

FACULTY OF ENGINEERING & TECHNOLOGY

SYLLABUS

FOR

B.Sc. Internet & Mobile Technologies (Semester: I – VI)

Session: 2019-20



GURU NANAK DEV UNIVERSITY AMRITSAR

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B.Sc. (Internet and Mobile Technologies) Semester System
(Four Years Degree Course)

SEMESTER – I:

Paper ID	Paper Name	Total Marks
IMT-101	Object Oriented Concepts and C++	75
IMT-102	Data Structures	75
IMT-103	Concepts of Computer Science	75
IMT-106	Practical – Based on Data Structures and C++	50
IMT-107	Practical – Based on SQL	50
IMT-104	Communication Skills in English – I	50
IMT-105	Punjabi (Compulsory) / ** ਮੁੱਢਲੀ ਪੰਜਾਬੀ / ** Punjab History & Culture (From Earliest Times to C 320)	50
	* Drug Abuse: Problem, Management and Prevention (Compulsory Paper)	50
Total Marks:		425

SEMESTER – II:

Paper ID	Paper Name	Total Marks
IMT-201	Scripting Languages	75
IMT-202	Web Designing	75
IMT-203	Fundamentals of PHP	75
IMT-204	Internet and E-Commerce	75
IMT-207	Practical – Based on PHP and Scripting Languages	50
IMT-208	Live Working Project	50
IMT-205	Communication Skills in English – II (Th.35+Pra.15)	50
IMT-206	Punjabi (Compulsory) / ** ਮੁੱਢਲੀ ਪੰਜਾਬੀ / ** Punjab History & Culture (C 320 TO 1000 B.C.)	50
	* Drug Abuse: Problem, Management and Prevention (Compulsory Paper)	50
Total Marks:		500

Note: * Marks of this Paper will not be included in the Total Marks.

**** (Special Paper in lieu of Punjabi Compulsory)**

(For those students who are not domicile of Punjab)

B.Sc. (Internet and Mobile Technologies) Semester System
(Four Years Degree Course)

SEMESTER – III:

Paper ID	Paper Name	Total marks
IMT-301	Java and Android Programming	75
IMT-302	Open Source Technologies	75
IMT-303	Advanced PHP	75
IMT-304	Practical Based Java and Android Programming	75
IMT-305	Project Based on Advanced PHP and CMS (Content Management System)	100
Total Marks:		400

SEMESTER – IV:

Paper No.	Paper	M. Marks
IMT-401	Cloud and Mobile Computing	75
IMT -402	Mobile Application Designing	75
IMT -403	Mobile Application Development(iOS)	75
IMT -404	E-Commerce and Prestashop	75
IMT -405	Software Engineering and Testing	75
IMT-406	Project work based on Mobile Application Designing and Developing (iOS)	75
ESL-221	* Environmental Studies (Compulsory)	100
Total Marks:		450

*** Marks of Paper EVS will not be included in Grand Total.**

B.Sc. (Internet and Mobile Technologies) Semester System
(Four Years Degree Course)

SEMESTER – V:

Paper ID	Paper Name	Total marks
IMT-501	Game Development	75
IMT-502	Advanced Programming in Android	75
IMT-503	Big Data and Analytics	75
IMT-504	Practical based on Game Development	50
IMT-505	Practical – Based on Android Application Development	75
IMT-506	Practical – Hadoop, MapReduce, HDFS, MongoDB	50
Total Marks:		400

SEMESTER – VI:

Paper ID	Paper Name	Total marks
IMT-601	Industrial Training Based on Mobile and Web Based Technology	400
Total Marks:		400

IMT-101: Object Oriented Concepts and C++

Time: 3 Hours

Max. Marks: 75

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A

Programming Paradigms: Introduction to the object oriented approach towards programming by discussing Traditional, Structured Programming methodology.

Objects & Classes: Object Definition, Instance, Encapsulation, Data Hiding, Abstraction, Inheritance, Messages, Method, Polymorphism, Classes, Candidate & Abstract Classes to be examples of the Design process.

SECTION–B

Object Oriented Programming using C++: Characteristics of OOP, Overview of C++, I/O using cout and cin, Objects and Classes, Member functions and data, private & public, constructor & destructor, Constructor Overloading, Types of Constructors.

SECTION–C

Operator Overloading: Overloading unary and binary operators, Type Conversion using Operator Overloading

SECTION–D

Inheritance: Concept of inheritance, Base & derived classes, Access Specifiers, Class Hierarchies, Types of Inheritance with examples.

Virtual Functions and Polymorphism: Virtual functions, friend functions, static function, this pointer, polymorphism, Types of Polymorphism with examples, templates, class templates.

References:

1. Designing Object Oriented Software Rebecca Wirfs - Brock Brian Wilerson, PHI.
2. Object Oriented Programming in Turbo C++, Robert Lafore, Galgotia Publication.
3. Designing Object Oriented Applications using C++ & Booch Method, Robert C. Martin.

IMT-102: Data Structures**Time: 3 Hours****Max. Marks: 75****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A

Preliminaries: Various data structures, common operations on data structures, algorithm complexity, big O notation, time-space tradeoff between algorithms.

Arrays: Arrays defined, representing arrays in memory, various operations on linear arrays, Multi- dimensional arrays, Records.

Linked Lists: Types of linked lists, representing linked lists in memory, advantage of using linked lists over arrays, various operation on linked lists.

SECTION–B

Stacks: Description of stack structure, implementation of stack using arrays and linked lists. Applications of stacks - converting arithmetic expression from infix notation to polish and their subsequent evaluation, Quicksort technique to sort an array.

Queues: Description of queue structure, implementation of queue using arrays and linked lists, description of priorities queues. Applications of queues - Operating system simulations.

SECTION–C

Trees: Description of tree structure and its terminology, binary search tree, implementing binary search tree using linked lists, various operations on binary search trees.

Heaps: Description of heap structure, implementing heaps using arrays, various operations on heaps, Applications of heaps – Heapsort technique to sort an array, implementation of priority queues.

SECTION–D

Graphs: Description of graph structure, implementing graphs in memory using adjacency matrix or adjacency lists, various graphs transversing algorithms, finding shortest path between two nodes, Dijkstra's shortest path algorithm.

Searching and Sorting: Linear Search, Binary search, Bubble Sort, Selection Sort, Insertion Sort, Merge Sort.

Hash Tables: Direct address tables, hash tables, collision resolution by chaining, hash functions, open addressing – linear probing, quadratic probing, double hashing.

Reference:

- Seymour Lipschutz: Theory and Problems of Data Structures, Schaum Outline Series, McGraw-Hill Book Company.

IMT-103: Concepts of Computer Science

Time: 3 Hours

Max. Marks: 75

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A

Basic Concepts: History & Evolution of Operating System, OS as resource manager, Various views of OS.

Memory Management: Basic Memory management Schemes, Partition memory management, demand paged memory management, segmented memory management, swapping, hierarchy of memory.

SECTION–B

Process Management: States of Processes, process scheduling, race conditions, deadlocks, banker's algorithm, precedence graphs, semaphores, monitors.

SECTION–C

Basic Concepts of Database Management (Database, Database System, why database, Data independence) an architecture for a database system (levels of the architecture, mappings, DBA, client/server architecture) Introduction to Relational db systems.

ER Model: Overview, ER diagrams, Database design using ER model.

SECTION–D

The Relational Model: Relational Data Objects: Domains and relations, Integrity Constraint, SQL Language. Working knowledge of DDL, DML and DCL based statements for generating queries is to be provided.

Relational Database Design: Concepts of functional dependencies, multivalued dependencies, 1NF, 2NF, 3NF, BCNF, Higher Normal Forms.

References:

1. Madnick and Donovan: Operating System, McGraw Hill, 1973.
2. J.L. Peterson, A. Silberchatz: Operating System Concepts, Addison Wesley, 1983.
3. C.J. Date, "An Introduction of Database System", The Systems Programming Series, 6/Ed, Addison-Wesley Publishing Company, Inc., 1995.
4. Silberschatz, Korth and Sudarshan, "Database System Concepts", Third Ed. McGraw Hill International Editions, Computer Science Series-1997.

