

Syllabus

15. INFORMATICS PRACTICES (Code 065)

Class XII (Theory)

Class XII

Unit	Topic	Period		Marks	
		Theory	Practical	Theory	Practical
1	NETWORKING AND OPEN STANDARDS	20	4	10	2
2	PROGRAMMING	42	40	25	16
3	RELATIONAL DATABASE MANAGEMENT SYSTEM	42	36	30	8
4	IT APPLICATION	6	20	5	4
		110	100	70	30

UNIT 1: NETWORKING AND OPEN STANDARDS

Computer Networking:

- Networking : a brief overview.
- Communication Media: Wired Technologies - Co-Axial, Ethernet Cable, Optical Fiber, Wireless Technologies - Blue Tooth, Infrared, Microwave, Radio Link, Satellite Link.
- Network Devices : Hub, Switch, Repeater, Gateway and their functions
- Types of Network: LAN, MAN, WAN, PAN
- Network Topologies: Star, Bus, Tree
- Network Protocols: HTTP, TCP/IP, PPP
- Identifying computers and users over a network: Basic concept of domain name, MAC (Media Access Control), and IP Address, domain name resolution.
- Networking Security: denial of service, intrusion problems, snooping.

Open Source Concepts:

- Open Source Software (OSS), common FOSS/FLOSS examples (e.g. Gnu/Linux, Firefox, OpenOffice, Java, netbeans, MySQL), common open standards (WWW, HTML, XML, ODF, IP, TCP).
- Indian Language Computing: Character encoding, UNICODE, different types of fonts (open type vs true type, static vs dynamic), Entering Indian Language Text - Phonetic and key map based.

UNIT 2: PROGRAMMING

Review of Class XI;

Programming Fundamentals

(Refer to Appendix A for sample guidelines of GUI Programming, and Appendix B for Swing Control Methods & Properties)

Basic concept of Access specifier for classes, Members and methods

Basic concept of Inheritance.

Commonly used libraries: String class and methods: toString(), concat(), length(), toLowerCase(), toUpperCase(), trim(), substring()

Math class methods: pow(), round()

Accessing MySQL database using ODBC/JDBC to connect with database.

Web application development: URL, Web Server, Communicating with the web server, concept of Client and Server Side.

HTML based web pages covering basic tags - HTML, TITLE, BODY, H1..H6, Paragraph (P), Line Break (BR), Section Separator (HR), FONT, TABLE, LIST (UL, OL), FORM;

Creating and accessing static pages using HTML and introduction to XML

UNIT 3: RELATIONAL DATABASE MANAGEMENT SYSTEM

Review of RDBMS from Class XI

Database Fundamentals

Concept of Database Transaction, Committing and revoking a Transaction using COMMIT and REVOKE,

Grouping Records: GROUP BY, Group functions - MAX(), MIN(), AVG(), SUM(), COUNT(); using COUNT(*), DISTINCT clause with COUNT, Group Functions and Null Values,

Displaying Data From Multiple Tables: Cartesian product, Union, concept of Foreign Key, Equi-Join

Creating a Table with PRIMARY KEY and NOT NULL constraints, Viewing Constraints, Viewing the Columns Associated with Constraints using DESC Command;

ALTER TABLE for deleting a column, ALTER TABLE for modifying data types of a column

For adding a constraint enabling constraints, dropping constraints.

DROP Table for deleting a table;

UNIT 4: IT APPLICATIONS

Front-end Interface - Introduction; content and features; identifying and using appropriate component (Text Box, Radio Button, CheckBox, List etc. as learnt in Unit-2 (Programming) for data entry, validation and display;

Back-end Database - Introduction and its purpose; exploring the requirement of tables and its essential attributes;

Front-End and Database Connectivity - Introduction, requirement and benefits

Demonstration and development of appropriate Front-end interface and Back-end Database for e-Governance, e-Business and e-Learning applications

Impact of ICT on Society : Social and Economics benefits and Infomania.

