UNIVERSITY OF PUNE

[4364]-791

B. E. Information Technology – 2013

Information Assurance and Security

(2008 Pattern)

Total No. of Questions : 12 **[Total No. of Printed Pages :2]**

[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

(1) Assume suitable data, if necessary.

(2) Figures to the right indicate full marks.

SECTION-I

Q1a) Illustrate the idea of securing the software code (Writing & distribution) [12]

Q1b) Illustrate Chinese remainder theorem [6]

OR

Q2a) What is mean by Modular arithmetic & Exponentiation? [12]

Q2b) What is the difference between block and stream cipher? [6]

Q3a) Explain Counter mode of operation. [8]

Q3b) Draw block diagram of SHA-1 and state the general step in the process. [8]

OR

Q4a) Describe the advantages and disadvantages of symmetric and asymmetric key cryptography. [8]

Q4b) Explain permutation and substitution steps in DES [8]

Q5a) List the certifying authorities in India and worldwide. Also list the steps to acquire the digital certificate. [8]

Q5b) Explain role of key distribution centre in symmetric system [8]

OR

Q6a) Draw sequence diagram of Neeham Schroeder protocol and explain [8]

Q6b) Explain how key storage and usage is managed in practice [8]

SECTION – II

Q7a) Illustrate **application programming** level security solution for Peer to Peer chat application which should support authentication, integrity and secrecy. [12]

Q7b) State threats in physical layer [6]

OR

Q8a) Explain SSL authentication protocols. [12]

Q8b) Explain the usage of any tool for instrusion Detection System [6]

Q9a) Write short note on ISO 27001 standard. [8]

Q9b) Explain importance of Security audit of "abc bank of india" [8]

OR

Q10a) Explain and draw a model for ISMS (Information security management system) of PDCA cycle (Plan, DO, Check, Act Phase). [8]

Q10b) What is mobile payment? How it works? [8]

Q11a) Explain in your own words what you understand about the global cooperation required in fighting against cybercrime. [8]

Q11b) Which types of data and techniques used for computer forensics [8]

OR

Q12a) Illustrate Industrial Espionage in IT industry. [8]

Q12b) List some of the cyber crime and respective penalties [8]

UNIVERSITY OF PUNE

[4364]-792

F. E. (Semester - I) Examination - 2013

Object Oriented Modeling and Design

(2008 Pattern)

Total No. of Questions : 12 **[Total No. of Printed Pages :3]**

[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

*(1) Answers to the **two sections** should be written in **separate answer-books**.*

(2) Black figures to the right indicate full marks.

(3) Neat diagrams must be drawn wherever necessary.

(4) In the question based on design you are encourage to make suitable assumption depending upon scope of the system data where necessary.

SECTION-1

Q. 1. a) What is COBRA? What are the basic elements of COBRA? Explain. [6]

b) With help of Example explain extensibility mechanism of UML [6]

c) Why we need OLC? Give the OLC expression syntax with an example. [6]

OR

Q. 2. a) explain extended features of UML 2.0 [6]

b) What is <<extends>> and <<include>> stereotype in UML [6]

c) Explain common Mechanism in UML [6]

Q. 3. a) Explain with the help of suitable diagram Rational Unified process. [8]

b) What is forward engineering of a use case from Use case diagram? Explain role of Actor, Use case and Relation among them with help of notation. [8]

OR

Q. 4. a) Explain 4+1 view architecture with corresponding UML diagram. [8]

b) What is use case diagram? Indentify the various use cause and draw the the use case diagram for “online Railway Reservation System”. [8]

Q. 5. a) Draw the class diagram for a banking system with two classes, Account and Customer. Customer can open a saving or a current account And can do „deposit' and „withdraw' transactions. Indentify suitable attributes and operations for the classes. [6]

b) Draw CRC card for any two classes & values for object [6]

c) What is a packing? How do you model a subsystem using a package? [4]

OR

Q. 6. a) Write short note on Composite structure diagrams? [4]

b) Draw a class diagram for an online library system. Make suitable additional assumptions about scope and working of the system. Class diagram must show relevant attributes, methods, relations and stereotype? [8]

c) Consider a class STUDENT that keeps personal details and another class MARKSHEET that keeps exam performance detail of the student. The two classes collaborate to give the student's personal and exam details. Make suitable assumptions about the two classes. Draw CRC cards to show the two classes. [4]

SECTION-II

Q. 7. a) Compare synchronous and asynchronous messages [8]

b) Draw a communication diagram for a "schedule of one day workshop" in the information technology department of an engineering institute organized for the students of final year. Make assumptions of possible classes. [8]

OR

Q. 8. a) Consider a use of a "Rent a car". A partial description of use case Follows. Customers rent online from choice of cars. A transaction of Renting car is hired, rate of hiring, etc. Payments can be done in various ways. Loyal customers with repeat business may be given discounts. some of the likely classes are cars, Types cars, Rates card, customers, Transactions for renting the car, Renting car a controller object, payment, Rental GUI object to interact etc. Make additional suitable assumptions about the scope and Draw the SEQUENCE DIAGRAM showing actors, lifelines, objects, messages/ parameters, return values, interactions. [8]

b) Compare interaction diagram and interaction Overview diagram. [4]

c) Explain lifeline and message of communication diagram. [4]

Q. 9. a) Explain notation of state machine diagram with suitable examples. [4]

b) A candidate applies in a placement call for placement in a company. [8]
He can be placed in one of the companies registered with the placement call. The candidate's applications are sorted on aggregate percentage basics. Top students are selected for placement in the registered companies on merit basic. The joining process involves candidate being shown available companies. Candidate select membership of health club, food club and entertainment club. On successful placement he is given a selection letter and a copy of company schedule. A candidate not placed can select to register himself for waitlist. Draw an activity diagram for the above described system making suitable assumption about scope.

c) Explain the concepts and notation through simple examples for following terms used for activity diagram: [4]
1) Action states. 2) Activity states

OR

Q. 10. a) Draw the state diagram with composite states for ATM card reading and authentication system. [8]

b) Describe Timing diagram with suitable example. [8]

Q. 11. a) What is component? What are the different types of component? Explain it with suitable example? [6]

b) What do you mean by two tier and three tier architecture? Draw the deployment diagram for a 2 tier web application. [8]

c) Write short notes on Application of UML in embedded system. [4]

OR

Q. 12. a) Explain how deployment diagram can be used for modeling embedded systems. [6]

b) Write short note on [12]
1) Applications of UML in web Application.
2) Pattern and framework.

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UNIVERSITY OF PUNE

BE-(IT) Examination - May 2013

[4364]-797

Advanced Operating System

(2008 Course)

Total No. Of Questions: 12 **[Total No. Of Printed Pages: 3]**

[Time: 3 Hours] **[Max. Marks: 100]**

Instructions:

*(1) Answer any **three questions** from each section.*

*(2) Answers to the **two sections** should be written in **separate answer-books**.*

(3) Black figures to the right indicate full marks.

(4) Neat diagrams must be drawn wherever necessary.

(5) Assume suitable data, if necessary.

SECTION-1

Q. 1. A) Explain following UNIX commands with eg. (10)

1) chmod 2) chown 3) useradd 4) ipconfig 5) chgrp

B) Enlist the services provided by the operating system for process management. Explain fork () system call with eg. (8)

OR

Q. 2. A) Define operating system. Discuss following kernel architectures: (10)

1) Monollithic kernel 2) Microkernel 3) Exokernel

B) Differentiate between procedure call and system call with eg. Explain the role of context switch operation with respect to procedure Call and system call. (8)

Q. 3. A) What is KMOS? Give specifications of SEND and DELAY system (8)

Call.