B.Sc. (Internet and Mobile Technologies) (Semester – I)
(Three Years Programme)

IMT-106: Practical – Based on Data Structures and C++

Marks: 50

IMT-107: Practical – Based on SQL

Marks: 50

IMT-104: COMMUNICATION SKILLS IN ENGLISH – I

Time: 3 Hours

Max. Marks: 50

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The syllabus is divided in four sections as mentioned below:

Section–A

Reading Skills: Reading Tactics and strategies; Reading purposes–kinds of purposes and associated comprehension; Reading for direct meanings.

Section–B

Reading for understanding concepts, details, coherence, logical progression and meanings of phrases/ expressions.

Activities:

- Comprehension questions in multiple choice format
- Short comprehension questions based on content and development of ideas

Section–C

Writing Skills: Guidelines for effective writing; writing styles for application, personal letter, official/ business letter.

Activities:

- Formatting personal and business letters.
- Organising the details in a sequential order

Section–D

Resume, memo, notices etc.; outline and revision.

Activities:

- Converting a biographical note into a sequenced resume or vice-versa
- Ordering and sub-dividing the contents while making notes.
- Writing notices for circulation/ boards

Recommended Books:

- *Oxford Guide to Effective Writing and Speaking* by John Seely.
- *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP

IMT-105: ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)

ਸਮਾਂ : 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ : 50

ਪਾਠ-ਕ੍ਰਮ ਅਤੇ ਪਾਠ-ਪੁਸਤਕਾਂ

ਸੈਕਸ਼ਨ-ਏ

ਆਤਮ ਅਨਾਤਮ (ਕਵਿਤਾ ਭਾਗ),
(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
(ਪ੍ਰਸ਼ਗ ਸਾਹਤ ਵਆਖਆ, ਸਾਰ)

ਸੈਕਸ਼ਨ-ਬੀ

ਇਤਿਹਾਸਕ ਯਾਦਾਂ (ਇਤਿਹਾਸਕ ਲੇਖ-ਸੰਗ੍ਰਹਿ)
ਸੰਪਾ. ਸ.ਸ.ਅਮੋਲ,
ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ। (ਲੇਖ 1 ਤੋਂ 6)
(ਨਿਬੰਧ ਦਾ ਸਾਰ, ਲਿਖਣ-ਸ਼ੈਲੀ)

ਸੈਕਸ਼ਨ-ਸੀ

(ੳ) ਪੈਰ੍ਰਾ ਰਚਨਾ
(ਅ) ਪੈਰ੍ਰਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ।

ਸੈਕਸ਼ਨ-ਡੀ

(ੳ) ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ : ਉਚਾਰਨ ਅੰਗ, ਉਚਾਰਨ ਸਥਾਨ ਤੇ ਵਿਧੀਆਂ, ਸਵਰ, ਵਿਅੰਜਨ,
ਸੁਰ-ਪ੍ਰਬਧ।
(ਅ) ਭਾਸ਼ਾ ਵੰਨਰੀਆਂ : ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪ-ਭਾਸ਼ਾ ਦਾ ਅੰਤਰ, ਪੰਜਾਬੀ
ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ-ਚਿੰਨ੍ਹ।

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ।
ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ
ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

IMT-105: ਮੁੱਢਲੀ ਪੰਜਾਬੀ
(In lieu of Compulsory Punjabi)

ਸਮਾਂ : 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ: 50

ਪਾਠ-ਕ੍ਰਮ

ਸੈਕਸ਼ਨ-ਦੇ

ਪੈਂਤੀ ਅੱਖਰੀ, ਅੱਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤ੍ਰਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ)
ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ

ਸੈਕਸ਼ਨ-ਬੀ

ਪੰਜਾਬੀ ਸ਼ਬਦ-ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ
(ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ)

ਸੈਕਸ਼ਨ-ਸੀ

ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇ-ਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਨਾਲ ਸੰਬੰਧਤ।

ਸੈਕਸ਼ਨ-ਡੀ

ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ।
ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

IMT-105: Punjab History & Culture (From Earliest Times to C 320)

**(Special Paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)**

Time: 3 Hours

Max. Marks: 50

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section–A

1. Physical features of the Punjab and its impact on history.
2. Sources of the ancient history of Punjab

Section–B

3. Harappan Civilization: Town planning; social, economic and religious life of the Indus Valley People.
4. The Indo-Aryans: Original home and settlements in Punjab.

Section–C

5. Social, Religious and Economic life during *Rig* Vedic Age.
6. Social, Religious and Economic life during Later Vedic Age.

Section–D

7. Teachings and impact of Buddhism
8. Jainism in the Punjab

Suggested Readings:

1. L. M Joshi (Ed.), *History and Culture of the Punjab*, Art-I, Patiala, 1989 (3rd Edition)
2. L.M. Joshi and Fauja Singh (Ed.), *History of Punjab*, Vol.I, Patiala 1977.
3. Budha Parkash, *Glimpses of Ancient Punjab*, Patiala, 1983.
4. B.N. Sharma, *Life in Northern India*, Delhi. 1966.
5. Chopra, P.N., Puri, B.N., & Das, M.N. (1974). *A Social, Cultural & Economic History of India*, Vol. I, New Delhi: Macmillan India.

**PAPER: DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION
(COMPULSORY PAPER)**

PROBLEM OF DRUG ABUSE

Time: 3 Hours

Max. Marks: 50

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section – A

Meaning of Drug Abuse:

Meaning, Nature and Extent of Drug Abuse in India and Punjab.

Section – B

Consequences of Drug Abuse for:

Individual	:	Education, Employment, Income.
Family	:	Violence.
Society	:	Crime.
Nation	:	Law and Order problem.

Section – C

Management of Drug Abuse:

Medical Management: Medication for treatment and to reduce withdrawal effects.

Section – D

Psychiatric Management: Counselling, Behavioural and Cognitive therapy.

Social Management: Family, Group therapy and Environmental Intervention.

References:

1. Ahuja, Ram (2003), *Social Problems in India*, Rawat Publication, Jaipur.
2. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
3. Inciardi, J.A. 1981. *The Drug Crime Connection*. Beverly Hills: Sage Publications.
4. Kapoor. T. (1985) *Drug epidemic among Indian Youth*, New Delhi: Mittal Pub.
5. Kessel, Neil and Henry Walton. 1982, *Alcoholism*. Harmond Worth: Penguin Books.
6. Modi, Ishwar and Modi, Shalini (1997) *Drugs: Addiction and Prevention*, Jaipur: Rawat Publication.
7. National Household Survey of Alcohol and Drug abuse. (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
8. Ross Coomber and Others. 2013, *Key Concept in Drugs and Society*. New Delhi: Sage Publications.
9. Sain, Bhim 1991, *Drug Addiction Alcoholism, Smoking obscenity* New Delhi: Mittal Publications.
10. Sandhu, Ranvinder Singh, 2009, *Drug Addiction in Punjab: A Sociological Study*. Amritsar: Guru Nanak Dev University.
11. Singh, Chandra Paul 2000. *Alcohol and Dependence among Industrial Workers*: Delhi: Shipra.
12. Sussman, S and Ames, S.L. (2008). *Drug Abuse: Concepts, Prevention and Cessation*, Cambridge University Press.
13. Verma, P.S. 2017, “*Punjab’s Drug Problem: Contours and Characteristics*”, Economic and Political Weekly, Vol. LII, No. 3, P.P. 40-43.
14. World Drug Report 2016, United Nations office of Drug and Crime.
15. World Drug Report 2017, United Nations office of Drug and Crime.

IMT-201: Scripting Languages

Time: 3 Hours

Max. Marks: 75

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A

The Web: Historical Perspective of HTTP, Uniform Resource Locator, Request-Response paradigm, Statelessness, Request Methods with Status Codes, Structure of HTTP Message: Content Types, caching control, security, session support; Virtual Hosting, Caching Support and Persistent Connections.

