UNIVERSITY OF PUNE
B.E.(Computer Engineering) Examination, May-2013
Operating System
(2003 course)

[Total No. of Questions:12] **[Total No. of Printed pages :5]**
Time : Three Hours **Maximum Marks : 100**

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

Q.1 (a) Why do we say that an operating system is an interface, mediator between hardware resources and application (04)

Q.1 (b) How is a kernel different from an operating system? Why do we say that an operating system is more than a kernel? (04)

Q.1 (c) Explain the multi-processor and time sharing operating system. What is the difference between these two operating system. Describe multi process operating system that is not timesharing (10)

OR

Q.2 (a) What is an operating system and why do we need it? Describe the two main goal operating system. (04)

Q.2 (b) What is kernel ? explain its main function. What relationship with operating system? (04)

Q.2 (c) Explain the multi-processor and Multi program operating system. what is the difference between these two operating system. Can we have multiprocessing in uni-program operating system. (10)

Q.3 (a) Five jobs in the READY queue waiting to be processes? (08)
Their estimated CPU cycles are as follows : 10,3,5,6 and 2, using shortest job next, in what order should they be processed to minimize average waiting time.

Q.3 (b) Given the following information : (08)

Job Number	Arrive Time	CPU Cycle
1	0	10
2	1	2
3	2	3
4	3	1
5	4	5

Compute the average waiting time and turnaround time for each following scheduling algorithms and determine which gives best result.

a. FCFS
b. SJF
c. SRTF
d. Round robin (using time quantum of 2)

OR

Q.4 (a) For FCFS ,SJF, SRTF and Round Robin , compute waiting time and turnaround time of every job as well as the average waiting time and average turnaround time . The average values should consolidated in a table to comparison.(time quantum for round robin is 4 milliseconds and 0.4 millisecond) compare outputs from all the runs and discuss which would be better policy for the following data. (08)

Job Number	Arrive Time	CPU Cycle
1	0	6
2	3	2
3	5	1
4	9	7
5	10	5
6	12	3

7	14	4
8	16	5
9	17	7
10	19	2

Q.4 (b) A job running in a system, with variable time quantum's per queue, needs 30 milliseconds to run to completion. If the first queue has a time quantum of 5 milliseconds and each queue thereafter has a time quantum that is twice as large as the previous one, how many times will the job interrupted and on which queue will it finish its execution? (08)

Q.5 (a) Given the following page reference string (08)
1,2,3,2,5,6,3,4,6,3,7,3,1,6,3,4,5,3,2,4,3,4,5,1
Number of page frames are 4
Show the page trace and calculate the number of page frames for following page replacement policies
a)LRU b)Optimal c) FIFO

Q.5 (b) Explain fixed and dynamic partitioning scheme for memory management also state its advantages and disadvantages (08)

OR

Q.6(a) What is virtual memory management? Explain address translation in paging system for virtual memory. (10)

Q.6 (b) Explain following terms in brief (06)
a) translation look aside buffer
b) thrashing

SECTION-II

Q.7(a)	Explain disk free space management system	(08)
Q.7(b)	Why I/O Buffering is necessary? State and explain different I/O buffering techniques	(08)

OR

Q.8 (a)	What is an I/O controller? How is it different from I/O devices? How does CPU interact with I/O controller?	(08)
Q.8 (b)	What is RAID? Describe the seven layers of RAID	(08)
Q.9 (a)	What is file? What is file system? What is file management system? How is it different from file system? What is file descriptor? What is its relation with file?	(08)
Q.9(b)	Explain how the following file management operations are handle in the UNIX File open, File Close File Read File write File Creation	(10)
Q.10(b)	What is directory? How is it different from a regular file? Why do we use directory? How many types of file do UNIX system have?	(08)
Q.10(b)	Consider a system that uses a bit map for free space management (bit 0 means block is free), assume that file system is empty a. four file A,B,C and D of respective sizes 2200,3251,1002 and 3214 blocks are written into disk. Show the bit maps after each file is written b. Files B and C in that order are deleted show the bit maps after each deletion.	(10)