B) Explain the concept of Mailbox in Multitasking OS. How CREATEMBOX systems call works? (8)

OR

Q. 4. A) What is multitasking OS? Draw and explain Process state transition Diagram wrt Multitasking OS. (8)

B) Explain Interrupt Management in KMOS. (8)

Q. 5. A) What is Microprocessor Operating System? What are its feature? Discuss SISD and MIMD types. (8)

B) What is NORMA architecture? Discuss its type. (8)

OR

Q. 6. A) Explain different ways for multiprocessor synchronization. (8)

B) Describe Symmetric Multiprocessor system. How it is different from Separate supervisor system. (8)

SECTION-2

Q. 7. A) Explain the concept of zones and pages with eg. How they are related with each other? (8)

B) Differentiate between internal and external fragmentation . Explain Non contiguous memory management scheme. (10)

OR

Q. 8. A) Describe the concept of zoned page frame allocator. (10)

B) Explain the kmlloc() and vmalloc() systems calls using their respective (8)

Code.

Q. 9. A) Explain the concept of Disc caching. Explain the role of DMA Mapping in it. (8)

B) How different kernel components are affected by a block devices Operation? (8)

OR

Q. 10. A) What are elevators? Explain any two elevator algorithms. (8)

B) What is an I/O interface? Discuss its type. (8)

Q. 11. A) Explain the concept of VFS. (8)

B) Explain the following system call for file system with eg. Read, Write, lseek, mount (8)

OR

Q. 12. A) Draw the structure of inode in UNIX O.S. Explain the role of file Descriptors. (8)

B) Describe the operation of mounting and unmounting of the file Systems in UNIX. (8)

[Total No. of Questions: *12*] **[Total No. of Printed Pages: 2]**

UNIVERSITY OF PUNE
[4364]-802
B. E. (*IT*) Examination - 2013
Information Retrieval (2008 Course)

[Time: *3* Hours] **[Max. Marks: 100]**

SECTION -I

Q.1	A	Explain Conflation Algorithm in detail and explain in short "steps to conflate" the following words: Here, Hereby, Hereafter, Herein, Hereupon.	10
	B	Explain exhaustively and specificity with respect to Index term weighting.	8

OR

Q.2	A	Describe various classification methods based on the relations among properties, classes and objects.	10
	B	Explain single Link Algorithm in detail.	8
Q. 3	A	Explain various IR models in detail with their advantages and disadvantages.	8
	B	Explain the differences between suffix array and suffix tree.	8

OR

Q. 4	A	Explain the concept of Inverted index file. How it can be used Information Retrieval.	8
	B	Explain the different kinds of search strategies.	8
Q. 5		Consider a reference collection and its set of example information requests. If q is the information request and a set $R_q = \{d_3,d_5,d_9,d_{25},d_{39},d_{44},d_{50},d_{70},d_{80},d_{120}\}$. Now, consider new retrieval algorithm has been designed and has been evaluated for information request q returns, ranking of the documents in the answer set as.	16

1. $\underline{d_{120}}$	6. $\underline{d_9}$	11. d_{38}
2. d_{84}	7. d_{58}	12. d_{48}
3. $\underline{d_{50}}$	8. d_{129}	13. d_{230}
4. d_6	9. d_{143}	14. d_{113}
5. d_8	10. $\underline{d_{25}}$	15. $\underline{d_3}$

The documents that are relevant to the query q are underlined. Calculate precision and recall for the documents that are relevant to the query q. Also, explain

		average precision at seen relevant documents and R-Precision with the help of above example.	
		OR	
Q. 6	A	Discuss the architectural issues in Digital Library.	8
	B	Explain the terms Harmonic mean, E-measure, R- precision and precision histogram.	8
		SECTION II	
Q. 7	A	Explain distributed IR with the help collection partitioning, source selection and query processing.	10
	B	Explain the differences between parallel IR and distributed IR.	8
		OR	
Q. 8	A	Describe MIMD architecture with respect to parallel IR. How is inverted file used for MIMD?	10
	B	What is parallel computing? Discuss commonly used taxonomies of parallel architectures.	8
Q. 9	A	Explain GEMINI approach for multimedia IR.	8
	B	What is multimedia IR? Explain the steps multimedia IR.	8
		OR	
Q. 10	A	What is multimedia information retrieval? Explain query specification query processing with respect to multimedia information retrieval.	8
	B	Explain the feature extraction and distance function for 2D color image.	8
Q. 11	A	Explain the different components of web crawler.	8
	B	Explain centralized search engine architectures, comment on drawbacks of harvest distributed architecture.	8
		OR	
Q. 12	A	Write short notes on i) Challenges in web search ii) Digital Libraries.	16

[Total No. of Questions: *12*] **[Total No. of Printed Pages: 2]**

UNIVERSITY OF PUNE

[4364]-808

B. E. (*I.T.*) Examination - 2013

414451-Neural Network And Expert System (2008 Course)

[Time: *3* **Hours]** **[Max. Marks: 100]**

Instructions:

1 *Answers to the **two sections** should be written in **separate** sheet*
2 *Use of logarithmic tables, slide rule and electronic pocket calculator is allowed.*
3 *Neat diagrams must be drawn wherever necessary.*
4 *Black figures to the right indicate full marks.*
5 *Assume suitable data, if necessary.*

SECTION –I

Q.1	A	What is fundamental building block of the biological neural network? Also discuss the functioning of a simple artificial neural network.	9
	B	Explain the distinction between pattern and data. What are different methods for solving pattern recognition task?	9
		OR	
Q.2	A	What is meant by topology of artificial neural networks? Give a few basic topological structures of artificial neural networks.	9
	B	What is weight vector in ANN training? How it is described in following learning laws: i. Hebb's Law and ii. Delta Learning Law	9
Q. 3	A	Distinguish between multilayer perceptron and a general multilayer feed forward neural network.	8
	B	How associative memory medals are classified? With diagram explain the working of Auto-associative Neural Network.	8
		OR	
Q. 4	A	Draw a 3-layer feed –forward Neural Network. Explain the Back propagation training algorithm in detail.	8
	B	Draw the structure of ADALINE computing Model and state its learning laws. Compare it with Perceptron Model.	8

Q. 5	A	With example explain how Radial Basis function Network (RBFN) can be used for pattern classification.	8
	B	Explain in brief the statistical learning theory? What is the use of kernel functions in pattern analysis?	8
		OR	
Q. 6	A	What is the use of RBF network for pattern classification? Explain in detail.	8
	B	Explain construction of optimal hyperplane for linearly separable pattern with respect to support vector machine	8
		SECTION II	
Q. 7	A	What are the salient features of the Kohonen's self-organizing learning algorithm?	10
	B	What is Hopfield model of a neural network? What is meant by capacity of feedback network?	8
		OR	
Q. 8	A	Discuss the architecture of Hopfield Network? Compare it with Boltzman Machine.	10
	E	Explain Kohonen model for self organized feature maps. Also Write Kohonen's SOM algorithms detail.	8
Q. 9	A	Explain the rule based architecture of expert system. Write common characteristics of expert systems.	8
	B	Describe a method in which rules could be grouped or organized in a knowledge based to reduce the amount of search required during the matching part of the inference cycle.	8
		OR	
Q. 10	A	What are the major uncertainties in rule based systems. Give details.	8
	B	Give the advantages of expert system architecture based on decision tree over those of production rules. What are the main disadvantages?	8
Q. 11	A	What is knowledge management? Explain Rulemaster building system with suitable diagram.	8
	B	Describe and compare the different types of problems solved by four of the earliest expert system DENDRAL, MYCIN, PROSPECTOR and R1.	8
		OR	
Q. 12	A	Draw and explain process of knowledge acquisition. Also write the role of knowledge engineer.	8
	B	Give a short note on expert tool MYCIN	8

Total No of Questions: [12] *SEAT NO. :*

XXXX
[Total No. of Pages :]

[4364]-798

B.E. (Info. Tech.)

