of FDI, FDI Policy and role of R.B.I. Emerging issues in Corporate Laws and Governance.

Suggested Readings:

1. Ravinder Kumar, Legal Aspects of Business, Cengage Learning India Ltd: New Delhi
2. M.C. Kuchhal & Vivek., Business Legislation for Management, Vikas Publishing House Pvt. Ltd.: New Delhi.
3. Padhi, P.K., Legal Aspects of Business, PHI Learning India Pvt. Ltd: New Delhi
4. Sulphey & Basheer: Laws for Business, PHI Learning India Pvt. Ltd: New Delhi
5. N.D. Kapoor, Company Law, Sultan Chand & Sons: New Delhi

SYLLABUS FOR UNDERGRADUATE STUDIES UNDER NEP 2020
VOCATIONAL COURSE

Tourism Transport & Travel Management

TOTAL -3 Credits
TOTAL Marks= 100 Marks.

Unit-1

12 Hours

Travel & Tourism Fundamentals-: Concept, Tourism Systems, Scope, Functionaries, Impacts:-
Travel Motivations & Types-Historical & Cultural, Sports, Health, Education & Niche, Travel &
Tourism Governance in India.

Unit-2.

12 Hours

.Tourism Resources & Communication: - Geophysical & Natural Resources of Tourism-Historical
Resources-Architectural & Art History India-. Business Communication.

Unit-3

12 Hours

Tourism Transportation-

Tourism & Transport Services: Basic issues in Air Transport Services, Surface Transport, Water
Transport.

Unit-4

12 Hours

Hospitality & Accommodation Services

Tour Itinerary & Presentation, Preparation of Travel Planning. Transport Booking, Accommodation
Booking, E- Travel Ticketing & Booking, Tour operations & Tour Guide.

TRIPURA UNIVERSITY
(A CENTRAL UNIVERSITY)
SURYAMANINAGAR, TRIPURA

**UNDERGRADUATE ACADEMIC
PROGRAMMES UNDER THE NEP-2020**

**SYLLABUS FOR TOURISM TRANSPORT
&
TRAVEL MANAGEMENT**
(THEORY & PRACTICAL)

CREDITS: 03 / 100 MARKS

Syllabus for- Tourism Transport & Travel Management - 1st Semester

3 Credits- 100 Marks.		
5 Groups, Each Group carries 20 Marks= 5 X 2 = 100 Marks.	1 st Semester	2 nd Semester
Syllabus for 1 st Semester		
Group-A. Travel & Tourism Fundamentals - 20 Marks-	10 Classes	10 Classes
Unit-1. Tourism Systems, Scope, Impacts.		
Unit-2. Travel Motivations & Types.		
Unit-3. Travel & Tourism Organizations.		
Group-B. Tourism Resources & Communication - 20 Marks-	10 Classes	10 Classes
Unit-1. Geophysical & Natural Resources of Tourism.		
Unit-2. Historical Resources		
Unit-3. Business Communication.		
Group-C. Tourism Transportation - 20 Marks-	10 Classes	10 Classes
Unit 1. Tourism & Transport Services.		
Unit 2. Air Transport Services		
Unit-3. Surface Transport		
Unit-4. Water Transport.		
Group-D. Hospitality & Accommodation Services - 20 Marks.	10 Classes	10 Classes
Unit-1 . Tour Itinerary & Presentation.		
Unit-2- Preparation of Travel Planning.		
Unit-3. Transport Booking		
Unit-4. Accommodation Booking		
Unit 5 - E- Travel Ticketing & Booking.		
Unit 6- Tour operations & Tour Guide.		
Group- E. Practical & Viva voce - 20 Marks.	5 Classes	5 Classes
Unit-1- Tour Itinerary & Presentation.		
Unit 2- Health & Hygiene in Tourism.		
Unit-3- Study Tour Report.		
Total Classes in 1 (One) Semester	45 Classes	45 Classes

Submitted by.
 Debarata Roy 17/01/23
 Associate Professor.
 SVM Mohanpur
 Tripura (W)