Q.11(a) What are the different kinds of transparency in distributed system? How migration transparency handle in distributed operating system? (08)

Q.11 (b) Explain the following Distributed OS model. (08)

a. minicomputer model
b. workstation model
c. workstation server model
d. processor pool model

Q.12(a) Compare between network operating system, distributed operating system and multiprocessor operating system. (08)

Q.12(b) What are the following properties in Distributed OS (08)

a. Autonomy and independence
b. Concurrency and parallelism
c. Scalability
d. Reliability and fault tolerance

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B. E. (Computer Engineering) Examination May 2013

Principles of Compiler Design

(2003 Course)

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)Assume suitable data, if necessary.

SECTION-I

Q1.

a) Define the following with example [8]
- Regular expression
- Token
- Lexical Error
- Byte Code compiler

b) Explain in detail the various phases of compiler, describe the output for the following expression after each phase, considering and without considering precedence and associativity of operators.
$a = b^{*}c + c^{*}b$ [8]

OR

Q2.

a) What is bootstrapping process in compiler design? How does it related to the cross compilers? [6]

b) Explain in detail various compiler construction tools such as LEX and YACC [8]

c) Parsing phase acts as the driver phase of compiler, is it true? Justify [2]

Q3.

a) Every SLR (1) grammar is unambiguous. But for the following unambiguous grammar prove that it is not SLR (1) [10]
$S \rightarrow L = R$
$S \rightarrow R$

L → *R
L→ id
R→ L

b) What is a need and role of semantic analyser in compilation process [6]

OR

Q4.

a) Compare top-down parsing with bottom up parsing [6]

b) Construct shift reduce parser for the grammar [10]
S→aABe
A→Abc/b
B→d
Show the shift reduce action for 'abbcde'

Q5. Write short notes on [18]

- Three address code
- Error detection and Recovery during syntax analysis
- Type checking during semantic analysis

OR

Q6.

a) What is syntax directed definition? How bottom up evaluation of S-attributed definition takes place? [10]

b) Consider high level language example explain how intermediate code is generated for [8]
- Assignment statements
- Declaration statements

SECTION-II

Q7.

a) Explain the term run time support and storage organization. [8]

b) Explain accessing non local data using Display. [8]

OR

Q8.

a) What is an activation record? Describe significance of various fields of activation record with example. [8]

b) Compare static scope with dynamic scope. Explain with suitable examples. [8]

Q9.

a) Explain in detail peephole optimization with examples. [10]

b) Explain various issues in code generation. [8]

OR

Q10.

a) For the following code show three address code, basic blocks and flow graph [10]

```
prod = 0;
i = 0;
do
{
prod = prod +a[i]*b[i];
i++;
}while(i<20);
```

b) Explain code generation algorithm with example. [8]

Q11.

a) With example explain various transformations on basic blocks. [8]

b) Discuss the algorithm for live variable analysis. [8]

OR

Q12.

a) Explain following related to code optimization [8]

1) Constant propagation 2) dead code elimination

3) Instruction selection 4) common sub expression

b) Explain principle sources of code optimization. [8]

B.E.(Computer Engineering) Examination, May-2013
Design and Analysis of Algorithms
(2003 course)
[4364]-291

Time : Three Hours **Maximum Marks : 100**

N.B. : (1) Answer three questions from each section.
(2) Answer 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

Q.1 (a) What are the basic components that contribute to the time and space complexity of algorithms? (04)

Q.1 (b) With respect to algorithmic complexity explain the following with example (04)
i) Asymptotic order of growth
ii) Asymptotic upper bound
iii) Asymptotic lower bound

Q.1 (c) What is time complexity of an algorithm? How do we represent it using Big-Oh(O) notation? Write any algorithm to solve same problem in different ways so that they have different time complexities. (10)

OR

Q.2 (a) What are the use of recurrence relation? Give a recurrence relation for linear search and binary search algorithms. (08)

Q.2 (b) Compare the running time of the merge sort and quick sort for (10)
(i) sorted input
(ii) reverse ordered input
(iii)random input

Q.3 (a) Analyze an single source shortest path algorithm with time and space complexity using greedy approach. (08)