SECTION–B

Client Side Script: Scripting Language variables, functions, conditions, Objects; DOM, Data Validation, Web browser Configuration, Comparison of Client Side Scripting Languages.

Browser Languages:

XHTML: Forms, Frames, Tables etc.

DHTML: Cascading Style Sheets, Object Model, Event Model, Filters and Transitions, Data Controls, Handling of Multimedia Data.

SECTION–C

XML: Introduction, Syntax, Document structure, Document type Definitions, namespaces, XML schemas, Displaying raw XML documents, Displaying XML documents with CSS, XSLT stylesheets, XML Processors, Introduction XSL, XML transformed, XSL elements transforming with XSLT, web feeds (RSS).

SECTION–D

Overview of Server Side Script:

Static vs. Dynamic web pages, Need of Server Side Scripting, Server Side scripting, Multitier Web Architecture.

References:

1. Leon Shklar and Rich Rosen, Web Application Architecture: Principles, Protocols and Practices, Wiley, 2009.
2. Chris Bates, Web Programming: Building Internet Applications, John Wiley and Sons Ltd.
3. Patrick Carey, HTML, XHTML and XML , Course Technology CENGAGE Learning, 2010.
4. Elliotte Rusty Harold and W. Scott Means, XML in a Nutshell, O'REILLY, 2001-2004.
5. Paul Wilton, Beginning Javascript, Wiley – India, 2004.

IMT-202: Web Designing

Time: 3 Hours

Max. Marks: 75

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A

Introduction to Dreamweaver CS4

About Dreamweaver CS4, Opening Files in Dreamweaver, The Menu Bar, Properties Inspector and Panels, Panels, Moving Panels, The Properties Inspector, The Document Window, The Status Bar, The Document Toolbar, Coding Toolbar

Creating Your First Website

Set up a New Site, Creating a Root Folder, Adding Text on a Page, Formatting Text, Paragraphs, Line Breaks, Fonts, Color, Formatting Paragraphs, Creating Lists, Increase and Reduce Indentions, Insert Special Characters, Images, Inserting Images, Add White Space around Images, Align Images, Add Border to an Image, Crop an Image, Resizing Images, Create Image Placeholders, Creating Links, Text Links, Make an Image a Clickable Link, Make a Clickable, Image that Enlarges When Clicked, Create an Email Link, Create Anchors and Jump Links

Designing with Tables

Setting Up a New Site, Creating Tables, Setting Table Properties and the Properties Inspector, Placing Images and Graphics Into Tables, Adding a Background Color, Using Tracer Images in to Design a Website

Creating a Site Using a Template

Browsing Templates, Creating Your Website From a Template, Adding Images, Changing Background Colors, Create a Template from an Existing Site, Setting Editable and Uneditable Regions, Nested Templates

SECTION–B

Creating Online Forms

Form Basics, Creating a Basic HTML Form, Validation, Create Hints for Text Fields, Block Invalid Characters, Add a Validated Text Field, Add a Text Area, Add Checkboxes, Adding Radio Buttons, Adding List Menus, Creating a Submit Button

Libraries, Assets, and More Time Saving Tools

Creating Library Items, Insert a Library Item into a Document, Edit a Library Item, The Assets Panel, The Find and Replace Command, Check Spelling,

Creating a Website with Frames

Creating Frames and Framesets, Creating a Predefined Frameset, Design Your Own Frameset, Resize a Frame, Open a Document in a Frame, Save Framesets and Frames, Create a Scroll Bar, When to Use Frames

Rollovers and Other Image Tricks, Drawing Image Maps,

SECTION–C

Designing with Cascading Style Sheets

Creating Style Sheets, CSS Code Format, The CSS Styles Panel and Editing Styles, External Style Sheets, Applying Existing External Style Sheets, Working with Predefined Styles, Adding Additional Rules, Creating a New Class Style, Creating a New ID, Edit a Rule, CSS Layout

Creating Precise Designs Using AP Elements

Drawing AP Div Elements, Stacking Multiple AP Div Elements, Arranging Layers Using the Z Index, Prevent Overlaps, Hiding/Showing AP Div Elements, AP Div Elements Properties Inspector, Nested AP Div Elements, Aligning AP Div Elements, Using Tables within AP Elements, Adding Background Images, Creating a Tracing Image

Behaviors

Using the Behaviors Panel, Applying and Changing Behaviors, Changing Behaviors, Create a Pop Up Window, Create Status Bar Text, Assign Behaviors to an Image Map

Adding Audio, Video & Flash to a Page

SECTION–D

Embedding vs. Linking, Working with Flash Embedding SWF Files into a Dreamweaver Document Exploring the Flash Properties Inspector, Additional Properties, Embedding FLV Files in Dreamweaver Documents, Progressive Download Video Options, Streaming Video Options, Windows Media, QuickTime, and Other Video Formats, Adding Audio to a Page.

Working in the Code

Introduction to HTML, HTML Attributes, Viewing Source Code in a Browser Window, Edit HTML Code, Code View Options, Code Hints, Using the Code Inspector, Cleaning Up HTML, Creating Snippets

Publishing & Managing Your Website

Setting up the Server Information for FTP, The File Panel Options and Viewing Remote Files, Transferring Files To and From a Server, Getting Files, Putting Files, Working with the Synchronize Buttons, Enable Cloaking, Activating Collaborative Features, Working with Design Notes, Enabling Design Notes, and Creating Design Notes.

IMT-203: Fundamentals of PHP**Time: 3 Hours****Max. Marks: 75****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A**PHP Introduction:**

A Brief History of PHP - Installing PHP - A Walk Through PHP - Installing and Configuring PHP on Windows.

Language Basics:

Lexical Structure -Data Types -Variables -Expressions and Operators – Constants - Flow-Control Statements -Including Code -Embedding PHP in Web Pages

SECTION–B**Functions:**

Calling a Function - Defining a Function - Variable Scope -Function Parameters – Return-Values -Variable Functions - Anonymous Functions.

Strings:

Quoting String Constants - Printing Strings - Accessing Individual Characters -Cleaning Strings - Encoding and Escaping -Comparing Strings - Manipulating and Searching Strings - Regular Expressions.

SECTION–C**Arrays:**

Indexed Versus Associative Arrays - Identifying Elements of an Array - Storing Data in Arrays - Multidimensional Arrays - Extracting Multiple Values - Converting Between Arrays and Variables - Traversing Arrays - Sorting - Acting on Entire Arrays - Using Arrays.

Objects:

Terminology - Creating an Object - Accessing Properties and Methods - Declaring a Class - Introspection – Serialization
Extending PHP:

SECTION–D

Architectural Overview - What You'll Need - Building Your First Extensions - The config.m4 File - Memory Management - The pval / zval Data Type - Parameter Handling - Returning Values - References - Global Variables - Creating Variables - Extension INI Entries – Resources.

Reference:

1. Programming PHP Rasmus Leadoff and Levin Tatroe O'Reilly Publications.

IMT-204: Internet and E-Commerce

Time: 3 Hours

Max. Marks: 75

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A

Introduction to Networks: Uses of Computer Networks, Network Hardware, Network Software, seven-layer OSI architecture of ISO, concepts of layer protocols and layer interfaces, TCP/IP reference model, comparison of OSI & TCP/IP reference models.

SECTION–B

Internet Addresses, The Domain Name System, Client-Server Model, Port Numbers, Implementations and Application Programming Interface.
Electronic Communication, PCs and Networking, E-mail, Internet and intranets.

SECTION–C

EDI to E-commerce, EDI, UN/EDIFACT

Security Technologies: Cryptography, Public Key Algorithms, Private Key Algorithms, Hashing techniques, Certification and key Distribution, Cryptographic Applications, Encryption, Digital Signatures.

SECTION–D

Protocols for Transactions. SSL-Secure Socket Layer, SET-Secure Electronic Transaction, Credit Card Business

Electronic Commerce providers. CyberCash, Digicash, VeriSign

References:

1. Kamlesh K. Bajaj, Debjani Nag, E – Commerce – The Cutting Edge of Business.
2. Forouzon Behrouz: Data Communications, Tata McGraw Hill.

