Total No. of Questions :4]

SEAT No. :

P2331

[Total No. of Pages :3

[4937]-12
M.Sc.
COMPUTER SCIENCE
CS-102: Object oriented Software Engineering
(2008 Pattern) (Semester - I) (Part - I)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume data, wherever necessary.***

Q1) Attempt all of the following: **[16]**

a) What is a modeling?

b) Define:

i) Active Class

ii) Flow of Control

c) What is Unified Process?

d) Define:

i) Abstract Class

ii) Generalization

e) What is Forward Engineering.

f) Give the goals of UML.

g) Explain how sub-systems can be organized.

h) Explain the different types of actors?

P.T.O.

Q2) Attempt any four: **[16]**

a) Explain the components of state transition diagram.

b) Differentiate between aggregation and composition.

c) Explain the different phases of Unified process.

d) Explain the steps involved in OOAD.

e) Explain OO testing.

Q3) Attempt any four: **[32]**

a) Identify the different activities of Food Processor along with juicer and prepare an activity diagram for the functioning of Food Processor. Clearly mention the assumptions made.

b) 'Passport Office' has to computerize their system such that all offices distributed over different cities are connected by main office located in 'Pune' city. There are different customers enquiring for the passport. The customer has to fill a form where he mention his name, address, phone, date-of-birth, identity mark etc. The system should take care of new passport, renewal, cancellation etc. Mention all the assumptions made. Draw Class diagram and Use Case diagram for this system.

c) People use elevators to move from one floor to another. Draw a sequence diagram showing different events and event exchanges between objects.

d) Draw a Component and Deployment diagram for 'Satellite Communication System'.

e) Draw a Object diagram for AirLine Reservation System. The passenger is required to fill reservation form giving details of his journey. The counter clerk ensures whether the seats are available and prepares a booking statement.

Q4) Attempt any four: **[16]**

a) Write a short note on task management component.

b) Explain the benefits of iterative development.

c) Analysis is the first step of OMT methodology. Comment.

d) Prepare an object diagram showing at least 8 relationships among the following object classes include associations, aggregation and generalization. Show multiplicity. Add at least one attributes to each class window, shape, line, closed shape, scrolling window, canvas, panel, panel item, ellipse, polygon, event. clearly mention the assumptions made.

e) Draw a collaboration diagram or class diagram for ATM system. A customer inserts the card in the ATM. He inserts his id and pin. If valid pin he can withdraw the amount from his account. At one time he can withdraw max Rs.20,000/-. Customer can perform different transactions like cash withdrawal, balance enquiry etc. Clearly mention the assumptions made.

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Total No. of Questions :5]

SEAT No. :

P2332

[Total No. of Pages :3

[4937]-21
M.Sc.
COMPUTER SCIENCE
CS-201: Advanced Networking Concepts
(2008 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Assume suitable data, ifnecessary.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Attempt all of the following: **[8×2=16]**

a) Discuss the problems of X.25WAN.

b) Define the role of speaker node in path vector routing.

c) List the applications of TFTP.

d) How error control is accomplished in BOOTP?

e) Justify: IP is best effort delivery protocol.

f) Define domain name and label.

g) What is use of 'end of option', option in IP datagram.

h) Define role of relay agent in BOOTP.

Q2) Attempt any four of the following: **[4×4=16]**

a) Compare headers of IPv4 & IPv6 datagram.

P.T.O.

b) Explain socket interface for connectionless concurrent server.

c) Explain various UDP applications.

d) Explain SNMP in detail.

e) Discuss various options used by DHCP.

Q3) Attempt any four of the following: **[4×4=16]**

a) Explain RIP in detail.

b) Discuss the need & architecture of ATM Networks.

c) Explain the use of priority and flow label fields in IPv6.

d) Explain in detail various forwarding techniques.

e) Explain the characters used in TELNET by client to control the remote server.

Q4) Attempt any four of the following: **[4×4=16]**

a) Explain with example dynamic buffer allocation in transport layer.

b) Explain three phases that a mobile host goes through to communicate with remote host.

c) Explain various techniques used in point to point WAN to establish connection between two devices.

d) What are the types of BGP sessions? Explain types of packets used in BGP.

e) Differentiate between transport Layer and data link layer.