Class XII (Practical)

Class XII

S.No.	Description			Marks
1	Problem Solving using Java			10
2	SQL Queries			4
3	Practical Record <ul style="list-style-type: none">• Simple Problems using IDE Java• SQL Queries• IT Applications			6
5	Project Work			4
4	Viva Voce			6
Total				30

Evaluation of Practical Examination

1. Problem Solving using Java

Student is required to solve programming problems based on all concepts covered in theory throughout the year and maintain a record of these in the practical file.

Student will be given a problem to be solved using Java during final practical examination to be conducted at the end of the academic session.

2. SQL Queries

Students will be trying out SQL queries in MySQL throughout the year alongwith course coverage in theory.

Student will be asked to write 4 queries based on one or two tables during final practical examination to be conducted at the end of the academic session

3. Practical Record File

A practical record file is required to be created during the entire academic session. It should be duly signed by the concerned teacher on regular basis and is to be produced at the time of Final Practical Examination for evaluation. It should include the following:

- At least 12 solutions of simple problems and 2 IT applications using IDE based Java (refer to Appendix 'A' & 'B')
- At least 24 SQL queries based on one and/or two tables
- Solution of at least 2 simple problems incorporating Java Application & Database connectivity

4. Project File

Students in group of 2-3 are required to work collaboratively to develop a project using Programming and Database skills learnt during the course. The project should be an application in any one of the following domains, - e-Governance, e-Business and e-Learning with GUI front-end corresponding database at the back-end.

5. Viva Voce

Students will be asked oral questions during practical Examination to be conducted at the end of the course. The questions will be from the entire course covered in the academic session

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Appendix 'A'

Sample Guidelines for GUI Programming

1. To display a message using Label, TextBox, MessageDialog using simple GUI applications
2. To concatenate two text entries and display using simple GUI application
3. To perform a simple arithmetic operation (+, -, *, /) and display the result in MessageDialog or TextBox using simple GUI application
4. To perform simple arithmetic operation (+, -, *, /) and display the result in TextBox using simple GUI application
5. To make simple decision making (if statement) solution and display relevant message using GUI application (Example - Problems related to Eligibility for a given value of Age, "Profit" or "Loss" messages for given values of Cost Price and Sale Price, Grade Display for given values of Marks of students etc.)
6. To create a simple GUI application to perform both arithmetic and logical operation together (Example - Total, Average and Grade calculation for given marks, Salary Calculation on different criteria)
7. To create a simple GUI application to perform an operation based on the criteria input by the user in a CheckBox or a RadioButton.

(Example 1: Find the Discount of an item on the basis of Category of item [Electrical Appliance/ Electronic Gadget/Stationary specified using a Radio button] and its Cost [Below 1000/Above 1000/Equal to 1000 specified using a Radio button]).

(Example 2: Calculate the incentive of a Sales Person on the basis of his Sales Amount, Customer Feedback, Count of Customer specified using CheckBox)
8. To create a simple GUI application to change the property of a swing element based on the selection made by the user

(Example 1: To change the background or Foreground color of any of the Swing elements of the form based on the color selected from a list)

(Example 2: To change the foreground and background color of a label based on the values input/stored in a combo box)
9. To create a simple GUI application for repeatedly doing a task based on the user input.

(Example: To display the multiplication table of a number input by the user)
10. To store the data (Admission No., Name, Date of Birth, Class and Section) of 10 students in a table (Table) and find total number of students in each class and section.

Sample Guidelines for Connectivity Problems

11. To create a simple GUI application that counts and displays the number of records present in a database table.
12. To create a simple GUI application that displays the records of a database table in a tabular format (using jTable) on the GUI form.
13. To create a simple GUI application that displays the records of a database table in a tabular format (using jTable) on the GUI form based on a criteria input by the user.
14. To create a simple GUI application to perform a calculation based on a value retrieved from database table and a value entered by the user in a GUI application.