Q.3 (b) Discuss the Merge sort algorithm for the following data set to sort in ascending order, in which data set do you think that merge sort is not advisable to use (08)
(1) 12,12,12,12,12
(2) 20,15,14,11,10
(3) 10,1,12,15,7

OR

Q.4 (a) By considering the complete graph with n vertices, show that the (08)

number of spanning trees in an n vertex graph can be greater than $2^{n-1}-2$

Q.4 (b) Discuss the Quick sort algorithm for the following data set to sort in ascending order, in which data set do you think that Quick sort is not advisable to use (08)
(1) 12,12,12,12,12
(2) 20,15,14,11,10
(3) 10,1,12,15,7

Q.5 (a) Write dynamic strategy based algorithm for computing minimum cost path from source to destination in multistage graph (08)

Q.5 (b) Solve the following problem of job sequencing with deadline using Greedy approach. Find out feasible and optimal solution. (08)
Let
N=4, (p1,p2,p3,p4) =(100,10,15,27) and (d1,d2,d3,d4) = (2,1,2,1)

OR

Q.6(a) N = 3 and {a1, a2, a3}= {do, if, while} Let p (1:3) = (0.5,0.1,0.05) q(0:3) = (0.15,0.1,0.05,0.05) (10)
Compute and construct OBST for above values using Dynamic approach

Q.6 (b) Compare between Dynamic programming, Recursive algorithm and Greedy algorithm. (06)

Section - II

Q.7(a) .Explain the difference between fractional knapsack and 0/1 knapsack problems. Does the same programming technique work for both the problems? Justify with example in detail (10)

Q.7(b) Solve the sum of subset problem using backtracking algorithmic strategy for the following data (08)
N=4 (w1,w2,w3,w4) = (11,13,24,7) and M = 31

OR

Q.8 (a) Describe the following with respect to Branch and Bound (18)
(i) the methods
(ii) Least cost search (LC Search)
(iii) control abstraction for LC search
(iv) Bounding

And take an example of 0/1 Knapsack problem using branch and bound.

Q.9 (a)	Write an algorithm for pointer doubling problem. What is the time complexity of this algorithm?	(08)
Q.9(b)	Discuss various parallel computational model and how do they achieve the parallelism in the algorithmic design.	(08)

OR

Q.10(b)	Write an algorithm for prefix computation. Determine its time complexity.	(08)
Q.10(b)	Explain parallel sort strategy	(08)
Q.11(a)	Explain Cooks Theorem	(08)
Q.11 (b)	Prove that vertex cover problem is NP complete	(08)

OR

Q.12(a)	Traveling Salesman Problem is not in Polynomial algorithm. Explain why?	(08)
Q.12(b)	What is an NP-hard and approximation algorithm? What is the relation between these two? Give suitable example	(08)

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B. E.(COMPUTER) Examination-2013

IMAGE PROCESSING

(2003 Pattern)

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

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.
(4) Attempt Section I :Q1or Q2, Q3 or Q4, Q5 or Q6 and Section II: Q7 or Q8, Q9 or Q10, Q11 or Q12

SECTION I

Q1) A) How DCT is related with DFT? Define 2-D DCT and discuss its various Features. [08]

B) Represent Harr transform matrix of size 8 x8. Explain the features and use of Harr transform. [08]

OR

Q2) A) Discuss the significance and use of membership function in fuzzy logic. State one such function. [08]

B) With block diagram, explain in brief different stages of Image Processing. [08]

Q3) A) Explain the photometric model used for Image formation. [08]

B) Discuss the process of sampling and Quantization w.r.t. an image signal. [08]

OR

Q4) A) Explain the problem of Camera Calibration w.r.t. geometric model of Image formation. [08]

B) State the following terms w.r.t digital image- [08]
i) distance function ii) a frame F
iii) Intensity/gray level iv) City-block distance

Q5) A) Explain in brief the following point operations performed on the digital image:- [10]
i) Intensity level slicing ii) Contrast stretching iii) Digital negative

B) What is meant by Image Restoration? Discuss the use of wiener filter in Image Restoration. [08]