Syllabus for- Tourism Transport & Travel Management - 2nd Semester

Credits- 100 Marks.		
5 Groups, Each Group carries 20 Marks= 5 X 2 = 100 Marks.		
	1 st Semester	2 nd Semester
Syllabus for 2 nd Semester		
Group-A. Travel & Tourism Fundamentals - 20 Marks-	10 Classes	10 Classes
Unit-1. Tourism Systems, Scope, Impacts.		
Unit-2. Travel Motivations & Types.		
Unit-3. Architectural Art and History of India		
Group-B. Tourism Resources & Communication - 20 Marks-	10 Classes	10 Classes
Unit-1. Geophysical & Natural Resources of Tourism.		
Unit-2. Historical Resources		
Unit3. Historical background of India		
Group-C. Tourism Transportation - 20 Marks-	10 Classes	10 Classes
Unit 1. Tourism & Transport Services.		
Unit 2. Air Transport Services		
Unit3. Surface Transport		
Unit4. Water Transport.		
Group-D. Hospitality & Accommodation Services - 20 Marks.	10 Classes	10 Classes
Unit.1 . Tour Itinerary & Presentation.		
Unit2- Preparation of Travel Planning.		
Unit3. Transport Booking		
Unit4. Accommodation Booking		
Unit 5 - E- Travel Ticketing & Booking.		
Unit 6- Tour operations & Tour Guide for Foreign Tours		
Group- E. Practical & Viva voce - 20 Marks.	5 Classes	5 Classes
Unit-1- Tour Itinerary & Presentation.		
Unit 2- Medical Tourism in India.		
Unit-3-Project Report for Foreign Tour		
Unit-4- Different Languages.		
Total Classes in 1 (One) Semester	45 Classes	45 Classes

Submitted by -
 Debabrata Roy. 17/05/23
 Associate Professor.
 SVM, Mohanpur.
 Tripura (W)

Vocational Course

Electronics Technology

Objectives

The overall Objectives of this vocational course:

- The true development of modern society started just after the invention of electron and since then Electronics branch is playing the vital role in development of every sphere of our life. This course will provide learning experiences to students that develop broad knowledge and understanding of key concepts of electronics and equip them with advanced scientific/technological capabilities for analyzing and tackling the issues and problems in the field of electronics.
- Develop ability in students to apply knowledge and skills they have acquired to solve specific theoretical and applied problems in electronics
- Develop abilities in students to design and develop innovative solutions for benefits of society.
- Provide students with skills that enable them to get employment in industries or pursue higher studies or research assignments or turn as entrepreneurs.

Course Outcome

- Students will enable to apply Logic thinking and Basic Science knowledge for problem solving in various fields of electronics both in industries and research.
- To acquire experimental skills, analyzing the results and interpret data.
- Ability to design / develop/manage/ operation and maintenance of sophisticated electronic gadgets / systems / processes that conforms to a given specification within ethical and economic constraints.
- Capacity to identify and implementation of the formulate to solve the electronic related issues and analyze the problems in various sub disciplines of electronics.
- Capability to use the Modern Tools/Techniques.

1ST Semester

ELECTRONIC DEVICES AND CIRCUITS

Group A(Theory Part)

Internal Assessment-15, Semester Eam-45 , Credit point 2

Content	Hrs
UNIT – 1	10
Network Theorems: Superposition, Thevenin's, Norton's, Maximum Power Transfer, and Reciprocity Theorems., RLC series and parallel Resonant Circuit	
PN junction diode: Ideal and practical diodes, Formation of Depletion Layer, Diode Equation and I-V characteristics. Idea of static and dynamic resistance, Zener diode, Reverse saturation current, Zener and avalanche breakdown.	
Rectifiers: Half wave and Full wave (centre tap and bridge) rectifiers, expressions for output voltage, ripple factor and efficiency (mention only), Shunt capacitor filter. (Numerical examples wherever applicable).	
UNIT – 2	10
Voltage regulator: Block diagram of regulated power supply, Line and Load regulation, Zener diode as voltage regulator – circuit diagram, load and line regulation, disadvantages. Clippers (shunt type) and clampers (Qualitative analysis only), Voltage Multipliers.	
Bipolar Junction Transistor: Construction, types, CE, CB and CC configurations (mention only), VI characteristics of a transistor in CE mode, Regions of operation (active, cut off and saturation), leakage currents (mention only), Current gains α , β and γ and their inter-relations, dc load line and Q point. Applications of transistor as amplifier and switch - circuit and working. (Numerical examples wherever applicable).	