Embedded System

(2008 Pattern) (Elective - II) (Semester - I)

Time: 3 Hours *Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Solve Q1 or Q2, Q3 orQ4, Q5 or Q6 from Section –I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section -II***
5) ***Use of Calculator is allowed.***
6) ***Assume Suitable data if necessary.***

SECTION I

Q1)	a)	Explain, How design metrics compete in design of Embedded System?	[10]
	b)	How a selection of particular processor / micro-controller is justified for suitability in embedded system design?	[8]
		OR	
Q2)	a)	Differentiate General Purpose Processors, Application Specific Processor, Digital Signal Processors based on performance parameters.	[10]
	b)	What are different characteristics, which make a system as Embedded system	[8]
Q3)	a)	Draw Architecture of Standard single purpose processor and explain it in brief.	[8]
	b)	What are different criteria for Selection of processor and memory for a particular task	[8]
		OR	
Q4)	a)	What is role of Watchdog timer? Explain operation with modes.	[8]
	b)	List different clocking techniques alongwith features, advantages and drawbacks of each.	[8]
Q5)	a)	Explain Interfacing of 08 bit ADC with microcontroller with control signals.	[8]
	b)	Explain serial communication using I2C. Explain Master control and I2C modes.	[8]
		OR	
Q6)	a)	What are Device Drivers ? Explain Board Support package.	[8]
	b)	What are makeable and Non-maskable interrupts? List steps of ISR execution	[8]

SECTION II

Q7)	a)	What are different features of cross-compilers? How targets can be added to cross compilers?	[8]
	b)	What is In-line-Assembly? What are the uses of dis-assembler and register window during debugging?	[8]

OR

Q8) a) What is In-circuit emulator? How it is different from simulators? List debugging capabilities of ICE. [8]

b) What are Software engineering practices in the embedded software development process. [8]

Q9) a) What is pre-emptive task scheduling? Explain any one algorithm for scheduling of tasks. [8]

b) List differences between Semaphores, message Queue, mailbox and pipes. [10]

OR

Q10) a) When priority inversion is needed? What are issues with it? How these issues are handled? [10]

b) Explain OS functions & tasks for resource management in case of embedded system. [8]

Q11) a) Explain algorithm for vending machine system with μCOS II. [8]

b) Explain case study of sending application layer byte streams on A TCP/IP Network Using RTOS Vx works. [8]

OR

Q12) Write short notes on (Any Two) [16]

a) Adaptive Cruise control System in a car

b) Smart Card – Circuitry and operation,

c) Digital Camera – Block and Interfacing Diagram

UNIVERSITY OF PUNE
[4364]-793
B. E. (IT) Examination 2013
Software Testing and Quality Assurance
(2008 course)

[Total No. of Questions:12] **[Total No. of Printed pages :3]**

[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

(1) Answer question number 1 or 2,3 or 4, 5 or 6 from section I.
(2) *Answer question number 7 or 8, 9 or 10, 11 from section II.*
(3) *Answers to the two sections should be written in separate answer books.*
(4) Neat diagrams must be drawn wherever necessary.
(5) Figures to right indicate full marks.
(6) Assume suitable data, if necessary.

SECTION I

Q1) a) Differentiate any two in detail: [10]

i)Verification and validation.

ii)Load and stress testing.

iii)Test plan and Test strategy.

iv)Defect severity and defect priority.

b) Define Test Adequacy criteria Is complete testing possible? When to stop testing? Explain the difference between random testing and testing using error guessing. [8]

OR

Q2) a)Explain in short five methods of System Level Testing. [10]

b) Define any four of the following terms: [8]

i) Failure ii)Test Oracle

iii) Test Bed iv) Defects

v) Errors vi) Software Quality

Q3) a) Draw and explain the various stages of Software Testing Life Cycle.[8]
b) What is control flow graph? How is it used in white box testing? [8]
How is the cyclomatic complexity value useful to the tester?

OR

Q4) a) Develop black box test cases for an ATM system which reads the [8]
amount to be withdrawn from the users account. The amount has to be a multiple of Rs. 100 and be less than Rs. 10,000. List any assumptions you make and label equivalence classes and boundary values that you use.

b) Based on the following procedure, identify two test conditions for each [8]
of the following:
i)Statement coverage.
ii)Decision coverage.
iii)Condition coverage.
iv)Multiple condition coverage.

```
Procedure liability (age, gender, married, premium)
begin premium:=500; if ((age<25) and (gender= male) and (not married)) then
  premium:=premium +1500; else if ((married or (gender= female)) then
  premium:=premium -200; if ((age<45) and (age<65)) then
   premium :=preminum-100;) end;
```

Q5) a) Define measurement scale and explain the Nominal, Ordinal, Interval[8]
and Ratio scales of measurement.
b) Explain in short the following metrics used in software testing: [8]
i) Test coverage ii) Test Execution status
iii) Defect density iv) Defect leakage.

OR

Q6) a) Write short notes on: [8]
i)Product quality metrics.
ii)In-process quality metrics.
b) Explain GQM technique in detail. Draw a GQM tree for identifying[8]
software measures.

Section-II

Q7) a)What are the outcomes of SQA? List all different quality concepts?[8]
b) Illustrate with example the use of following techniques in improving quality[8]

i) Code inspection
ii) Project planning

OR

Q8) a) Explain Ishikawa's Seven basic tools. [8]
b) List and explain software reliability attributes. [8]
Q9) a) What is CMM? Explain all the levels. [10]
b) Explain Software Project tracking &oversight (SPTO) KPA of CMM level II in detail. [6]

OR

Q10) a) List all the requirements of ISO 9000 and ISO 9001. [8]
b) What is Six Sigma? Explain terms DMAIC & DMADV with reference to Six Sigma. [8]
Q11) Write short notes on any three [18]
a)Software Configuration Management (SCM)
b)Software Product Engineering (SPE)
c)Quantitative Process management (QPM)
d) Process Change Management (PCM)

UNIVERSITY OF PUNE

[4364]-794
B. E. (IT) Examination - 2013
ADVANCED DATABASE MANAGEMENT
(JUNE 2008 Course)

[Time : 3 Hours] **[Max. Marks : 100]**
Total No. of Questions : 12 **[Total No. of Printed Pages :3]**

Instructions :

(1) Answers to the section should be written in separate books
(2) Neat diagrams must be drawn wherever necessary.
(3) Assume suitable data, if necessary.
(4) Section I :Q1or Q2, Q3 or Q4, Q5 or Q6
(5) Section II: Q7 or Q8, Q9 or Q10, Q11 or Q12

SECTION-I

Q1. a) Explain parallel query evaluation using data partitioning technique 06
Q1. b) Describe Partitioned parallel join. 06
Q1. c) Describe the benefits and drawbacks of Partitioned parallelism. 05

OR

Q2. a) Explain parallelizing individual operations using bulk loading and scanning, sorting. 06
Q2.b) Explain parallel evaluation of a relational query in a DBMS with shared nothing architecture. 06
Q2.c) Write a short Note of parallel Query optimization 05

Q3. a) Explain 2PC and 3PC commit protocols 06
Q3. b) Explain distributed catalog management in distributed databases. 06
Q3. c) Write a short note on LDAP 05

OR

Q4. a) Explain any two availability approaches in distribute databases 06

Q4. b) Suppose that the employee relation is stored in Madison and the tuples with salary < 100000 are replicated at New York. Consider the following three options for lock management : all locks managed at a single site, say ABC; primary copy with Madison being the primary for employees; and fully distributed. For each of the lock management options, explain what locks are set for all following queries. Also state from which site the page is read 06

i. A query at Austin wants to read a page of employees tuples with salary <= 50000

ii. A query at Madison wants to read a page of employees tuples with salary <= 50000

iii. A query at New York wants to read a page of employees tuples with salary <= 50000

Q4. c) Write a short Note on Query Transformation 05

Q5. a) Consider the following nested relational schema 10

Emp= (ename, childrenset setoff(children), skillset setoff(skills)
Children = (name, birthday), Birthday= (day, month, year)
Skills = (type, Examset setoff(Exams)), Exams = (year, city)
Answer the following

1. Write DTD and XML file
2. Write a query in XPath to list all skill types in Emp.
3. Find the name of all the employees who have a child who has a birthday in March.
4. Find the those employee who took an examination for the skill Type "typing" in the city "Pune"
5. List all skill types in Emp.

