

# INFORMATICS PRACTICES

## for Class XII

Computer Networking

MySQL Queries

Problem Solving  
Using Java

Case Studies

HTML

Relational Database  
Management System

IT Applications

Open Source Concepts



Pranab Kumar Das Gupta  
Ramprosad Mondal

# INFORMATICS PRACTICES

For Class XII

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## ***Dedication***

*This book is dedicated to all the students who aspire to excel in their career and serve Mother India.*



# Preface

Students look forward for a book on Informatics Practices (IP), which is easy to understand, not voluminous and help them understand the subject. This book **Informatics Practices for Class XII** is concise, crisp and strictly based on the syllabus of CBSE. This book will help students to secure good marks in IP in class XII. The book covers computer networking, open source concepts, object oriented programming, web technology and developing data driven applications using MySQL and Java. The book concludes with the discussion on software case studies. Publisher and Authors welcome constructive suggestions to improve the book.

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We express our heart-felt gratitude to the management and the editorial team of S. Chand & Co. Pvt. Ltd. for their dynamism towards publishing the book in such a short span of time.

Last but not least, we express sincere thanks to our family members whose moral support has energized us in completion of the book.

**PRANAB KUMAR DAS GUPTA**

**RAMPROSAD MONDAL**

# Syllabus

## COURSE DESIGN CLASS–XII (2014-15)

Unit	Topic	Periods		Total periods
		Theory	Practical	
1.	Networking and Open Standards	20	04	24
2.	Programming	46	44	90
3.	Relational Database Management System	50	40	90
4.	IT Applications	10	26	36
		126	114	240

### 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, Remote access software such as Team Viewer;
- Identifying computers and users over a network: Basic concept of domain name, MAC (Media Access Control), and IP Address, domain name resolution
- Network security: denial of service, intrusion problems, snooping
- Internet Applications: SMS, Voice Mail, Electronic Mail, Chat, Video Conferencing
- Wireless/Mobile Communication: GSM, CDMA, WLL, 3G, 4G
- Network Security Concepts: Cyber Law, Firewall, Cookies, Hackers and Crackers

#### Open Source Concepts:

- Open Source Software (OSS), common FOSS/FLOSS examples (GNU/Linux, Firefox, OpenOffice, Java, Netbeans, MySQL), common open standards (WWW, HTML, XML, ODF, TCP, IP)
- 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, Inscript.

## Unit 2: Programming

Review of Class XI;

Programming Fundamentals

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

- Basic concept of Access specifier for class members (data 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 ROLLBACK.
- 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, Intersection 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 column(s), modifying data type(s) of column(s),
- 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, environmental and Economic benefits.

In each of the above domains, identify at least two real-life problems, list the expected outputs and the input(s) required for the output, and describe the problem solving approach and develop relevant front-end interface and back-end database.

**COURSE DESIGN**  
**CLASS – XII (PRACTICAL) (2014-15)**

S.No.	Description		Marks
1.	Problem Solving using Java	10	10
2.	SQL Queries	4	4
3.	Practical Record <ul style="list-style-type: none"> <li>• Identify Network configuration and OSS used in school</li> <li>• Simple problems using IDE Java</li> <li>• SQL Queries</li> <li>• IT Applications</li> </ul>	1 2 1 2	6
4.	Project Work		5
5.	Viva Voce	4	5
	<b>Total</b>		<b>30</b>

**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 practicing SQL queries in MySQL throughout the year alongwith course coverage in theory. Student will be asked to write four 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 using IDE based Java (refer to Appendices 'A' & 'B')
- Network Configuration and open source software used in your school.
- Solution of at least 2 simple problems incorporating Java Application & Database connectivity
- At least 24 SQL queries based on one and/or two tables
- At least two web pages using HTML

**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 domains – e-Governance, e-Business and e-Learning - with GUI front-end and 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.

### Question Paper Design Class – XI (2014-15) and XII (2014-15)

S. No.	Typology of Questions	Very Short Answer (VSA) (1 mark)	Short Answer-I (SA-I) (2marks)	Short Answer-II (SA-II) (4 marks)	Long Answer (L.A.) (6 marks)	Total Marks	% Weightage
1.	Knowledge Based	4	3	2	–	18	25.7
2.	Conceptual Understanding	4	5	1	–	18	25.7
3.	Reasoning Based	4	–	2	1	18	25.7
4.	Skill Based	–	1	2	1	16	22.9
	Total Marks	12	9	7	2	70	100

1. No chapter wise weightage. Care to be taken to cover all the chapters.
2. The above template is only a sample. Suitable internal variations may be made for generating similar templates keeping the overall weightage to different form of questions and topology of questions same.
3. Questions may be case based requiring problem solving skills.
4. LA Questions may be case-based requiring problem–finding and problem –solving skills.