IMT-207: Practical – Based on PHP and Scripting Languages

Marks: 50

IMT – 208: Live Working Project

Marks: 50

PAPER: COMMUNICATION SKILLS IN ENGLISH – II

Time: 3 Hours

Max. Marks: 50
Theory Marks: 35
Practical Marks: 15

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Course Contents:

SECTION–A

Listening Skills: Barriers to listening; effective listening skills; feedback skills.

Activities: Listening exercises – Listening to conversation, News and TV reports

SECTION–B

Attending telephone calls; note taking and note making.

Activities: Taking notes on a speech/lecture

SECTION–C

Speaking and Conversational Skills: Components of a meaningful and easy conversation; understanding the cue and making appropriate responses; forms of polite speech; asking and providing information on general topics.

Activities: 1) Making conversation and taking turns

2) Oral description or explanation of a common object, situation or concept

SECTION–D

The study of sounds of English,
Stress and Intonation,
Situation based Conversation in English,
Essentials of Spoken English.

Activities: Giving Interviews

PRACTICAL / ORAL TESTING

Marks: 15

Course Contents:-

1. Oral Presentation with/without audio visual aids.
2. Group Discussion.
3. Listening to any recorded or live material and asking oral questions for listening comprehension.

Questions:-

1. Oral Presentation will be of 5 to 10 minutes duration (Topic can be given in advance or it can be student's own choice). Use of audio visual aids is desirable.
2. Group discussion comprising 8 to 10 students on a familiar topic. Time for each group will be 15 to 20 minutes.

Note: Oral test will be conducted by external examiner with the help of internal examiner.

PAPER: ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)

ਸਮਾਂ : 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ : 50

ਪਾਠ-ਕ੍ਰਮ ਅਤੇ ਪਾਠ-ਪੁਸਤਕਾਂ

ਸੈਕਸ਼ਨ-ਏ

ਆਤਮ ਅਨਾਤਮ (ਕਹਾਣੀ ਭਾਗ),
(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
(ਵਿਸ਼ਾ-ਵਸਤੂ, ਪਾਤਰ ਚਿਤਰਨ)

ਸੈਕਸ਼ਨ-ਬੀ

ਇਤਿਹਾਸਕ ਯਾਦਾਂ (ਇਤਿਹਾਸਕ ਲੇਖ-ਸੰਗ੍ਰਹਿ)
ਸੰਪਾ. ਸ.ਸ.ਅਮੋਲ,
ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ। (ਲੇਖ 7 ਤੋਂ 12)
(ਸਾਰ, ਲਿਖਣ ਸ਼ੈਲੀ)

ਸੈਕਸ਼ਨ-ਸੀ

(ੳ) ਸ਼ਬਦ-ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ : ਪਰਿਭਾਸ਼ਾ, ਮੁੱਢਲੇ ਸੰਕਲਪ
(ਅ) ਸ਼ਬਦ ਸੂਚੀ

ਸੈਕਸ਼ਨ-ਡੀ

(ੳ) ਸੰਖੇਪ ਰਚਨਾ
(ਅ) ਮੁਹਾਵਰੇ ਅਤੇ ਅਖਾਣ

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿੱਚ ਕਰ ਸਕਦਾ ਹੈ।

PAPER: ਮੁੱਢਲੀ ਪੰਜਾਬੀ
(In lieu of Compulsory Punjabi)

ਸਮਾਂ: 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ: 50

ਪਾਠ-ਕ੍ਰਮ

ਸੈਕਸ਼ਨ-ਏ

ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ
(ਨਾਂਵ, ਪੜਨਾਂਵ, ਕਿਰਿਆ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ ਅਤੇ ਵਿਸਮਿਕ)

ਸੈਕਸ਼ਨ-ਬੀ

ਪੰਜਾਬੀ ਵਾਕ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ
(ੳ) ਸਾਧਾਰਨ ਵਾਕ, ਸੰਯੁਕਤ ਵਾਕ ਅਤੇ ਮਿਸ਼ਰਤ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ)
(ਅ) ਬਿਆਨੀਆ ਵਾਕ, ਪ੍ਰਸ਼ਨਵਾਚਕ ਵਾਕ ਅਤੇ ਹੁਕਮੀ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ)

ਸੈਕਸ਼ਨ-ਸੀ

ਪੈਰ੍ਹਾ ਰਚਨਾ
ਸੰਖੇਪ ਰਚਨਾ

ਸੈਕਸ਼ਨ-ਡੀ

ਚਿੱਠੀ ਪੱਤਰ (ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ)
ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ।
ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

PAPER: Punjab History & Culture (C 320 to 1000 B.C.)
(Special Paper in lieu of Punjabi compulsory)
(For those students who are not domicile of Punjab)

Time: 3 Hours

Max. Marks: 50

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section–A

1. Alexander's Invasion and its Impact
2. Punjab under Chandragupta Maurya and Ashoka.

Section–B

3. The Kushans and their Contribution to the Punjab.
4. The Panjab under the Gupta Empire.

Section–C

5. The Punjab under the Vardhana Emperors
6. Socio-cultural History of Punjab from 7th to 1000 A.D.

Section–D

7. Development of languages and Education with Special reference to Taxila
8. Development of Art & Architecture

Suggested Readings:

1. L. M Joshi (Ed), *History and Culture of the Punjab*, Art-I, Punjabi University, Patiala, 1989 (3rd Edition)
2. L.M. Joshi and Fauja Singh (Ed.), *History of Punjab*, Vol. I, Punjabi University, Patiala, 1977.
3. Budha Parkash, *Glimpses of Ancient Punjab*, Patiala, 1983.
4. B.N. Sharma: *Life in Northern India*, Delhi. 1966.

**PAPER: DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION
(COMPULSORY PAPER)**

DRUG ABUSE: MANAGEMENT AND PREVENTION

Time: 3 Hours

Max. Marks: 50

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section – A

Prevention of Drug abuse:

Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny.

Section – B

School: Counselling, Teacher as role-model. Parent-teacher-Health Professional Coordination, Random testing on students.

Section – C

Controlling Drug Abuse:

Media: Restraint on advertisements of drugs, advertisements on bad effects of drugs, Publicity and media, Campaigns against drug abuse, Educational and awareness program

Section – D

Legislation: NDPs act, Statutory warnings, Policing of Borders, Checking Supply/Smuggling of Drugs, Strict enforcement of laws, Time bound trials.

References:

1. Ahuja, Ram (2003), *Social Problems in India*, Rawat Publication, Jaipur.
2. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
3. Inciardi, J.A. 1981. *The Drug Crime Connection*. Beverly Hills: Sage Publications.
4. Kapoor. T. (1985) *Drug Epidemic Among Indian Youth*, New Delhi: Mittal Pub.
5. Kessel, Neil and Henry Walton. 1982, *Alcoholism. Harmond Worth*: Penguin Books.
6. Modi, Ishwar and Modi, Shalini (1997) *Drugs: Addiction and Prevention*, Jaipur: Rawat Publication.
7. National Household Survey of Alcohol and Drug Abuse. (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
8. Ross Coomber and Others. 2013, *Key Concept in Drugs and Society*. New Delhi: Sage Publications.
9. Sain, Bhim 1991, *Drug Addiction Alcoholism, Smoking Obscenity*, New Delhi: Mittal Publications.
10. Sandhu, Ranvinder Singh, 2009, *Drug Addiction in Punjab: A Sociological Study*. Amritsar: Guru Nanak Dev University.
11. Singh, Chandra Paul 2000. *Alcohol and Dependence among Industrial Workers*: Delhi: Shipra.
12. Sussman, S and Ames, S.L. (2008). *Drug Abuse: Concepts, Prevention and Cessation*, Cambridge University Press.
13. Verma, P.S. 2017, “*Punjab’s Drug Problem: Contours and Characteristics*”, Economic and Political Weekly, Vol. LII, No. 3, P.P. 40-43.
14. World Drug Report 2016, United Nations office of Drug and Crime.
15. World Drug Report 2017, United Nations office of Drug and Crime.