Q5. b) Compare and contrast the two-tier and three-tier architecture for Web-DBMS. Describe design issues for a web- DBMS based E-learning application which includes text, audio and video data. 06

OR

Q6. a) Describe the various issues for efficient evaluation of XML Queries 06

Q6. b) Write a short Note on 10

1. XML facets
2. Web services and SOAP

SECTION II

Q7. a) Design basic conceptual schemas of conceptual modeling of data warehouse for Inventory application. 06

Q7. b) Explain Load manager in data warehouse. 06

Q7. c) Explain guidelines for designing fact tables 05

OR

Q8. a) Explain Indexing techniques in data warehouse 06

Q8. b) Explain Kimball's nine steps design methodology 06

Q8. c) Write a short notes on OLAP 05

Q9. a) Describe Incremental mining algorithm for computing Frequent Itemsets with suitable example 06

Q9. b) Explain the splitting criteria and pruning process for decision tree construction with suitable example 06

Q9. c) Write a short Note on Web Mining 05

OR

Q10.a) Explain different types of clustering in data mining with suitable example 06

Q10.b) Design a classification model using Naïve Bayesian classifier with suitable example 06

Q10.c) Write a short note on Text Mining 05

Q11. a) Explain the following terms in Information Retrieval with suitable example 06

i) Synonyms ii) Homonyms iii) Proximity iv) TF-IDF

Q11. b) Write short notes on 10

i) Bit-sliced Signature File

ii) Precision and Recall

Q12. a) Define Information Retrieval System. Describe Web search engine architecture 06

Q12. b) Write short notes on 10

iii) Document Ranking

iv) Link based searching approach

UNIVERSITY OF PUNE

[4364]-795

B. E.(Information Technology Engg.)Examination - 2013

ARTIFICIAL INTELLIGENCE

(2008 Pattern)

[Total No. of Questions:12] **[Total No. of Printed Pages :2]**

[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

*(1) Answers to the **two sections** should be written in **separate answer-books.***

(2) Neat diagrams must be drawn wherever necessary.

(3) Assume suitable data, if necessary.

SECTION-I

Q1 a) What is the Turing Test? What is its relevance with artificial Intelligence? [8]

b) What is an Intelligent Agent? Detail the architecture of an agent. [8]

OR

Q2 a) Write a detailed note on Problem Solving Agent. [8]

b) Explain any two applications of Artificial Intelligence. [8]

Q3 a) Explain AO* algorithm with example. [10]

b) Explore the cryptatithmetic problem solution LOGIC+LOGIC =PROLOG using Constraint Satisfaction algorithm. [8]

OR

Q4 a) Write and explain A* Algorithm [10]

b) List and explain all Production system characteristics for AI system. [8]

Q5 a) What is Nonmonotonic Reasoning? Explain with example. [8]

b) Explain process of resolution using predicate logic. [8]

OR

Q6 a) What is conceptual dependency? Explain in detail. [8]

b) Detail syntax analysis phase of NLP. [8]

SECTION-II

Q7 a) Explain Goal Stack Planning using the example in Blocks' world? [10]

b) Explain in detail the various components of a typical planning system? [8]

OR

Q8 a) Explain Hierarchical planning with example. [8]

b) Describe Waltz's algorithm in detail. [10]

Q9 a) Discuss any case study of an Expert System. [7]

b) Explain Supervised, Unsupervised and Reinforcement Learning. [9]

OR

Q10 a) What is Rote Learning? Explain with example. [6]

b) Explain Perceptron Learning in detail. [10]

Q11 a) Write a note on Parallel AI. [8]

b) Explain backtracking principle in PROLOG with example [8]

OR

Q12 a) Write a note on distributed AI. [6]

b) Explain the process of recursion with reference to Factorial program in PROLOG. [10]

UNIVERSITY OF PUNE

[4364]-796

B. E. (INFORMATION TECHNOLOGY) Examination 2013

COMPILER DESIGN

(2008 Pattern)

[Total No. of Questions:12] **[Total No. of Printed pages :3]**

[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

(1) *Answer three questions from each section.*

(2) Answers to the two Sections should be written in separate answer-books

(3) Neat diagrams must be drawn wherever necessary.

(4) Figures to right indicate full marks.

(5) Assume suitable data, if necessary.

SECTION-1

Q1) a) Explain the Role of Lexical Analyzer, Explain interaction between Lexical Analyzer and Parser, Define Lexeme, Token and Pattern with suitable example. [8]

b) Define passes and phases of Compiler. Explain different phases of Compiler in detail. [10]

OR

Q2) a) Explain the following terms [6]

i)Cross Compiler

ii) Bootstrapping

iii) Incremental Compiler

b) Explain the role of Regular expression and DFA in Lexical Analyzer. [6]

c) Differentiate between Compiler and Interpreter. [6]

Q3) a) Discuss the term ‚Ambiguity of Grammar'. Consider following grammar. $S \rightarrow S + S \mid S*S \mid a \mid b$ [10]

Determine whether the grammar is ambiguous? If yes, show resultant parse trees for one example string.

b) Which are the conflicts may encounter during LR parsing? Explain with example. [6]

OR

Q4) a) Show that following grammar is LR (1) but not LALR. [8]

S→ Aa | bAc | Bc | bBa

A→ d

B→ d

b) Explain the following terms with suitable examples. [8]

i) Left Recursion ii) Left Factoring

Q5) a) Explain the following terms with suitable examples. [8]

i)S-attributed Grammar ii)L-attributed Grammar

iii)Type Expression iv)Abstract Syntax Tree

b) Suppose declarations are generated for Pascal Language by following grammar: [8]

D→ id L

L→,id L | :T

T→int | real

Construct a translation scheme to enter the type of each identifier into the symbol table

OR

Q6) Consider the following attribyted grammar: [16]

Grammar Rule	Semantic Rule
S→XYZ	Y.s=S.s
	X.s=Y.i+Z.i
	S.i=X.i
X→x	X.i=3*X.s
Y→y	Y.i=Y.s
Z→z	Z.i=1

i)Draw Parse tree for string “xyz”.

ii)Draw annotated parse tree.

iii)Draw dependency graph for associating attributes and describe correct order of evaluation.

iv)If S.s =4 before evaluation, what is S.i after evaluation?