# Contents

<b>Chapter 1: An Introduction to Computer Networks</b>	<b>15 – 42</b>
1.1. Introduction	15
1.2. Computer Network	15
1.3. Transmission Medium	18
1.4. Networking Devices	22
1.5. Network Topologies	23
1.6. Network Protocols	27
1.7. Network Securities	33
1.8. Remote Access Software	35
1.9. Conclusion	39
<i>Review Questions</i>	39
<i>Assignment</i>	41
<b>Chapter 2: Open Source Concept</b>	<b>43 – 55</b>
2.1. Introduction	43
2.2. Open Source Concept	43
2.3. Open Source Software	45
2.4. Conclusion	53
<i>Review Questions</i>	53
<i>Assignment</i>	55
<b>Chapter 3: A Revision Tour to GUI Programming using NetBeans</b>	<b>56 – 93</b>
3.1. Introduction	56
3.2. Revisiting The Control Statements In Java	59
3.3. Introduction To NetBeans	63
3.4. Java GUI Components	65
3.5. Working with List Box and Combo Box	72
3.6. Working with Radio Buttons and Check Boxes	77

3.7. Working with Password Field and Dilaog Boxes	80
3.8. Working with Numbers	83
3.9. Conclusion	86
<i>Review Questions</i>	86
<i>Assignments</i>	91
<b>Chapter 4: Object Oriented Programming in Java</b>	<b>94 – 117</b>
4.1. Introduction	94
4.2. Classes and Objects	95
4.3. Features of Object Oriented Programming System	102
4.4. Advantages of Object Oriented Programming System	111
4.5. Errors and Exceptions	112
4.6. Conclusion	115
<i>Review Questions</i>	115
<i>Assignments</i>	117
<b>Chapter 5: A Revision Tour to MySQL</b>	<b>81 – 101</b>
5.1. Introduction	118
5.2. MySQL Products and Tools	119
5.3. Creating and Managing Databases	121
5.4. Creating and Managing Tables	122
5.5. Querying Data	125
5.6. Operators in MySQL	125
5.7. Ordering and Filtering Data	127
5.8. Join, in, Between and Distinct	127
5.9. Built in Functions	128
5.10. Using Group by Clause with Grouping Functions	130
5.11. MySQL Expressions without Table	131
5.12. Conclusion	131
<i>Review Questions</i>	131
<i>Assignments</i>	136

<b>Chapter 6: Web Technology</b>	<b>140 – 173</b>
6.1. Introduction	140
6.2. Hyper Text Markup Language (HTML)	142
6.3. HTML Links	149
6.4. HTML Frames	151
6.5. HTML Tables	154
6.6. HTML Lists	156
6.7. HTML Forms And Input	160
6.8. HTML Images	163
6.9. Cascading Style Sheets	164
6.10. Introduction to Extensible Markup Language (XML)	164
6.11. Conclusion	169
<i>Review Questions</i>	<i>169</i>
<i>Assignments</i>	<i>171</i>
<b>Chapter 7: Developing Data Driven Application using MySQL and Java</b>	<b>174 – 201</b>
7.1. Introduction	174
7.2. Layers in a Data Driven Computer Application	174
7.3. Architecture of Data Driven Applications	175
7.4. MySQL Connectors	179
7.5. Conclusion	198
<i>Review Questions</i>	<i>198</i>
<i>Assignment</i>	<i>200</i>
<b>Chapter 8: More on MySQL</b>	<b>202 – 218</b>
8.1. Introduction	202
8.2. Data Integrity	202
8.3. Transactions	206
8.4. Advanced Queries In MySQL	209
8.5. Set Operators	212
8.6. Conclusion	215
<i>Review Questions</i>	<i>215</i>
<i>Assignment</i>	<i>217</i>

<b>Chapter 9: Advanced Database Concepts</b>	<b>219 – 234</b>
9.1. Introduction	219
9.2. Normalization	219
9.3. First Normal Form	220
9.4. Second Normal form	223
9.5. Third Normal Form	226
9.6. Boyce-Cod Normal form	229
9.7. Fourth Normal form	230
9.8. Conclusion	230
<i>Review Questions</i>	231
<i>Assignments</i>	232
<b>Chapter 10: IT Applications - Case Studies</b>	<b>235 - 263</b>
10.1. Introduction	235
10.2. Case Study-I, Developing Mind Reader Game	235
10.3. Case Study-II, Developing Message Board System	242
10.4. Conclusion	261
<i>Review Questions</i>	261
<i>Assignment</i>	262
<b>Appendix A: Solution of Review Questions and Assignments</b>	<b>264 – 304</b>
<b>Appendix B: Informatics Practices Question Papers: 2014 - 2015</b>	<b>305 – 323</b>
<b>Index</b>	<b>324 – 327</b>



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