OR

Q6) A) With algorithm explain the Huffman coding scheme. Illustrate it with Suitable example. What is an entropy coding? [10]

B) Explain the use of Law Pass Filter and Median filter w.r.t Image smoothing. [08]

SECTION II

Q7) A) What is the use of Image Segmentation? Describe the region growing Technique and state its problems. [10]

B) With suitable example, explain K-means clustering algorithm. [08]

OR

Q8) A) Discuss in brief the geometric and topological attributes used for feature extraction. [10]

B) State different edge filtering masks with its features. [08]

Q9) A) Explain the linear interpolation technique used for zooming a given image. [08]

B) Discuss the various approaches used for pseudo colour image processing. [08]

OR

Q10) A) Explain in brief the following morphological transforms- [08]
i) Dilation ii) Thinning

B) With features, state different colour spaces used for colour image presentation. [08]

Q11) Compare Digital Water marking with Image steganoghaphy. With suitable methods/algorithms, explain the embedding and extraction process w.r.t. digital image steganography. [16]

OR

Q12) Discuss the preprocessing and feature extraction techniques used in following applications:- [16]
i) Satellite Image Processing
ii) Medical Image Processing

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B.E.(Computer Engineering) Examination 2013

Advanced Databases

(2003 pattern)

Time-Three hours **Maximum Marks-100**

[Total No. of Question=12] **[Total no. of printed pages= 3]**

Instructions:

(1)Answer to the TWO sections should be written in separate answer books

(2)Neat diagrams must be drawn whenever necessary.

(3)Figures to the right indicate full marks.

(4)Assume suitable data whenever necessary.

SECTION-I

Q.1 (a)Describe and differentiate the following partitioning techniques. (8)

(i)Range Partitioning (ii)Round Robin

(b)Explain the following with suitable example. (8)

(i)Pipelined parallelism (ii)Independent parallelism

OR

Q.2 (a)Explain in detail intraoperation and interoperating parallelism. (8)

(b)Describe how following operations are parallelized. (6)

(i)Selection (ii)Projection (iii)Aggregation

(c)What is meant by skew in Parallel databases? (2)

Q.3 (a)Explain in detail Deadlock Handling and availability with respect to distributed databases. (10)

(b)Explain distributed data storage. (8)

OR

Q.4 (a)What are different locking protocols in distributed databases ?Explain. (10)

(b)Explain data fragmentation in distributed databases. (8)

Q.5 (a)Explain the following terms. (6)

(i)SOAP (ii)X -query (iii)XML DTD

(b)Explain in detail different tiers in 3-tier architecture. (10)

OR

Q.6 (a)Explain the following terms. (6)

(i)Thin client (ii)Xpath (iii)Application server

(b)Explain in detail XML document. (10)

SECTION-II

Q.7 (a)Differentiate between OLTP and OLAP systems. (6)

(b)Explain in detail snowflake schema for the multidimensional databases. (10)

OR

Q.8 (a)Why data preprocessing is required?Explain phases of Data Preprocessing. (10)

(b)Explain the following terms. (6)

(i)Data cube (ii)Slice and dice.

Q.9 (a)State and explain K-means Algorithm. (10)

(b)Write short note on. (8)

(i)Decision tree (ii)Outlier analysis

OR

Q.10 (a)State and Explain Apriori Algorithm. (10)

(b)Write short notes on. (8)

(i)Bayesian classifier (ii)Text Mining

Q.11 (a)Describe web crawler and web search engine in detail. (8)

(b)Explain the following terms. (8)

(i)Inverse document frequency

(ii)Homonyms

(iii)Synonyms

(iv)Term frequency

OR

Q.12 (a)Explain in detail popularity ranking. (8)

(b)Explain the following terms. (8)

(i)Inverted Index

(ii)Precision and recall

(iii)Stop words

(iv)Ontologies

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B. E.(Computer Engineering.)Examination - 2013
ELECTIVE I ARTIFICIAL INTELLIGENCE(410445)
(2003 Pattern)

[Total No. of Questions:12] **[Total No. of Printed Pages :4]**
[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