SECTION –II

Q7)a)What is activation record? Explain its components with an example. [10]

b)Explain procedure call with an example. [6]

OR

Q8)a) Discuss Display Mechanism used by the Pascal compiler to handle access to non-local names with adequate illustration. [10]

b)Compare Static Scope and Dynamic Scope. Illustrate with suitable examples. [6]

Q9)a) Generate quadruple, triple and indirect triple representation for following a= -u*v / w^ x+y*z [6]

b) Explain following code optimization techniques with example: [8]

i) Common subexpression Elimination

ii)Code Movement

iii) Strength Reduction

iv) Dead Code Elimination

c) Define the following terms with example [4]

i) Live Variable

ii) Available expession

OR

Q10) a) For the following fragment of code, generate three address code, AST and DAG. do { p=p+x[i]/y[i]; } while (i>100); [12]

b) Explain the following terms with respect of simple code generation algorithm: [6]

i)Register Descriptor

ii)Address Descriptor

Q11)a)Is there any difference between Class-based languages and object-based languages? If yes, justify the answer. [6]

b) How can overloading and overriding of functions in object oriented programming languages handle by Compiler? Explain in detail. [10]

OR

Q12) a) Explain different types of inheritance with example. [8]

b) Discuss the features of OOP language and its benefits. [8]

UNIVERSITY OF PUNE
[4364]-799
B. E. (INFORMATION TECHNOLOGY) Examination 2013
MOBILE COMPUTING (414444)
(2008 Course)(ELECTIVE –II) (SEM –I)

[Total No. of Questions:12] **[Total No. of Printed pages :2]**
[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

(1) *Answers any 3 questions from each section*
(2) *Answer Q1orQ2,Q3or Q4and Q5or Q6from Section-I and Q7 or Q8,Q9or Q10,and Q11or Q12 from Section-II*
(3) *Answers to the two Sections should be written in separate answer-books*
(4) *Neat diagram must be drawn wherever necessary.*
(5) Figures to the right indicate full marks.
(6) Assume suitable data, if necessary.

SECTION-I

Q.1a) Explain the need for hand off and step by step Inter-BS Handoff. [8]

b) Explain the concept of frequency route channel. [8]

OR

Q.2a) Describe the three hand off detection strategies. [8]

b) Explain the roaming management in GSM. [8]

Q.3a) Explain step by step description of [8]

1) GSM call origination.

2) GSM call termination.

b) Explain the MAP service primitives in GSM network. [8]

OR

Q.4a) Explain VLR failure restoration. [8]

b) Discuss about the architecture of GSM. [8]

Q.5a) Explain four layers in the SMS protocol. [10]

b) Explain the procedure of International call setup. [8]

OR

Q.6 Write short notes on: [18]

1) Tariff administration

2) SMS architecture

3) Fixed network number portability.

SECTION-II

Q.7a) Describe the GPRS are architecture. [8]

b) Discuss the Billing procedure in GPRS. [8]

OR

Q.8a) Describe the WAP protocol. [8]

b) Compare W-CDMA and CDMA 2000. [8]

Q.9a) Describe the goals and requirements of mobile IP. [8]

b) Explain dynamic source routing in MANET. [8]

OR

Q.10a) Explain IPV6 in detail. [8]

b) Explain important processes used in mobile IP. [8]

Q.11 Write short notes on: [18]

1) W-LAN

2)RFID

3)Spread spectrum technologies

OR

Q.12 Write short notes on: [18]

1) Wireless Local Loop

2) Java card

3) Bluetooth

UNIVERSITY OF PUNE

[4364]-800

B. E. (I.T) Examination – 2013

MULTIMEDIA SYSTEMS (Elective II)

(COURSE 2008)

[Total No. of Questions:12] **[Total No. Printed Pages: 2]**

[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

(i) *Attempt q. No. 1 or q. no2, Q. No. 2, Q. No. 3 or Q. No. 4, Q. No. 5 or Q. No. 6 from Section I and Q No. 7 or Q. No. 8, Q. No. 9 or Q. No. 10. Q. No. 11 or Q No. 12 from section II.*

(ii) *Answers to the **two sections** should be written in **separate answer-books**.*

(iii) *Neat diagrams must be drawn wherever necessary.*

(iv) *Black figures to the right indicate full marks.*

SECTION - I

Q.1 a) Explain in brief the multimedia building blocks. [6]

b) State three applications of multimedia in diverse domains and elaborate on the importance of audio and video as multimedia elements in the stated applications. [12]

OR

Q.2 a) What is hypertext? What is the architecture of hypertext document? [6]

b) What is the importance of text compression? With the help of an example, explain LZW as text compression technique.

Q.3 a) In the context of digital images, what is pixel dimension, image resolution, file size, color depth, image representation? [10]

b) What is the need of image compression? Elaborate of RLE compression technique of image compression. [8]

OR

Q.4 a) Elaborate BMP image file format [8]

b) What is fractal compression technique for image compression? [8]

Q.5 a) Write a short note on characteristics of sound [8]

b) Write a short note on delta modulation of AUDIO [8]

OR

Q.6 a) Draw a block diagram of sound card and example how it works. [8]

b) Write a short note on WAV and AIFF file format [8]

SECTION – II

Q.7 a) Write short note on EDTV and HDTV [6]
b) Write short note on VHS [6]
c) Write short note on AVI video file format [6]

OR

Q.8 a) Write a short note on digital video, MiniDV and DVCAM [8]
b) Write a short note on H261, H263 [10]

Q.9 a) Elaborate on usage of virtual reality in an application of your choice [8]
b) What is virtual reality? Write a short note on forms of Virtual Reality [8]

OR

Q.10 a) Write a short note on Hand groves as a Virtual Reality device [8]
b) Write a short note on 3d sound system [8]

Q.11 a) Elaborate on any four principles of animation. [8]
b) Elaborate on onion skinning and motion cycling [8]

OR

Q.12 a) Elaborate on atmospheric effects and particle systems in animation [8]
b) Elaborate on morphing, masking in the context of animation [8]

[Total No. of Questions: 12] **[Total No. of Printed Pages :2]**

UNIVERSITY OF PUNE

[4364]-801
B. E. (Information Technology)
Examination - 2013
DISTRIBUTED SYSTEM
(2008 Pattern)

[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

(1) Answers Question 1 or 2, 3 or 4 and 5 or 6 from section I and Question 7 or 8, 9 or 10 and 11 or 12
(2) *Answers to the **two sections** should be written in **separate answer-books**.*
(3) *Neat diagrams must be drawn whenever necessary.*
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.

SECTION I

1	A	Describe architecture model of the Distributed System design. How these models play important roles in the design of a Distributed System.	8
	B	When a Distributed System can be considered as an Open Distributed System? Mention benefits provided by an Open System.	8
		OR	
2	A	Describe the working of Distributed System based upon middleware software systems. Also clearly describe the roles played by middleware in Distributed System.	8
	B	List out different types of transparencies associated in a Distributed System. Compare Distributed Operating System with Network Operating System in terms of transparencies associated.	8
3	A	Define Remote Object. Explain Distributed Objects with working of client side proxy and server side skeleton to provide remote access to methods of an object.	8
	B	What is marshalling? How marshalling and serialization is used in communication between a client and a server?	8
		OR	
4	A	Explain working of Remote Procedure Call with neat diagram showing various RPC components and their interactions with each other.	8
	B	How Lightweight Remote Procedure Call technology is used to provided communication between domains in a single machine. What are the basic feature of LRPC?	8
5	A	Why should time be synchronized in a Distributed System? How network Time	10

		Protocol (NTP) work to synchronize the clocks of computers in internet? Compare clock synchronization in centralized and Distributed Systems	
	B	Discuss happens-before relationship in a set of events occur in various processes. How happens-before relationship is used in Lamport's logical clock synchronization?	8
		OR	
6	A	Explain the working of coordinator selection algorithm. How Bully and Ring algorithms are used to handle the workload after crash of the current coordinator in Distributed System.	10
	B	Explain centralized and distributed algorithms used to achieve mutual exclusion.	8
		SECTION II	
7	A	How does Distributed File System differ from a file system used for a centralized time sharing system?	8
	B	Describe Sun NFS with its architecture and components for Unix system with the help of neat diagram.	8
		OR	
8	A	How does client side caching is used in NFS? Discuss the role of RPC in NFS.	8
	B	Discuss the issues of improving availability of files in a Distributed File System. Describe various methods of replica creation in Distributed File System. (You can consider NFS as an example DFS.)	8
9	A	Describe Distributed Shared Memory system with placement of various components in its architecture representation.	8
	B	Discuss how the efficiency of Distributed Shared Memory system depends on the size of granularity and protocol used for page replacement.	8
		OR	
10	A	Explain consistency models used in the Distributed Shared Memory system.	8
	B	Message passing is used as a communication mechanism in Distributed System, Compare programming issues of Distributed Shared Memory system with message passing approach.	8
11	A	Explain following points related to fault tolerance issues in distributed systems: 1. Availability 2. Reliability 3. Failure models 4. Triple Modular Redundancy	10
	B	How check pointing is used in fault tolerance in Distributed Systems? Explain independent check pointing and coordinated check pointing.	8
		OR	
12	A	Explain following points related to recovery for providing fault tolerance capacities: 1. Backward recovery 2. Forward recovery 3.Sender based logging 4. Receive based logging 5. Stable storage	10
	B	How failure masking is used to provide fault tolerance capability in distributed system?	8