UNIT – 3	10
<p>Chapter No. 7- Transistor biasing and Stabilization circuits: Fixed Bias and Voltage Divider Bias. Thermal runaway, stability and stability factor. Transistor as a two-port network, h-parameter equivalent circuit.</p>	
<p>Amplifier: Small signal analysis of single stage CE amplifier using h-parameters. Input and Output impedances, Current and Voltage gains.</p>	
<p>Special semiconductor diodes: Varactor diode, Schottky diode, Tunnel diode - characteristics, working, symbol, and applications for each. LED, LCD and solar cell – construction, operation and applications, 7-segment display.</p>	

Group B – PRACTICAL

Internal assessment -10, Experiment -30

Credit-1, Total Class period: 20 hours

Content	Hrs
<ol style="list-style-type: none">1. To draw the characteristic curves of PN-junction diode for both forward and reverse bias and hence to determine AC and DC resistance of the diode.2. Study of the I-V Characteristics of Zener diode.3. Study of the I-V Characteristics of LEDs of two different colours and 7-segment display.4. Study of Half wave rectifier without and with shunt capacitor filter– ripple factor for different values of filter capacitors.5. Study of full wave bridge rectifier without and with shunt capacitor filter – ripple factor for different values of filter capacitors.6. Study of Zener diode as a Voltage Regulator using bridge rectifier with shunt capacitor filter [Load and line regulation].7. Study of Clipping, Clamping and Voltage Multiplier circuits.8. Study of Transistor characteristics in CE configuration – determination of h-parameters9. Study of Series Resonance circuits – determination of its<ul style="list-style-type: none">• Resonant frequency• Bandwidth• Quality Factor	30

2ND Semester

ANALOG AND DIGITAL ELECTRONICS

Group A(Theory Part) Credit 2

Internal Assessment-15, Semester Exam-45

Content	Hrs
UNIT – 1	10
Op-Amp: Differential Amplifier, Block diagram of Op-Amp, Characteristics of an Ideal and Practical Op-Amp, Open and closed loop configuration, CMRR, Slew Rate and concept of Virtual Ground.	
Applications of op-amps: Concept of feedback, negative and positive feedback, advantages of negative feedback (Qualitative Study). Inverting and non- inverting amplifiers, Summing and Difference Amplifier, Differentiator, Integrator, Comparator.	
Filters: First and Second order active Low pass, High pass and Band pass Butterworth filters.	
UNIT – 2	10
Number System: Decimal, Binary, Octal and Hexadecimal number systems, base conversions, Binary arithmetic; addition, subtraction by 1's and 2's complement method	
Boolean Algebra: Constants, variables, operators, basic logic gates- AND, OR, NOT, Positive and negative logic, Boolean laws, Duality Theorem, De Morgan's Theorem, simplification of Boolean expressions-SOP and POS. Derived logic gates (NAND, NOR, XOR & XNOR). Universal property of NOR and NAND gates. (Numerical examples wherever applicable).	
Digital to Analog Converter: DAC with binary weighted resistor and R-2R resistor ladder network. Analog to Digital converter:	

<p>Design of Arithmetic Logic Circuits: Half Adder, Full Adder, Half Subtractor, Full Subtractor. 4-bit parallel binary adder, Encoder, Decoder, 2:4 decoder using AND gates, 3:8 decoder using NAND gates, Multiplexer - 4:1 and 8:1 multiplexer, Demultiplexer - 1:4 and 1:8 demultiplexer (logic diagram and truth table of each)</p>	
<p>UNIT - 4</p>	<p>10</p>
<p>Sequential Logic Circuits: Flip-Flops - SR Latch, RS, D and JK Flip-Flops. Clocked (Level and Edge Triggered) Flip-Flops. Preset and Clear operations. Race-around conditions in JK Flip-Flop. Master- Slave JK and T Flip-Flops. Applications of Flip-Flops in semiconductor memories, RAM, ROM and types.</p>	

Group B – PRACTICAL
Internal assessment -10, Experiment -30
Credit-1, Total Class period: 20 hours

Content	Hrs
<ol style="list-style-type: none">1. Design of inverting and non-inverting amplifier using Op-amp2. Op-amp inverting and non-inverting adder, subtractor3. Design and study of differentiator and integrator using op-amp for different input waveforms.4. Design and study of first order high-pass and low-pass filters using op-amp.5. Verification of truth tables of OR, AND, NOT, NAND, NOR, XOR and XNOR gates using respective ICs. Realization of XOR and XNOR using basic gates.6. Universal property of NAND and NOR gates7. Half Adder and Full Adder using (a) logic gates (b) using only NAND gates.8. Half Subtractor and Full Subtractor (a) logic gates (b) using only NAND gates9. Study of Clocked RS, D and JK Flip-Flops using NAND gates.	30