*(1) Answer **any three** 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

Q1 a) Explain applications of AI with a suitable example. [8]

b) Explain architecture of an intelligent agent. Describe any one real world application. [8]

OR

Q2 a) Explain forward and backward reasoning with an example. [8]

b) Explain the seven characteristics of problems in AI with an example. [8]

Q3 a) Explain the A* algorithm with a suitable example [10]

b) Solve the following crypt arithmetic problem, using constraint satisfaction method: CROSS+ROADS=DANGER [8]

OR

Q4 a) Explain Hill Climbing algorithm and describe their limitations [8]

b) Explain Mini-max search procedure? Apply it for game playing [10]

Q5 Consider the following sentences [16]

Marcus was a man.

Marcus was a Pompeian.

All Pompeian's were Romans

Caser was a ruler.

All Romans were either loyal to Caesar or hated him.

Everyone is loyal to someone.

People only try to assassinate rulers they are not loyal to.

Marcus tried to assassinate Caesar.

1. Translate these sentences into formulas in predicate logic
2. Prove that was Marcus loyal to Caesar
3. Convert the formulas into clause form

OR

Q6 Explain all Truth maintenance system with a suitable example [16]

SECTION-II

Q7 a) Explain any two learning methods. [8]

b) Explain the steps in Non-Linear Planning. [10]

OR

Q8 a) Explain Waltz's algorithm. [8]

b) Explain Goal Stack Planning. [10]

Q9 a) Explain steps involved NLP? [8]

b) Write Notes on ATN and RTN [8]

OR

Q10 Write notes on Perception and Action [16]

Q11 a) Explain learning in neural networks [8]

b) Explain the role of Knowledge Acquisition in Expert systems [8]

OR

Q12 a) What is Neural Network? Explain their application [8]

b) Explain architecture of an Expert System with a suitable example [8]

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B. E.(Computer)Examination - 2013

ELECTIVE-I: MULTIMEDIA SYSTEMS(410445)

(2003 Pattern)

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

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

Instructions :

*(1) Answer **any three** 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) Use of logarithmic tables, slide rule, Mollier charts, electronics pocket calculator is allowed.

(6) Assume suitable data, if necessary.

SECTION-I

Q1 a) What is meant by Multimedia Document Architecture? Explain SGML Architecture. [8]

b) What is authorware? Explain any one authorware tool for video creation and editing. [8]

OR

Q2 a) What are the building blocks of Multimedia? How multimedia is used in the Internet based application development? [8]

b) What is streaming? How it is useful in multimedia application development? [8]

Q3 a) Explain SIP and RSVP protocols for streaming. [8]

b) Compare .bmp, .gif and .tiff file formats on any four characteristics of an image. [8]

OR

Q4 a) What is MMDBMS? Explain how to store image and video in the Database. [8]

b) Differentiate between Multimedia file system and Conventional file system. [8]

Q5 a) What is image enhancement? Explain how it is achieved using the Contrast stretching and histogram equalization. [8]

b) Write pseudo codes for arithmetic encoder and decoder. [10]

OR

Q6 a) Explain how audio is captured and stored in computers? [8]

b) Explain Shannon-Fano compression algorithm by taking a suitable example. [10]

SECTION-II

Q7 a) Generate the Huffman encoding tree and codes for the example- Characters A,B,C,D and E have the following probability of occurrence: p(A)=0.16, p(B)=0.51, p(C)=0.09, p(D)=0.13, p(E)=0.11. [8]

b) Discuss the factors that determine size of file and quality of sound for audio capture and playback. What are various chunks present in a sound file stored as WAV format? [8]

OR

Q8 a) Which are the different layers in MPEG? Define and explain, I,P and B Frames with reference to MPEG. [8]

b) Explain any two audio file formats. [8]

Q9 a) What are the elementary tools for the Virtual Reality? Explain any two of them in details. [8]

b) Explain features of VRML 2.0 using examples. Write VRML code for creating garden using basic objects like cone and cylinder. [10]

OR

Q10 a) Explain any two applications of Virtual Reality. [8]

b) Explain use and role of Virtual Reality in web based application development. [10]