Appendix 'B'

Swing Control Methods & Properties

Class	jButton
Swing Control	jButton1, jButton2, jButton3, ... (default)
Methods	getText (), setText ()
Properties	Background, Enabled, Font, Foreground, Text, Label
Class	JLabel
Swing Control	jLabel1, jLabel2, jLabel3, ... (default)
Methods	getText (), setText ()
Properties	Background, Enabled, Font, Foreground, Text
Class	JTextField
Swing Control	jTextField1, jTextField2, jTextField3, ... (default)
Methods	getText (), isEditable (), isEnabled (), setText ()
Properties	Background, Editable, Enabled, Font, Foreground, Text
Class	JRadioButton
Swing Control	jRadioButton1, jRadioButton2, jRadioButton3, .. (default)
Methods	getText (), setText (), isSelected (), setSelected ()
Properties	Background, Button, Group, Enabled, Font, Foreground, Label, Selected, Text
Class	JCheckBox
Swing Control	jCheckBox1, jCheckBox2, jCheckBox3, ... (default)
Methods	getText (), setText (), isSelected (), setSelected ()
Properties	Button Group, Font, Foreground, Label, Selected, Text

Class	J Button Group
Swing Control	J Button Group1, (default)
Methods	
Properties	Add
Class	JComboBox
Swing Control	jComboBox1, jComboBox2, jComboBox3, ... (default)
Mehtods	getSelectedItem (), setSelectedIndex (), setModel ()
Properties	Background, ButtonGroup, Editable, Enabled, Font, Foreground, Model, SelectedIndex, SelectedItem, Text.
Class	JList
Swing Control	jList1, jList2, jList3,... (default)
Methods	getSelectedValue ()
Properties	Background, Enabeld, Font, Foreground, Model, SelectedIndex, SelectedItem, Selection Mode, Text
Class	JTable
Swing Contorl	jTable1, jTable2, jTable3, ... (default)
Methods	addRow (), getModel ()
Properties	model
Class	JOptionPane
Methods	showMessageDialog (), showInputDialog (), showConfirmDialog ()
Class	DefaultTableModel
Methods	getRowCount (), removeRow (), addRow, ()

Commonly used Mehtods

Class	Methods
Integer	parsoInt (), toDouble (), toString ()
String	concat (), length (), substring (), toDouble (), toLowerCase, (), toUpperCase (), trim ()
Double	parseDouble (), toString (), toInt ()
Math	pow (), round ()

Database Connectivity Mehtods

Class	Methods
Connection	createStatement (), close ()
DriverManager	getConnection ()
Statement	executeQuery ()
ResultSet	next (), first (), last (), getString ()
Exception	getMessage ()
System	exit ()

Note: The visual properties of any of the elements and Data connectivity methods (the properties/ methods, which are not highlighted in the above tables) will not be tested in the Theory examination but may be used by the student in the Practicals and Projects.

References

Suggested Reference Books

Introduction to Computer System

1. Rajaraman, FUNDAMENTALS OF COMPUTERS 4th Edition, Prentice Hall of India.
2. Peter Norton, INTRODUCTION TO COMPUTER 4th Edition, Tata McGraw Hill

Introduction to Programming

1. Heiko Böck, The Definitive Guide to the NetBeans Platform 6.5, Apress

Relational Database Management System and SQL

1. Lerry Ulman, MYSQL Database, Pearson Education, 2008

Computer Network

1. A.S. Tanenbaum, Computer Network 4th Edition, Prentice Hall of India P. Ltd.
2. Williams Stalling, Data Communication and Networks 5th Edition, Prentice Hall of India P. Ltd.

Suggested Websites on e-Governance

- www.mit.gov.in
- www.esevaonline.com
- bhoomi.kar.nic.in
- aponline.gov.in
- www.chips.nic.in

Suggested Websites on e-Business

- www.salesforce.com

- www.zoho.com
- www.itcportal.com

Suggested Websites on e-Learning

- www.moodle.org
- www.atutor.ca
- www.w3schools.com
- portal.unesco.org