IMT-301: JAVA AND ANDROID PROGRAMMING**Time: 3 Hours****Max Marks: 75****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type Calculator.

Section A**Introduction to Android and Java:**

Installing Android, Creating Hello World, Running on Emulator, Introduction to Java Data types, Loops, Conditionals and Operators.

Android Architecture and OOPS:

Building Blocks of Android, Java Classes and Objects, Class Methods and Instances, Inheritance and Polymorphism in Java, Interface and Abstract class

Section B**Android UI and Advance Java:**

Using resources, Using themes, Debugging Android Code, Settings, Java I/O, Threads and Synchronization

Android Graphics and Multimedia: Basic Graphics, Input Handling, Playing Audio, Playing Video

Section C

Persistence in Android: Accessing Internal Files system, Accessing SD cards, Introduction to SQLite, Data Binding Content Provider

Network Awareness: Accessing the Internet, Using Web services, Using Java and Java Script, Location Sensing

Section D**3D graphics in OpenGL and other views:**

OpenGL Introduction, Using Threads and Models, Texture in OpenGL, Making a application in OpenGL, Other standard views in Android

Widgets and the way ahead:

Android Widget Development, The Path Ahead for Android, Running Application on device, Android Market Some Do's and Don'ts, Introduction to System programming in Android

Reference Books:

1. Learn Java for Android Development, Author: Jeff Friesen, Publisher: Apress (2010)
2. Android Essentials, Author: Chris Haseman, Publisher: Apress (2008)
3. Beginning Android Application Development, Author: Wei-Meng Lee, Publisher: John Wiley & Sons (2011)
4. Programming Android : Java Programming for the New Generation of Mobile Devices 2 Edition, Author: Zigurd Mednieks, Laird Dornin, G. Blake Meike, Masumi Nakamura, Publisher: O'Reilly Media (2012)
5. Sams Teach Yourself Java in 21 Days (Covering Java 7 and Android) 0006 Edition, Author: Rogers Cadenhead, Publisher: Sams (2012)

IMT-302: OPEN SOURCE TECHNOLOGIES

Time: 3 Hours

Max Marks: 75

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type Calculator.

Section A

Introduction to Open Source Software

History and Emergence of Open Source Software, Community Building, Open Standards, Open Source Licenses.

Introduction to Linux Operating System

Introduction to Linux/Open Source, Linux Installation Process, Navigating the Linux System, Linux Desktop Environment, File Management, Working with Removable Drives, Configuring Printing, Web Browsing, Email Applications, Multimedia, File/Directory Manipulation, Commands, Basic System Maintenance.

Section B

Linux System Administration

Overview, Linux Boot up, Remote Connectivity, Root control, Emergency Procedures, File System Structure, Managing your users, Process Management, Automation/Simplification of task through scripting, installing applications.

Section C

Linux Web Server

Overview of web Server, System Specifications for Web and FTP Server Installation procedures, Configuration settings, Start/Stop the servers, testing the servers, track of logs, Performance Tuning of servers. Apache HTTP Server and its flavors. WAMP server (Windows, Apache)

Section D

Content Management System

OSS for CMS: MediaWiki, Joomla, Drupal, Zope. Wiki Hosting Services, Using Wiki Technologies in libraries for designing subject based encyclopedias, subject directory/portal and so on. Installation of Joomla, Customization of Joomla, Use of Joomla.

Reference Books:

1. Linux: The Complete Reference 6th Edition Authored By: Richard Petersen Publisher: Tata McGraw - Hill Education (2007)
2. Joomla! Explained: Your Step-by-Step Guide 1st Edition Author: Stephen Burge Publisher: Pearson Education (2011)
3. Joomla Bible Author: Ric Shreves, Publisher: Wiley India Pvt. Ltd. (2011)
4. Drupal 7 Bible, Author: Ric Shreves, Brice Dunwoodie, Publisher: Wiley India Pvt. Ltd. (2011)
5. Web Component Development With Zope 3, 2nd Edition 2nd Rev. and Enlarged Ed. Edition Author: Philipp Von Weitershausen Publisher: Springer (2007)

IMT-303: ADVANCED PHP**Time: 3 Hours****Max Marks: 75****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type Calculator.

Section A**Beginning with CakePHP:**

What is CakePHP, Understanding Model-View-Controller, Basic Principles of CakePHP, CakePHP Structure, A Typical CakePHP Request, CakePHP Folder Structure, CakePHP Conventions, File and Classname Conventions, Model and Database Conventions, Controller Conventions, View Conventions,

Developing with CakePHP:

Installation, Configuration, Controllers, Components, Models, Behaviors, DataSources, Views, Helpers, Scaffolding, Global Constants and Functions, Vendor Packages, Data Validations, Pagination

Core Components & Helpers:

Access Control List, Authentication, Cookies, Email, Authentication, Ajax, Form, HTML, JavaScript, Paginator, Session, Text.

Section B**CakePHP Application:**

Creating the Blog database, Cake Database Configuration, Create a Post Model, Create a Posts Controller, Creating Posts Views, Adding Posts, Data Validation, Deleting Posts, Editing Posts, Routes.

Installing WordPress:

Creating a Database, Installing WordPress, Installing Themes, Downloading a Theme from the, WordPress Dashboard, Manually Installing a Theme, Adding Custom Header with Theme Name, Author, etc.

Setting Up Your WordPress.com Account:

Creating an Account on WordPress or at your own website/localhost, Logging Into Your Account, Writing Your First Post with little explanation, Customizing Your Account, Personal Settings, General Settings

Section C**Changing Themes (How the Blog Looks)**

Widgets, Editors, Writing Posts, Adding a Post, Using the Visual Editor, Adding Hyperlinks, Categories, Tags, & Reading/Writing Settings, Using Categories and Tags, Managing Categories and Tags, Controlling the Number of Posts That Are Displayed, Understanding Comments, Managing and Moderating Comments, Trackbacks and Pingbacks

Making Pages

Adding and Deleting a Page, Pasting from Text Files, Changing the Page Order, Adding and Managing Media, Adding a Photo, Adding a Video, Adding Other Content (.pdf, .doc, etc.), Managing Uploaded Content, Media Settings, Working with Links, Adding Links, Managing Links

Section D

Appearance Customization

Changing the Header Image, Customizing the Sidebar with Widgets, Previewing Custom Fonts, Using the Dashboard, Managing Recent Comments, Tracking Statistics, Customizing the Dashboard's Appearance, Installing some important plugins,

SEO Ultimate

Fast Secure Contact Form, Efficient Related Posts, Wordpress Backup to dropbox, WP-DB-Backup, WP-Polls, WP Survey and Quiz Tool, Subscribe to comments, Share button by lockerz Statpress Visitors, Google XML sitemaps, Social Login, First Visit Message

Reference Books:

1. PHP : The Complete Reference 1st Edition, Authored By: Steven Holzner, Publisher: Tata McGraw - Hill Education (2007)
2. HTML5 Black Book: Covers Css3, Javascript, XML, XHTML, Ajax, PHP And JQuery (With CD), Author: Kogent Learning Solutions Inc., Publisher: Dreamtech Press (2011)
3. Web Technologies Black Book : HTML, JavaScript, PHP, Java, JSP, XML and AJAX (With CD), Authored By: Kogent Learning Solutions Inc., Publisher: Dreamtech Press (2012)
4. Head First Ajax 1st Edition, Author: Rebecca M. Riordan, Publisher: Shroff O Reilly (2008)
5. CakePHP 1.3 Application Development Cookbook, Author: Mariano Lglesias, Publisher: Packt (2011)
6. Building PHP Applications With Symfony, CakePHP, And Zend, Framework, Author: Bartosz Porebski Karol Przystalski Leszek Nowak, Publisher: Wiley India Pvt Ltd (2011)
7. Beginning CakePHP: From Novice to Professional 1st Edition, Author: David Golding, Publisher: Apress (2008)
8. Professional Wordpress: Design And Development Author: Hal Stern David Damstra Brad Williams, Publisher: Wiley India Pvt Ltd (2010)
9. WordPress MU 2.8 Beginner's Guide Author: Lesley A. Harrison Publisher: Packt (2010)
10. The Practitioner's Guide to Rapid Improvements Author: Alan A. Harrison, Publisher: Authorhouse (2010) .