Q11 a) Explain different techniques of animation. [8]

b) Compare client-pull and server-push animation [8]

OR

Q12 Write short notes on following(**Any 3**) [16]

a. MIDI

b. Quality of Service in Multimedia data transmission.

c. Unix support for Multimedia

d. 3D sound

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

UNIVERSITY OF PUNE
4364-299
B.E. (Computer) Examination-2013
NETWORK AND INFORMATION SECURITY
(2003 Course)

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

Instructions:

1 *Answer three question 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 *Assume suitable data, if necessary.*

SECTION-I

Q.1	a)	Explain model of network security in detail.	8
	b)	Explain the difference between active attack and passive attack with examples.	8
		OR	
Q.2	a)	Explain Man-in-Middle attacks and Replay attacks with suitable example. What are different security measures to control these attacks?	8
	b)	What do you mean by packet sniffing and snooping? What are the different means to carry out these attacks?	8
Q.3	a)	Write an algorithm for key generation in RSA.	8
	b)	Explain Kerberos authentication model with a diagram.	8
		OR	
Q.4	a)	Explain Diffie-Hellman key exchange algorithm with suitable example.	8
	b)	Explain the X.509 certificate.	8
Q.5	a)	Explain working of DES algorithm in detail.	10
	b)	Is AES is more to attack than DES. Justify your answer.	8
		OR	
Q.6		Write short notes on i) Message Authentication Code. ii) MD5 algorithm iii) Vulnerabilities in OSI model	18

SECTION II

Q.7	a)	What are key components of VPN? Discuss various security issues concern to VPN.	8
	b)	Explain the role of Internet Key exchange in IPSec.	8
		OR	
Q.8	a)	Explain what is tunneling? What are different tunneling protocols used in VPN?	8
	b)	Explain different types of VPN?	8
Q.9	a)	What is OS hardening? Explain the concept of honeypot with suitable illustration.	8
	b)	What is WEP encryption for wireless network? How to configure wireless LAN with WEP Encryption?	8
		OR	
Q.10	a)	Explain what is honeypot with its classification? Explain various types of honeypot?	8
	b)	Explain packet filtering firewall in detail.	8
Q.11		Write a short note on. i) PGP ii) Electronic commerce attacks iii) Web Security	18
		OR	
Q. 12		Write a short note on i) Email security ii) TLS iii) DMZ	18

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

UNIVERSITY OF PUNE
[4364]-300
B. E. (*Computer Engineering*) Examination - 2013
ADVANCED COMPUTER ARCHITECTURE AND COMPUTING
(2003 Course)

[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

Q.1	A	Explain Flynn's, Feng's and Handler's Classification schemes in detail.	[15]
	B	Explain Amdahl's Performance Law.	[3]
		OR	
Q.2	A	Discuss in detail any three e applications of parallel processing.	[15]
	B	Compare instruction and thread level parallelism.	[3]
Q. 3	A	Explain Internal forwarding and Register tagging techniques	[10]
	B	What are the issues in designing Instruction pipeline.	[6]
		OR	
Q. 4		Explain the Superscalar Architecture of Ultra SPARC.	[16]
Q. 5		Explain the architecture of Cray-1 in detail.	[16]
		OR	
Q. 6	A	Explain parallel sorting on Array processors. Assume mesh interconnection of 16 PE's.	[10]
	B	Explain any two dynamic interconnection networks.	[6]

SECTION II

Q. 7	A	Compare loosely coupled and tightly coupled multiprocessors.	[8]
	B	Explain crossbar switch and multiport memories in detail	[10]
		OR	
Q. 8	A	Draw and Explain the typical architecture for Massively Parallel Processors.	[12]
	B	Compare COW and NOW.	[6]
Q. 9	A	What is Message passing? Explain with example.	[8]
	B	What are the Multithreading issues? Discuss the possible solutions.	[8]
		OR	
Q. 10	A	Explain shared memory and data parallel programming with examples.	[12]
	B	Brief Latency hiding technique and the purpose of it	[4]
Q. 11	A	What are the desirable features of the Language for parallelism? Discuss with reference to Parallel Language Constructs used by CCC.	[10]
	B	Write a note on PThreads in shared memory systems.	[6]
		OR	
Q. 12	A	What are the metrics to evaluate the performance of Parallel algorithms.	[8]
	B	Write a detail note on Neuro Computing.	[8]