[Total No. of Questions: 12] **[Total No. of Printed Pages: 4]**

UNIVERSITY OF PUNE
[4364]-803
B. E. (I.T) Examination - 2013
REAL TIME SYSTEM (Elective – III) (2008 Course)
[Time: 3 Hours] **[Max. Marks: 100]**

Instructions:

1 *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section II*

2 *Answers to the two sections should be written in separate answer-books.*

3 *Black figures to the right indicate full marks.*

4 *Your answer will be valued as a whole*

5 *Neat diagrams must be drawn wherever necessary.*

6 *Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*

7 *Assume suitable data, if necessary.*

8 *Answer any three questions from Section I and any three questions from Section II*

SECTION –I

Q.1	A	What is Hierarchical View of Performance measure of RTS? In what way it is different than traditional Measure of performance?	8
	B	Explain the following properties of good performance measure. 1) Efficient encoding 2) Objective optimization criteria. 3) Objective basis for ranking 4) Verifiable fact	8
		OR	
Q.2	A	Draw and explain Schematic flow chart of a timing estimation of Real Time System.	8
	B	Describe in brief the effect of following in estimating the run time of a program. 1) Source Code 2) Compiler	8

3) Machine architecture
4) Operating system

Q. 3 A Check whether the following set of periodic real time tasks is schedulable under RMA on a uniprocessor. T1 =(e1=20, p1 = 100), T2 =(e2=30, p2=150), T3=(e3=80, p3=210), T4=(e4=100, p4=400) 10

i) Compute total CPU utilization
ii) Necessary and sufficient Condition for optimum scheduling
iii) Time-Demand Analysis (Draw the graph between Time-Demand function and time.)

B Why priority inversion mechanism is not suited for real-time applications. write appropriate solution for this problem. 8

OR

Q. 4 A List down the suitable assumption for preemptive Earliest Deadline First Algorithm. In what way preemptive Earliest Deadline First Algorithm is different than Deadline Monotonic Algorithm. 6

B Describe the priority inheritance protocol. Give an example to show how this protocol can lead to deadlock. 8

C Consider the following set of task arrival to a system: 4

Task	Arrival Time	Execution Time	Absolute Deadline
T_1	O	10	30
T_2	4	3	10
T_3	5	10	25

Assigned all the task using preemptive Earliest Deadline(EDF)

Q. 5 A What is optimistic concurrency control? Describe following policies related to the optimistic algorithm in the presence of transaction priorities. 8

i) Scarifice policy
ii) Wait policy

B Describe the adaptive Earliest Deadline (AED) algorithm used in transaction priorities. State the drawback of AED algorithm . How Adaptive Earliest Virtual Deadline (AEVD) avoid this drawback. 8

OR

Q. 6 A Explain how the two-phase locking approach used in pessimistic concurrency control is disadvantage in real time system. How can it be modified to overcome the problem? 10

B How are time stamps assigned to transaction so that serialization consistency is maintained? Explain with suitable example? 6

SECTION II

Q. 7 A Explain Hierarchical Round Robin Protocol for real time network. Design Hierarchical Round Robin Protocol for link bandwidth 4 Mbps. Consider system of three class with the following allocation. Draw the scheduler for Hierarchical Round Robin . 10

Level i	Ni	Bi	FTi	Slot b/w
1	4	1	4	1Mbps
2	4	1	16	250kbps
3	2	0	32	125kbps

B Write short note on (Any Two) 8

1) fault tolerant routing algorithm
2) Resource reservation protocol
3) Deadline based protocol

OR

Q. 8 A Consider VTCSMA-L, suppose the packet arrive according to the following table. 8

Node	M	RC at arrival	DM	TM
1	1	0	32	16
2	2	10	36	20
3	3	20	56	40
4	4	20	72	60

Let us assume for each packet is TM =15, propagation time τ =1

Draw the trajectory for $\eta = 2$

Draw the trajectory for $\eta = 4$

B What is Timed Token protocol? How it is implemented? Draw the flow chart for synchronous and Asynchronous packet transmission 6

C What is polled bus protocol? 4

Q. 9	A	Write short notes on the following mechanism present operating system 1) Time service 2) Scheduling mechanism	10
	B	With the help of block diagram explain the capability of RT-Linux.	6
		OR	
Q. 10	A	Describe the following capability or real time operating system: i) External-internal interrupt Handling ii) Memory management through virtual memory mapping and memory locking	8
	B	What do you mean by POSIX standard? Explain the features of POSIX.1, POSIX.1B, and POSIX.1C in brief.	8
Q. 11	A	Describe the 3-types of voters in cases where an approximate agreement is required to achieve hardware redundancy through voting and consensus.	8
	B	Explain the Byzantine's algorithm for fault tolerance with an example. Also specify the interactive consistency condition.	8
		OR	
Q. 12	A	Describe the classification of faults according to their temporal and output behavior.	6
	B	Explain briefly fault Detection method using fault and error containment.	6
	C	Comment on the Data Diversity is an approach that can be used in associated with any of redundancy techniques.	4

[Total No. of Questions: *12*] **[Total No. of Printed Pages: *2*]**

UNIVERSITY OF PUNE

[4364]-804

B. E. (*IT*) Examination - 2013

Software Architecture (2008 Course)

[Time: *3* Hours] **[Max. Marks: 100]**

Instructions:

1 ***Answer 3 Que. from Section I and 3 Que. from Section II***

2 *Answers to the **two sections** should be written in **separate answer-books**.*

3 *Black figures to the right indicate full marks.*

SECTION –I

Q.1	A	Explain documentation required for Software Architecture.	04
	B	Explain Architecture Business Cycle activities in detail.	08
	C	What is the difference between Software Architecture and Software Engineering?	06
		OR	
Q.2	A	Why software architecture is important? Explain architecture pattern references, models and reference architectures.	10
	B	Explain Architecture structures and views in detail.	08
Q. 3	A	What are quality attributes? What is the need of quality attributes.	08
	B	Explain business Qualities and Architecture Qualities.	08
		OR	
Q. 4	A	Write short note on: 1. Modifiability Tactics. 2. Security Tactics.	08
	B	Give scenario for performance and usability quality attribute.	08
Q. 5	A	What is design Pattern? Explain design pattern template in detail.	08
	B	With structure explain observer pattern. Give examples of the same	08

OR

Q. 6	A	What are the types of design Patterns? Explain with example.	08
	B	Explain when proxy pattern can be used? With example explain types of Proxy.	08