IMT-304: PRACTICAL BASED ON JAVA AND ANDROID PROGRAMMING

Max Marks: 75

**IMT-305: PROJECT BASED ON ADVANCED PHP and CMS
(CONTENT MANAGEMENT SYSTEM)**

Max Marks: 100

IMT-401: Cloud and Mobile Computing**Time: 3 Hours****Max. Marks: 75****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type Calculator.

Section A

Overview of Cloud Computing: What is a cloud, Definition of cloud, Definition of cloud, characteristics of cloud, Why use clouds, How clouds are changing, How clouds are changing, Driving factors towards cloud, Comparing grid with cloud and other computing systems, workload patterns for the cloud, “Big Data”, IT as a service.

Cloud Computing Concepts: Concepts of cloud computing, Cloud computing leverages the Internet, Positioning cloud to a grid infrastructure, Elasticity and scalability, Virtualization, Characteristics of virtualization, Benefits of virtualization, Virtualization in cloud computing, Hypervisors, Multitenancy, Types of tenancy, Application programming interfaces (API), Billing and metering of services, Economies of scale, Management, tooling, and automation in cloud computing, Management: Desktops in the cloud, Security.

Section B

Cloud Service Delivery: Cloud service, Cloud service model architectures, Infrastructure as a service (IaaS) architecture, Infrastructure as a service (IaaS) details, Platform as a service (PaaS) architecture, Platform as a service (PaaS) details, Platform as a service (PaaS), Examples of PaaS software, Software as a service (SaaS) architecture, Software as a service (SaaS) details, Examples of SaaS applications, Trade-off in cost to install versus, Common cloud management platform reference architecture: Architecture overview diagram, Common cloud management platform.

Cloud Deployment Scenarios: Cloud deployment models, Public clouds, Hybrid clouds, Community, Virtual private clouds, Vertical and special purpose, Migration paths for cloud, Selection criteria for cloud deployment.

Section C

Security in Cloud Computing: Cloud security reference model, How security gets integrated, Cloud security, Understanding security risks, Principal security dangers to cloud computing, Virtualization and multitenancy, Internal security breaches, Data corruption or loss, User account and service hijacking, Steps to reduce cloud security breaches, Steps to reduce cloud security breaches, Reducing cloud security, Identity management: Detection and forensics, Identity management: Detection and Identity management, Benefits of identity, Encryption techniques, Encryption & Encrypting data, Symmetric key encryption, Asymmetric key encryption, Digital signature, What is SSL?

Section D

Overview of Mobile Technologies: Anatomy of a mobile device, Survey of mobile devices, applications of mobile computing

Wireless Communication Systems: Cellular Networks, Wireless Networks Standards 2G/2.5G/3G/4G, Geolocation and Global Positioning Systems

Application Environment: Limited Resource Computing, Memory Management, Low power management, Fault Tolerance, Security issues

Future of Mobile Computing – upcoming technologies Pervasive Computing, Location aware services.

Books:

1. T.S. Rappaport, Wireless Communication, PHI, 2005.
2. Y. Lin., Wireless and Mobile Network Architecture, Wiley, 2007.
3. T. Mikkonen, “Programming Mobile Devices: An Introduction for Practitioners”, Wiley, 2007.
4. J. Schiller, Mobile Communications, Pearson Education, 2006.
5. Raj Kumar Buyya, James Broberg, Andrezei M.Goscinski, Cloud Computing: Principles and Paradigms, 2011.
6. Michael Miller, Cloud Computing, 2008.
7. Judith Hurwitz, Robin Bllor, Marcia Kaufman, Fern Halper, Cloud Computing for Dummies, 2009.
8. Anthony T. Velte, Toby J. Velte and Robert Elsenpeter, Cloud Computing: A Practical Approach, McGraw Hill, 2010.
9. Barrie Sosinsky, Cloud Computing Bible, Wiley, 2011.
10. BorkoFurht, Armando Escalante (Editors), Handbook of Cloud Computing, Springer, 2010.

IMT-402: Mobile Application Designing

Time: 3 Hours

Max. Marks: 75

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type Calculator.

Section A

Understanding the Difference Between a Website, a Mobile Website, and an Application

What is a Website?

What is a Mobile Website?

Section B

Creating Our Own Mobile Website!

Create Document in photoshop, Background, Design the Header Adding the Search Option

Add the Body Text

Add the Arrows Next to the Body Text

Optimizing for Web,iPad& iPhone app design techniques Create a Mobile Sample App Interface in Photoshop

Section C

Parallax Website Design

What is Parallax Website Design?

It's an Animation

A Simple Parallax Tutorial

Section D

Creating a Parallax Website from Scratch

ParallaxHTML,css,Javascript

How it works?

Stellar.js Parallax Scrolling Website

Parallax Technologies: jQuery, Stellar.js, Skrollr.js, Jarallax, &CSS

Books and References:

1. <http://potentpages.com/parallax-tutorials/stellar/>
2. <http://abovethefoldbook.com/the-evolution-of-parallax-scrolling/>
3. Above the Fold: Understanding the Principles of Successful Web Site Design, Brian Miller.

IMT-403 Mobile Application Development (iOS)

Time: 3 Hours

Max. Marks: 75

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type Calculator.

Section A

Introduction to Xcode and the iOS Simulator Installation of XCode, Review the Objective C programming language, Compile and debug sample applications that illustrate iPhone features and focus on User Interface Implementation, Develop applications to practice generating an interface Objective C code

Discovering Swift and the iOS Playground Object-Oriented Programming and Swift, The Terminology of Object-Oriented Development, Exploring the Swift File Structure, Swift Programming Basics, Memory Management and Automatic Reference Counting, Introducing the iOS Playground, Further Exploration

Inside Cocoa Touch What Is Cocoa Touch, Exploring the iOS Technology Layers, Tracing the iOS Application Life Cycle, Cocoa Fundamentals, Exploring the iOS Frameworks with Xcode

Section B

Exploring Interface Builder Understanding Interface Builder, Creating User Interfaces, Customizing the Interface Appearance, Connecting to Code

Model-View-Controller Application Design Understanding the MVC Design Pattern, How Xcode Implements MVC, Using the Single View Application

Working with Text, Keyboards, and Buttons Basic User Input and Output, Using Text Fields, Text Views, and Buttons

Handling Images, Animation, Sliders, and Steppers User Input and Output, Creating and Managing Image Animations, Sliders, and Steppers

Using Advanced Interface Objects and Views User Input and Output (Continued), Using Switches, Segmented Controls, and Web Views, Using Scrolling and Stack

Getting the User's Attention Alerting the User, Exploring User Alert Methods

Section C

Implementing Multiple Scenes and Popovers Introducing Multiscene, Storyboards, Using Segues, Popovers, Universal Applications, and iPhones

Making Choices with Toolbars and Pickers Understanding the Role of Toolbars, Exploring Pickers, Using the Date Picker, Using a Custom

Advanced Storyboards Using Navigation and Tab Bar Controllers Advanced View Controllers, Exploring Navigation Controllers, Understanding Tab Bar Controllers, Using a Navigation Controller, Using a Tab Bar Controller

Navigating Information Using Table Views and Split View Controllers Understanding Tables, Exploring the Split View Controller, A Simple Table View Application, Creating a Master-Detail Application

Section D

Reading and Writing Application Data iOS Applications and Data Storage, Data Storage Approaches, Creating Implicit Preferences, Implementing System Settings, Implementing File System Storage

Building Responsive User Interfaces Responsive Interfaces, Using Auto Layout, Programmatically Defined Interfaces

Using Advanced Touches and Gestures Multitouch Gesture Recognition, 3D Touch Peek and Pop, Using Gesture Recognizers, Implementing 3D Touch Gestures

Sensing Orientation and Motion Understanding Motion Hardware, Accessing Orientation and Motion Data, Sensing Orientation, Detecting Acceleration, Tilt, and Rotation

Working with Rich Media Exploring Rich Media, The Media Playground Application

Application Tracing, Monitoring, and Debugging Instant Feedback with NSLog, Using the Xcode Debugger

Books and References:

1. iOS 7 Application Development in 24 Hours, Sams Teach Yourself (5th Edition), John Ray
2. Professional iOS Programming: Covers iOS 7, Peter Van De Put, Wrox Publications.
3. iOS 9 Application Development in 24 Hours, Sams Teach Yourself (Sams Teach Yourself in 24 Hours)
4. Programming iOS 9 Dive Deep into Views, View Controllers, and Frameworks Swift iOS 24-Hour Trainer Wrox Publication
5. iOS 9 Swift Programming Cookbook: Solutions and Examples for iOS Apps Vandad Nahavandipoor

IMT-404 E-Commerce and Prestashop

Time: 3 Hours

Max. Marks: 75

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type Calculator.