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

UNIVERSITY OF PUNE
[4364]-301
B. E. (Computer Engg) Examination - 2013
SOFTWARE TESTING AND QUALITY ASSURANCE
(2003 Course)

[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 *Black figures to the right indicate full marks.*
4 *Assume suitable data, if necessary.*

SECTION –I

Q.1	A	Compare and contrast three measurement scales types: nominal, ordinal, and interval scales. Give examples form software field.	8
	B	Explain the difference between fault and failure? Give an example on failure report in 8 attributes temple?	8
		OR	
Q.2	A	Define product attributes. Compare internal and external product attributes.	8
	B	Write a note on: i) CMM ii) Meaningful in measurement	8
Q. 3	A	Explain Albrecht's Approach? How functions are computed in this approach? What is the limitation of Albrecht's functioning point methodology?	8
	B	Define cohesion and coupling? What are different measures used in coupling?	8
		OR	
Q. 4	A	What is COCOMO-II? Explain the advantage of using COCOMO-II over function point's metrics?	8
	B	What is control flow structure? What is the difference between control flow structure and a flowgraph?	8

Q. 5	A	Write short notes on: i) Static testing ii) Mutation testing iii) Mc-cabe's complexity (with example).	18
		OR	
Q. 6	A	Write short notes on: i) Positive and negative testing ii) User documentation testing iii) Domain testing	18
		SECTION II	
Q. 7	A	Write a note on: i) Usability testing ii) Validation testing iii) Test execution and reporting.	18
		OR	
Q. 8	A	Write a note on: i) Acceptance testing ii) Scenario testing iii) Ad hoc testing	18
Q. 9	A	Explain with example the six sigma measure of software quality?	8
	B	Briefly explain defect removal effectiveness?	4
	C	Explain software audit and its significance?	4
		OR	
Q. 10	A	Define: Quality, Quality control, cost of quality, SQA.	8
	B	Draw a cause effect diagram to depict the typical factors causing failure of software projects.	4
	C	Explain total quality management?	4
Q. 11	A	Enlist and explain the roles of support analysis?	8
	B	Explain configuration management repository? What are the contents of configuration management repository?	8
		OR	
Q. 12	A	What is software maintenance? Explain its significance?	8
	B	What is problem reporting? What are the difficulties faced by a customer organization during reporting the problem?	8

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

UNIVERSITY OF PUNE
[4364]-302
B. E. (Computer Engineering) Examination - 2013
DISTRIBUTED SYSTEMS (2003 Course)

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

Instructions:

1 *Answers to the two sections should be written in separate books.*
2 *Neat diagrams must be drawn wherever necessary.*
3 *Figures to the right indicate full marks.*

SECTION –I

Q.1	A	Explain what is transparency in distributed system with examples.	06
	B	Compare distributed operating system and network operating system and network operating system.	06
	C	Explain difference between vertical distribution and horizontal distribution.	06
		OR	
Q.2	A	Explain the role of middleware in distributed system.	06
	B	What are different scaling techniques in distributed system?	06
	C	Explain variations on client server model in distributed system.	06
Q. 3	A	How quality of service can be achieved in stream oriented communication.	10
	B	Explain RPC mechanisms with the diagram.	06
		OR	
Q. 4	A	Describe with the help of neat diagrams two types of persistent communication and four types of transient communication.	08
	B	Write algorithms (server side and client side) for building RMI application.	08
Q. 5	A	Explain with neat diagram how local and remote file systems are accessible on an NFS client.	08
	B	What is DNS? Describe the organization of DNS name space.	08
		OR	
Q. 6	A	Compare following distributed file systems: NFS and Coda	08
	B	Explain different methods for name resolution with suitable example.	08