SECTION II

Q. 7	A	Explain three tier architecture in detail.	08
	B	What is coupling in XML? What are its advantages?	08
		OR	
Q. 8	A	What are different architecture styles? Explain each in detail.	08
	B	With example explain structure of XML.	08
Q. 9	A	Explain EJB Architecture in detail. Describe Entity, Session and Message beans in detail.	10
	B	Explain Application Server in detail with example	08
		OR	
Q. 10	A	Explain lifecycle and Architecture of Java Applet and Java Servlet.	08
	B	Write short note on following: i. JSP ii. JSF iii. JMS	10
Q. 11	A	What is the significance of IUnknown interface? Explain methods of IUnknown interface.	08
	B	Explain DLL Servers in detail.	08
		OR	
Q. 12	A	Describe .NET Architecture. What is role of CLR, CLS, CTS, and CLI in it?	08
	B	Write note on .NET web services.	08

[Total No. of Questions:12] **[Total No. of Printed Pages: *2*]**

UNIVERSITY OF PUNE

[4364]-805

B. E. (*Information Tech.*) Examination - 2013

(Advanced Graphics)(414450)(2008 Course)

[Time: *3* Hours] **[Max. Marks: 100]**

Instructions:

1. *Answer **Q1** or **Q2, Q3** or **Q4** and **Q5** or **Q6** from **section-I** & **Q7** or **Q8, Q9 or Q10** and **Q11** or **Q12** from **section-II.***
2. *Assume suitable data, if necessary.*
3. *Answers to the **two sections** should be written in **separate answer-books**.*
4. *Draw neat diagrams wherever necessary.*
5. *Figures to the right indicate **full marks.***
6. *Answer **any three** questions from each **section.***

SECTION -I

Q.1	A	What do you mean by the interpolation and approximation splines? Give the procedure for spline specifications.	8
	B	Explain the issues related to three dimensional display methods. Compare parallel projection and perspective projection method for 3-D objects.	6
	C	How polygon tables are used for representing polygon surfaces?	4
		OR	
Q.2	A	In parametric representation of curves, there are methods by which curves can be represented. Define and compare any two of the following: i. Bezier curve ii. B-Spline curve iii. NURBS(Non-Uniform Rational B-Spline)	8
	B	Explain Surface Rendering and polygon surfaces in detail.	8
	C	Explain Torus with the mathematical treatment	4
Q. 3	A	Compare conventional and computer assisted animation.	8
	B	What is meant by Animation Language? Explain the types of animation languages with appropriate examples.	8
		OR	
Q. 4	A	Why control hierarchy is required in animation? Explain various methods of controlling animation.	8
	B	Write short note on:	8

i. Frame-by-Frame Animation Techniques
ii. Real Time Animation Techniques

Q. 5 A Explain Regularized Boolean set operations with examples. 8

B Explain in detail Quadtrees and Octrees. 8

OR

Q. 6 A Compare any two solid modeling methods on following points 8
i. Accuracy
ii. Domain
iii. Validity
iv. Closure

B Write a short note on 8
i. Primitive Instancing.
ii. Constructive solid geometry

SECTION II

Q. 7 A What is the difference between Y in CMY and Y in YIQ color model? Write a note on HSV color model. 8

B Write a short note on polygon rending methods. 6

C Explain the conversion of CMY model to RGB model. 4

OR

Q. 8 A Discuss in brief the conversion of RGB model to YIQ model and YIQ model to RGB model. 8

B Explain Basic Ray Tracing Algorithm 6

C Explain Color selection and Applications. 4

Q. 9 A Explain Phong's illumination model in detail. 8

B Write short note on 8
i. Beam Tracing.
ii. Pencil Tracing

OR

Q. 10 A Derive the simple illumination model. Include the contribution of Diffuse, ambient and specular reflection 8

B Explain the scan conversion shadow algorithm 8

Q. 11 A What is meant by Virtual Reality? Describe any two special devices that are used for man machine interaction in virtual reality systems. 8

B What are the applications of virtual reality? Explain any one in detail. 8

OR

Q. 12 A What is the need of virtual reality? Explain with real life example 8

B What is Virtual Reality Modeling Language? What are the types of Virtual Reality? 8

[Total No. of Questions: 12] **[Total No. of Printed Pages: 2]**

UNIVERSITY OF PUNE
[4364]-806
B. E. (IT)(May/June) Examination - 2013
ADVANCED COMPUTER NETWORKS (ELECTIVE-III)
(414450) (2008 Course)

[Time: 3 Hours] **[Max. Marks: 100]**

Instructions:

1 *Answers to the two sections should be written in separate answer-books.*
2 *Black figures to the right indicate full marks.*
3 *Your answer will be valued as a whole*
4 *Neat diagrams must be drawn wherever necessary.*
5 *Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
6 *Assume suitable data, if necessary.*

SECTION –I

Q.1	A)	Explain the logical layers of ISO/OSI model in detail	[8]
	B)	Discuss in detail various principles of network design.	[8]
		OR	
Q.2	A)	Describe in detail protocol stack of Bluetooth.	[8]
	B)	Explain network architecture with neat diagram	[8]
Q. 3	A)	What is Network Address Translator? Explain in detail	[8]
	B)	State and explain the protocols of MPLS.	[8]
		OR	
Q. 4	A)	Explain in detail CIDR	[8]
	B)	Explain the general characteristics of Mobile IP	[8]
Q. 5	A)	Write a short notes on : (any 3) 1) The structure of ATM header 2) Various delays of the network 3) IPv6 4) RSVP	[18]

OR

Q. 6	A)	Explain mobility management issue in wireless networks	[8]
	B)	Explain in details various parameters specified in the Quality of Service.	[10]

SECTION II

Q. 7	A)	Explain various service classes of ATM network along with their attributes	[8]
	B)	Explain architecture of wireless network. State its applications.	[10]

OR

Q. 8	A)	Explain 5 different delays encountered by ATM cell with the help of figure.	[8]
	B)	Explain how ATM network can transport IP packets	[10]
Q. 9	A)	What are different QoS requirements of Voice and Video over IP?	[8]
	B)	Explain blocking probability in circuit switch network	[8]

OR

Q. 10	A)	How the concept of queuing theory is used to analyze datagram networks	[10]
	B)	Explain circuit switched network in brief	[6]
Q. 11	A)	Explain SSL in detail	[8]
	B)	Explain how firewall is implemented in the network	[8]

OR

Q. 12	A)	Explain in detail PGP protocol.	[8]
	B)	What are overlay networks? What is the importance of overlay networks.	[8]

[Total No. of Questions: 12] **[Total No. of Printed Pages: 3]**

UNIVERSITY OF PUNE
[4364]-807
B. E. (I T) Examination - 2013
BIOINFORMATICS (Elective IV) (Sem II) (2008 Course)

[Time: 3 Hours] **[Max. Marks: 100]**

Instructions:

1 *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section II.*
2 *Answer three questions from Section I and three questions from Section II.*
3 *Answers to the two sections should be written in separate answer-books.*
4 *Neat diagrams must be drawn wherever necessary.*
5 *Black figures to the right indicate full marks.*
6 *Assume suitable data, if necessary.*

SECTION -I

Q.1 A What is the scope of bioinformatics? Explain bioinformatics applications related to the following areas: 10
- i) Information search & retrieval.
- ii) Microarrays
- iii) Sequence Assembly
- iv) Pharmacogenomics

B Explain with neat diagram the central dogma of molecular biology. Explain the molecules participating in Information flow and the various Functional sites. 8

OR

Q.2 A Discuss the public bioinformatics databases which are accessible via the internet with appropriate examples. 10

B Explain Data Life Cycle for clinical data management with respect to following steps: 8
- i) Data creation and acquisition
- ii) Use
- iii) Modification
- iv) Archiving and data disposal.