Section A

What is E-Commerce?, History of E-Commerce, Importance for E-Commerce in business, Digital Marketing with E-Commerce.

Section B

Business to Business, Business to Customer, E-Commerce and multilevel marketing, E-Commerce and Indian market, Future of e-commerce, Advantages and Disadvantages of E-Commerce marketing.

Ebay, Amazon, Flipkart business models.

Section C

E-Commerce and Dropshipping basics

Creating your online store, Getting traffic to your online store, Search Engine Optimization for your online store, Customer Service and Satisfaction

Section D

Prestashop

Introduction to Prestashop, Installation, Products display, Template, Catalog management, Product stock management, Payment method, Localization and Taxes, Shipping, User accounts, Analysis and Reporting, Why prestashop is better than other Php CMS

Books and References:

1. E-Commerce, Kamlesh K. Bajaj, Debjani Nag, Tata McGraw-Hill
2. The ABC's of Ecommerce and Dropshipping Success, Robert H. Froyk
3. Prestashop 1.3 Theming - Beginner's Guide, Hayati Hashim

IMT-405 Software Engineering and Testing**Time: 3 Hours****Max. Marks: 75****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type Calculator.

Section A

Software: Characteristics, Components, Applications, Software Process Models: Waterfall, Spiral, Prototyping, Fourth Generation Techniques, Concepts of Project Management, Role of Metrics & Measurements.

S/W Project Planning: Objectives, Decomposition techniques: S/W Sizing, Problem-based estimation, Process based estimation, Cost Estimation Models: COCOMO Model, The S/W Equation,

Section B

System Analysis: Principles of Structured Analysis, Requirement analysis, DFD, Entity Relationship diagram, Data dictionary.

Section C

S/W Design: Objectives, Principles, Concepts, Design methodologies: Data design, Architectural design, procedural design, Object -oriented concepts

Testing fundamentals: Objectives, principles, testability, Test cases: White box & Black box testing, Testing strategies: verification & validation, unit test, integration testing, validation testing, system testing

Section D**Selenium IDE**

Install Selenium IDE and FireBug, Introduction to Selenium IDE, Creating your First Selenium IDE script, How to use Locators in Selenium IDE, How to enhance a script using Selenium IDE

WebDriver

Introduction to WebDriver & Comparison with Selenium RC, Guide to install Selenium, WebDriver, Creating your First Script in Webdriver, Accessing Forms in Webdriver, Accessing Links & Tables using Selenium Webdriver, Keyboard Mouse Events, Uploading Files – Webdriver

Books and References:

1. Software Engineering & Testing: An Introduction, B.B. Agarwal, S.P. Tayal, M Gupta.
2. Software Engineering, Roger S. Pressman.
3. Selenium Testing Tools Cookbook, Unmesh Gundecha
4. Selenium 2 Testing Tools: Beginner's Guide, Burns David.
5. Selenium Simplified, Alan John Richardson

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B.Sc. (Internet and Mobile Technologies) (Semester – IV)
(Three Years Programme)

**IMT-406 Project Work based on Mobile Application Designing
and Developing (iOS)**

Time: 3 Hours

Max. Marks: 75

ESL-221: ENVIRONMENTAL STUDIES

Time: 3 Hrs.

Max. Marks: 100

Teaching Methodologies

The Core Module Syllabus for Environmental Studies includes class room teaching and field work. The syllabus is divided into 8 Units [Unit-1 to Unit-VII] covering 45 lectures + 5 hours for field work [Unit-VIII]. The first 7 Units will cover 45 lectures which are class room based to enhance knowledge skills and attitude to environment. Unit-VIII comprises of 5 hours field work to be submitted by each candidate to the Teacher in-charge for evaluation latest by 15 December, 2019.

Exam Pattern: **End Semester Examination- 75 marks**
Project Report/Field Study- 25 marks [based on submitted report]
Total Marks- 100

The structure of the question paper being:

Part-A, Short answer pattern with inbuilt choice – **25 marks**
 Attempt any five questions out of seven distributed equally from Unit-1 to Unit-VII.
 Each question carries 5 marks. Answer to each question should not exceed 2 pages.

Part-B, Essay type with inbuilt choice – **50 marks**
 Attempt any five questions out of eight distributed equally from Unit-1 to Unit-VII. Each question carries 10 marks. Answer to each question should not exceed 5 pages.

Project Report / Internal Assessment:

Part-C, Field work – **25 marks [Field work equal to 5 lecture hours]**
 The candidate will submit a hand written field work report showing photographs, sketches, observations, perspective of any topic related to Environment or Ecosystem. The exhaustive list for project report/area of study are given just for reference:

1. Visit to a local area to document environmental assets: River / Forest/ Grassland / Hill / Mountain / Water body / Pond / Lake / Solid Waste Disposal / Water Treatment Plant / Wastewater Treatment Facility etc.
2. Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
3. Study of common plants, insects, birds
4. Study of tree in your areas with their botanical names and soil types
5. Study of birds and their nesting habits
6. Study of local pond in terms of wastewater inflow and water quality
7. Study of industrial units in your area. Name of industry, type of industry, Size (Large, Medium or small scale)
8. Study of common disease in the village and basic data from community health centre
9. Adopt any five young plants and photograph its growth
10. Analyze the Total dissolved solids of ground water samples in your area.
11. Study of Particulate Matter (PM_{2.5} or PM₁₀) data from Sameer website. Download from Play store.
12. Perspective on any field on Environmental Studies with secondary data taken from Central Pollution Control Board, State Pollution Control Board, State Science & Technology Council etc.

Unit-I

The multidisciplinary nature of environmental studies

Definition, scope and importance, Need for public awareness

(2 lectures)

Unit-II

Natural Resources: Renewable and non-renewable resources:

Natural resources and associated problems.

- (a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- (b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
- (c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- (d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- (e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
- (f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
 - Role of an individual in conservation of natural resources.
 - Equitable use of resources for sustainable lifestyles.

(8 Lectures)

Unit-III

Ecosystems

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

(6 Lectures)

Unit-IV

Biodiversity and its conservation

- Introduction – Definition: genetic, species and ecosystem diversity
- Biogeographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

(8 Lectures)

Unit-V

Environmental Pollution :

Definition :

- Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear pollution
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides

(8 Lectures)

Unit-VI

Social Issues and the Environment

- From unsustainable to sustainable development
- Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation
- Consumerism and waste products
- Environmental Protection Act, 1986
- Air (Prevention and Control of Pollution) Act, 1981
- Water (Prevention and control of Pollution) Act, 1974
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Public awareness

(7 Lectures)

Unit-VII

Human Population and the Environment

- Population growth, variation among nations
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights
- Value Education
- HIV / AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and Human Health
- Case Studies

(6 Lectures)

Unit-VIII

Field Work

- Visit to a local area to document environmental assets River / forest / grassland / hill / mountain
- Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems-pond, river, hill slopes, etc

(Field work equal to 5 lecture hours)

References:

1. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.
2. Down to Earth, Centre for Science and Environment, New Delhi.
3. Heywood, V.H. & Waston, R.T. 1995. Global Biodiversity Assessment, Cambridge House, Delhi.
4. Joseph, K. & Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.
5. Kaushik, A. & Kaushik, C.P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.
6. Rajagopalan, R. 2011. Environmental Studies from Crisis to Cure. Oxford University Press, New Delhi.
7. Sharma, J. P., Sharma. N.K. & Yadav, N.S. 2005. Comprehensive Environmental Studies, Laxmi Publications, New Delhi.
8. Sharma, P. D. 2009. Ecology and Environment, Rastogi Publications, Meerut.
9. State of India's Environment 2018 by Centre for Sciences and Environment, New Delhi
10. Subramanian, V. 2002. A Text Book in Environmental Sciences, Narosa Publishing House, New Delhi.