SECTION II

Q. 7	A	Compare Bully and Ring algorithms.	06
	B	How nested transactions are different from distributed transactions?	06
	C	Compare Cristian and Berkeley algorithm of clock synchronization.	06
		OR	
Q. 8	A	Compare the centralized, distributed algorithm for mutual exclusion.	06
	B	Explain Lamport's algorithm with suitable example.	08
	C	Give the characteristics of distributed transaction.	04
Q. 9	A	State and explain different failure models.	08
	B	Explain RPC semantics in case of failures.	08
		OR	
Q. 10	A	Explain what is n-army problem with possible solution.	08
	B	Explain in detail how reliable group communication is achieved.	08
Q. 11	A	Explain different types of GRIDS with examples.	08
	B	What is CORBA? Describe general organization of CORBA system with the help of diagram.	08
		OR	
Q. 12	A	Explain different types of clusters with examples.	08
	B	Write short notes on: i) CORBA Naming Service. ii) CORBA IDL	08

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

UNIVERSITY OF PUNE
[4364]-305
B. E. (*Computer***) Examination - 2013**
High Performance Networks (2003 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 *Figures to the right indicate full marks.*
4 *Neat diagrams must be drawn wherever necessary.*
5 *Assume suitable data, if necessary.*

SECTION –I

Q.1	A	Describe in short the need and significance of carrier extension and frame bursting In Giga Ethernet.	08
	B	What is medium independent interfacing? Differentiate among all 3 interfaces used in 10,100 and 1000mbps Ethernet (At least 4 points).	08
		OR	
Q.2	A	Differentiate between 10,100 and 1000mbps Ethernet based on MAC characteristics.	08
	B	Discuss in short about 1000 BASE –X Family with suitable applications.	08
Q. 3	A	Define the terms CIR, Bc, Be. What are their significance in congestion control?	06
	B	Differentiate between Frame Relay and ATM.	06
	C	Comment about the use and significance of LAPD protocol.	06
		OR	
Q. 4	A	Discuss the importance of FECN and BECN related to frame relay Congestion control.	06

	B	Comment on the transmission structure of ISDN with suitable channel functions.	06
	C	What is common channel signaling? Define the terms SP and STP related to SS7.	06
Q. 5	A	What is the need AAL? Which AAL will you choose to support following applications. 1. Circuit Emulation 2. Compressed Video 3. File Transfer	08
	B	Draw and explain the B-ISDN Protocol architecture. What are the functions supported by ATM layer?	08
		OR	
Q. 6	A	What are the functions of Transmission Convergence (TC) sub layer? Draw the diagram of Header Error Control Operation.	08
	B	Comment on B-ISDN Transmission structure? What are the 2 methods of transferring ATM cells?	08
		SECTION II	
Q. 7	A	Explain why are some variations of x DSL Asymmetric. Comment on any 4 DSL standards with data rates supported.	08
	B	Draw and explain the general block diagram of DMT Transmitter.	08
		OR	
Q. 8	A	Draw and explain A typical ADSL equipment configuration.	08
	B	Explain the usability and working of DSLAM (digital subscriber Line Access Multiplexer.	08
Q. 9	A	What is Quality of Service? Describe the significance of RSVP protocol in supporting QOS.	08
	B	Why Class based QOS is better than Flow Based QOS? Explain the concept Behind Differentiated services.	08
		OR	
Q. 10	A	Describe the following terms related to MPLS operation 1. Label Edge Router (LER) 2. Label Switch Router (LSR) 3. Label Distribution Protocol (LDP) 4. Label Switched Path (LSP)	08
	B	What is the range of label values? Which values are reserved? Explain the significance of value 0.	08

Q. 11	A	Explain why 802.11 do not use CSMA/CD as Ethernet does. Also explain the adapted solution and its working in detail.	10
	B	Explain the various security measures that can be applied to secure a Wi-Fi Network.	08
		OR	
Q. 12	A	Differentiate between Fixed WiMax and Mobile WiMax	06
	B	Explain the following terms: 1. Time Division Duplexing (TDD) 2. Frequency division Duplexing(FDD)	06
	C	Explain any 4QOS classes supported by 802.16 standard along with suitable Application support.	06