Q. 3 A Define Microarray. Explain the sources of variability in Microarray 8

		preparation and reading. Explain how statistical analysis can be used to reduce variability.	
	B	Explain in brief the data visualization techniques applicable to Bioinformatics. Discuss any two visualization tools with example.	8
		OR	
Q. 4	A	Differentiate between clustering and classification. Discuss in brief the K-means clustering and Decision tree.	8
	B	List the various statistical analysis tools. What is meant by Sensitivity and Specificity of a tool? Explain in brief False Negative, True Negative, True Positive and False positive.	8
Q. 5	A	What are the types of machine processes? Explain any two machine learning processes.	8
	B	Write short notes on: (i)Pairwise Sequence Alignment(PSA) (ii)Multiple Sequence Alignment(MSA)	8
		OR	
Q. 6	A	Explain the text mining with NLP Process.	8
	B	Explain computational methods of Sequence alignment. i) Dynamic programming ii) Word method	8

SECTION II

Q. 7	A	Explain in detail Primary, Secondary, Tertiary and Quaternary structures of Proteins.	10
	B	Explain the process of Drug discovery. What high-throughput screening methods are employed in screening drugs?.	8
		OR	
Q. 8	A	Discuss in brief the components of a modeling and simulation system alongwith the process.	8
	B	Draw and explain Collaboration-Communication model with appropriate examples.	10
Q. 9	A	Explain in detail FASTA algorithm and the recommended steps for a FASTA search.	8
	B	Explain BLAST algorithm. Discuss Gapped BLAST with its major refinements.	8
		OR	

Q. 10	A	Discuss Similarities and Differences of FASTA and BLAST tools for sequence alignment.	8
	B	Discuss the applications of PSI-BLAST program which explores protein family relationships.	8
Q. 11	A	What is biotechnology? What is the scope of bioinformatics in biotechnology?	8
	B	What are the natural causes of degradation of ecosystem?	8
		OR	
Q. 12	A	Define genetic engineering. Discuss current developments in genetic engineering.	8
	B	Write short notes on pollutants in Lithosphere, Hydrosphere and Atmosphere.	8

[Total No. of Questions: *12*] **[Total No. of Printed Pages:** *2*]

UNIVERSITY OF PUNE

[4364]-809

B. E. (*I.T.*) Examination - 2013

Geo Informatics System (2008 Course)

[Time: *3* **Hours]** **[Max. Marks: 100]**

Instructions:

1 ***Answer any 3 questions from each Section.***
2 *Answers to the* ***two sections*** *should be written in* ***separate answer-books***.
3 *Neat diagrams must be drawn wherever necessary.*
4 *Assume suitable data, if necessary.*

SECTION -I

Q.1	A	Explain the technique is used for correcting image from different errors?Explain all methods used for correcting errors from digital images?	10
	B	What is visual image interpretation ?Explain all basic elements of image Interpretation with example?	8
		OR	
Q.2	A	Describe image enhancement scheme and its role in Digital image processing? Preprocessing should be done before Enhancement. Justify with example?	9
	B	Explain logarithmic and exponential contrast stretch in details.	9
Q. 3	A	What is remote sensing and its types? Explain in detail the steps involved in remote sensing with example?	8
	B	Explain in detail the Wave model of Electromagnetic Radiation? Write and explain in brief Maxwell's Equations involved in this.	8
		OR	
Q. 4	A	Explain in detail the RADAR principle with equation?For which reasons RADARS are required?	8
	B	Classify and explain types of sensors with their architecture?Give comparison of these sensors?	8
Q. 5	A	Explain in detail the architecture of GIS?On which factors geographic integration of information can be done?	8
	B	What are the types of data involved in GIS?Explain how these data can be represented in Raster and Vector data model with suitable example?	8
		OR	
Q. 6	A	What is map projection and its types?Explain the types maps which can be produced by using GIS?	8
	B	Explain in detail any one application of GIS adopted by Government for	8

Urban planning and management?Take suitable example.

SECTION II

Q. 7	A	What is the need of geographical transformation? Explain in detail the three steps involved in geographic transformation to restore geometrically distorted images with equations and examples?	10
	B	Classify and elaborate all types of errors in GIS data?Explain with suitable example the factors affecting reliability of GIS data?	8
		OR	
Q. 8	A	Explain Forward mapping with algorithm and interpolation scheme with its types along with the equations and formulas?	9
	B	Explain the error which may occur in vector GIS? Explain the error caused to data during vector to raster conversion?	9
Q. 9	A	What is spatial data model?Assume any spatial information and represent its features using types of spatial data model by explaining them?	8
	B	Explain GIS database model in detail?How many spatial information can be represented in the form of relational schema?Draw schema diagram for the assumed database?	8
		OR	
Q. 10	A	What is Geospatial Database? Explain the role and importance of this Database in GIS?Give any example of how Geospatial data can be stored and retrieved from database?	8
	B	Explain vector GIS model in detail?Compare it with Raster model?	8
Q. 11	A	Write a short note on (any two) (i)SAR and SLAR (ii)Binary and index model (iii)TIN	8
	B	Explain in detail objectives of design of GIS?How this will ensure the effectiveness of GIS?	8
		OR	
Q. 12	A	Write a short note on: (i)Electromagnetic radiation. (ii)Spectral Resolution (iii)Raster data compression Technique	8
	B	Explain in detail GIS database and application Design,Development support ,and Integration with architecture?	8

[Total No. of Questions: 12] **[Total No. of Printed Pages: 2]**

UNIVERSITY OF PUNE
[4364]-810
B. E. (I.T.)(Semester II) Examination - 2013
BUSSNESS INTELLIGENCE (Elective-IV)
(414451)(2008 Course)

[Time: 3 Hours] **[Max. Marks: 100]**

SECTION -I

Q.1	A	Explain basic elements of data warehouse with neat diagram.	8
	B	What is Data Mart, Explain in detail.	8
		OR	
Q.2	A	Explain Subject Orientation and Application Orientation in data warehouse. Give example.	8
	B	How is an OLTP system useful in an organization? What are its applications?	8
Q. 3	A	What is fact table? Explain an non additive fact (Give example).	8
	B	Write a short notes on 1) Start Schema 2) Snowflake Schema	8
		OR	
Q. 4	A	List out the important characteristics of dimension table. Describe the same for a retail industry that has multiple stores in different parts of the country. The design should include at least 1 fact table and 2 dimension table.	10
	B	Explain Hierarchy in dimensions.	6
Q. 5	A	What is ETL? Explain the architecture of ETL.	9
	B	Explain the following terms. 1) Data Extraction & cleansing 2) Data scrubbing 3) Cubes	9
		OR	
Q. 6	A	What is Data Mart? Compare Dependent and Independent Data Marts.	6
	B	What is data Staging? Explain it's pros and cons.	6
	C	Data sources form which the data is extracted for ETL process can be heterogeneous at many times. What are the typical challenges involved in handling such data sources?	6

SECTION II

Q. 7	A	What is OLAP? Explain "slicing and dicing", "drill down and Roll-up" and "Multidimensional" with respect to the OLAP.	9
	B	Explain security issues concerned with reporting.	7
		OR	
Q. 8	A	What is the importance of visualization in BI system? Explain any 4 types of charts including their purpose and significance in details.	8
	B	Compare OLTP Vs OLAP.	8
Q. 9	A	Compare Data Mining Vs Text mining.	6
	B	Explain any one method of hierarchical clustering with an example.	10
		OR	
Q. 10	A	There are 2 sets of data mining algorithms – supervised and unsupervised. Elaborate the major difference between the 2. Clustering is one of them. Is it supervised or unsupervised? Why? Explain any one technique that is used for clustering numeric data.	8
	B	Explain the following. 1) Data Visualization. 2) Cluster Analysis	8
Q. 11	A	Explain salient feature of Netezza.	9
	B	Explain the use of HIVE in Hadoop.	9
		OR	
Q. 12	A	Explain BI on Cloud.	2
	B	Write a short notes on following 1) Real time BI 2) Operational BI (3)Embedded BI (4) Agile BI.	16