IMT-501: Game Development

Time: 3 Hours

Max. Marks: 75

Note:

- 1. Eight questions are required to be set giving equal weightage to all the units. The Candidates will have to attempt any five. All questions carry equal marks.**
- 2. The student can use only Non-programmable & Non-storage type Calculator.**

Game Programming using C and C++

Introduction to technologies and drawing the game board, creating a real, playable game

Adding difficulty levels and other menu options

Changing the game board size and the block count

Adding undo/redo functionality and keyboard

accelerators Designing a game using modules

MiniMax Game Trees

Chess Board

Representation

Object-Oriented Animation

Learn how to design a framework for doing animation--a foundation for many games and graphics engines.

An Introduction to Object Oriented Animation Frames, Layers and Layer Folders

The design of the animation engine

Introduction to Cocos2D-x

Cocos2D-x, Supported Platforms, Supported Languages, Main Features, System requirements

Editors, Installation and Testing

Modules

2D Graphics, Audio, Data Structures, Debugging, File IO, GUI, Handling User Input, Memory management , Network Physics ,Scene Graph, Scheduler, Scripting, Threading, Sprite3D, Game Controller

Reference Book:

Jumping into C++ By Allax Allan, Cocos2d-X by Example Beginner's Guide, Roger Engelbert

IMT-502: Advanced Programming in Android

Time: 3 Hours

Max. Marks: 75

Note:

- 1. Eight questions are required to be set giving equal weightage to all the units. The Candidates will have to attempt any five. All questions carry equal marks.**
- 2. The student can use only Non-programmable & Non-storage type Calculator.**

Android Studio Installation, install JDK, Install Android Studio (Windows), Android Studio Tour, Android Emulator, AVD in Android Studio, Hardware Device, Hello World Tutorial, Creating my first APP

Android Overview, Android Basic Blocks, Basic UI Elements, Strings.xml & message localization, Resources and Asset Files, Gradle Dependencies, Android Broadcast Intent and Broadcast Receiver, Debugging, Persisting Application State, Debug Logcat Errors, Text to Speech (TTS) and Speech to Text using google TTS.

Recyclerview, Adapter & ViewHolder, Fragments, Material Design Elements, Navigation, Working with my App, Adding Views Dynamically, Building Layouts for screen configuration changes, working with Custom Styles & Themes.

Android Hierarchical Navigation, Webview, Custom Views, Permission system, AsyncTask, Threading and Handlers, Using AsyncTask vs. Java Threads (with Handlers), Loaders, AsyncTaskLoader & CursorLoader, Background Services, Android Scheduling task.

Access Files in Assets, Access Resources, Save Data and Files, SQLite Databases, Content Providers, Loaders, Background Services, Access RESTful webservices with JSON and other formats.

Widgets, Notifications, Test and troubleshoot the individual components and your entire application, Getting Ready for Deployment, Publish on Play Store

Reference Books:

1. Android Cookbook, 2e – by Ian Darwin (Author)
2. Android Studio 2.3 Development Essentials: Android 7 Edition – by Neil Smyth
3. Android App Development in Android Studio: Java + Android Edition for Beginners – by J. Paul Cardle.
4. Android Programming: The Big Nerd Ranch Guide (Big Nerd Ranch Guides), 2013 by Bill Phillips and Brian Hardy
5. Professional Android 4 Application Development, 2012 by Reto Meier
6. Android Application Development in 24 Hours, Sams Teach Yourself (4th Edition), 2015 by Carmen Delessio and Lauren Darcey.

IMT-503: Big Data and Analytics

Time: 3 Hours

Max. Marks: 75

Note:

1. **Eight questions are required to be set giving equal weightage to all the units. The Candidates will have to attempt any five. All questions carry equal marks.**
2. **The student can use only Non-programmable & Non-storage type Calculator.**

Introduction to Big Data: Databases and their evolution, convergence of key trends, unstructured data, web analytics, big data and marketing, fraud and big data, risk and big data, credit risk management, big data and algorithmic trading, big data and healthcare, big data in medicine, advertising and big data, big data technologies, introduction to Hadoop, open source technologies, cloud and big data mobile business intelligence, Crowd sourcing analytics, inter and trans firewall analytics.

NoSql Data Management: Introduction to NoSQL, Types of NoSQL, aggregate data models, aggregates, key-value, document data models, relationships, graph databases, schema less databases, materialized views. Overview of MongoDB.

MapReduce, partitioning and combining, composing map-reduce calculations, MapReduce examples such as matrix multiplication.

Hadoop: Introduction to Hadoop, Data format, analyzing data with Hadoop, scaling out, Hadoop streaming, Hadoop pipes, Hadoop distributed file system (HDFS), HDFS concepts, data flow, Hadoop I/O, data integrity, compression, serialization, Avro file-based data structures, Map Reduce workflows, Section tests with MRUnit, test data and local tests – anatomy of Map Reduce job run, classic Map-reduce, YARN, failures in classic Map-reduce and YARN, job scheduling, shuffle and sort, task execution, MapReduce types, input formats, output formats.

Hadoop Related Tools: Hbase, data model and implementations, Hbaseclients, Hbase examples – praxis. Cassandra, Cassandra data model, Cassandraexamples, Cassandraclients, Hadoop integration. Pig, Grunt, pig data model, Pig Latin, developing and testing Pig Latin scripts. Hive, data types and file formats, HiveQL data definition, HiveQL data manipulation – HiveQL queries, Overview of spark.

Reference Books

1. Michael Minelli, Michelle Chambers, and AmbigaDhiraj, "Big Data, Big Analytics, "Emerging Business Intelligence and Analytic Trends for Today's Businesses", Wiley.
2. Big-Data Black Book, DT Editorial Services, Wiley India
3. Massive Online Open Courses (MOOCS): Big Data University, Udacity and Coursera.
4. P. J. Sadalage and M. Fowler, "NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence", Addison-Wesley Professional, 2012.
5. Tom White, "Hadoop: The Definitive Guide", Third Edition, O'Reilley, 2012.
6. Eric Sammer, "Hadoop Operations", O'Reilley, 2012.
7. E. Capriolo, D. Wampler, and J. Rutherglen, "Programming Hive", O'Reilley, 2012.
8. Lars George, "HBase: The Definitive Guide", O'Reilley, 2011. 8. Eben Hewitt, "Cassandra: The Definitive Guide", O'Reilley, 2010. 9. Alan Gates, "Programming Pig", O'Reilley, 2011.

IMT-504 Practical based on Game Development

Max. Marks 50

IMT-505: Practical Based on Android Application Development

Time: 3 Hours

Max. Marks: 75

MT-506: Practical – Hadoop, MapReduce, HDFS, MongoDB

Max. Marks 50

IMT-601: Industrial Training Based on Mobile and web Based Technology

Time: 3 Hours

Max. Marks: 400

1. A software module based on the work done in the entire course is to be developed.
2. The soft copy of the module shall be submitted to the College/Institute.
3. The software module shall be developed in groups, consisting of at most two students in a group.
4. The respective college shall depute guide(s)/supervisor(s) under whose supervision the software module shall be developed. The guide/supervisor shall clarify that the work done is original & authenticated. The certificate found to be incorrect at any stage shall attract the proceedings against all the stakeholders, as per the University rules.
5. The evaluation of the module shall be done as per the common ordinance of UG/PG w.e.f. 2012-2013 under semester system.