Q5) Attempt any four of the following: **[4×4=16]**

a) Discuss socket premitives used for TCP.

b) Show the message transfer phase from xyz@aaa.com to pqr@bbb.com. The message is "Hello World".

c) Why do we need on RRQ or WRQ message in TFTP but not in FTP.

d) Explain all headers used in HTTP.

e) Explain any two approches used in streaming stored audio/video.

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Total No. of Questions :5]

SEAT No. :

P2333

[Total No. of Pages :4

[4937]-22
M.Sc.
COMPUTER SCIENCE
CS-202: Unix Internals
(2008 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***All questions carry equal marks.***
4) ***Assume suitable data, if necessary.***
5) ***All questions are compulsory.***

Q1) Attempt all of the following: **[8×2=16]**

a) A buffer whose status is delayed write can not be read by process. Comment and Justify.

b) What are major and minor number of device files?

c) What are the actions taken by kernel when a process incurs a page fault for a page marked ‘demand fill’ or ‘demand zero’.

d) Describe the term “cause of sleep”.

e) What is global interrupt stack?

f) List the states; in which the page that caused the fault can be occur.

g) Explain the syntax and usage of unlink ( ) system call.

h) What is uarea? List its field.

P.T.O.

Q2) State true or false. Justify your answer (any four): **[4×4=16]**

a) Zombie processes are never swapped.

b) 'exec' and 'fork' system calls are similar.

c) The kernel clears the addresses of user signal catches in U-area while invoking exec system call.

d) The kernel can lock and unlock an allocated inode independent of the value of reference count.

e) The kernel never invokes the grow region to increase the size of shared region.

Q3) Attempt any four of the following: **[4×4=16]**

a) In which cases kernel removes the entries for sticky-bit text regions.

b) Explain the inode it assigned to a file.

c) Explain the cases for reading and writting from the pipe.

d) When a process is exited, how process group leader exit and parent exit are handled.

e) How kernel maintains the table of content in inode using direct and indirect blocks? Convert file offset 1,30,000 into physical block number and offset into block using b-map. Assume block size of 1024 bytes.

Q4) Attempt any four of the following: **[4×4=16]**

a) Write a C program which acts as a server in the UNIX system domain using sockets.

b) Explain the behavior of the following program:

```
# include <fcnt l.h>
main ( )
```

```
{
    int fd;
    char lilbuf [20], bigbuf [1024];
    fd = open ("/etc/ passwd", O-RDONLY);
    read (fd, lilbuf, 20);
    read (fd, bigbuf, 1024);
    read (fd, lilbuf, 20);
}
```

c) How kernel behave if we execute following program? Why?

```
# include <signal.h>
main (argc, argv)
{
    int i, val, code;
    if (argc >=1)
    {
        signal (SIGCLD, SIG-IGN);
        for (i=0; i<20; i++)
        {
            if (fork ( ) = = 0)
            {
                printf ("child process %X\n", getpid  ( ));
                exit (i);
            }
        }
    }
    val = wait (&code);
    printf ("Wait val.% X code % X", val, code);
}
```

d) Write C program in which parent process will write unnamed pipe and will read from it .

e) Write C program to create named pipe. The named pipe is created in writer process that will write a message "Interprocess communication" into pipe. Write reader process also to read the named pipe contents and print it.

Q5) Attempt any four of the following: **[4×4=16]**

a) Explain race condition for locked buffer.

b) Explain block diagram of the system kernel.

c) What happens when process execute unlink system call?

d) What should a fault handler do if the system runs out of pages.

e) Use of ptrace for process tracing is primitive and suffers several drawbacks. How? Explain in detail.

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Total No. of Questions :5]

SEAT No. :

P2334

[Total No. of Pages :3

[4937]-23
M.Sc. -I
COMPUTER SCIENCE
CS-203: Software Architecture
(2008 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn whenever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

Q1) Attempt all of the following: **[8×2=16]**

a) What are the known responsibilities in GRASP?

b) Define the term "Architectural styles".

c) State phases of unified process.

d) Define - framework.

e) Give participants of "command and state" pattern.

f) Name categories of 'patterns'.

g) What are the features of "Velocity" framework.

h) List out the applicability of abstract factory design pattern.

P.T.O.

Q2) Attempt following (Any four): **[4×4=16]**

a) What is Heterogeneous Architectures?

b) Write a short note on pipe and filter Architectural style.

c) What is design pattern? What are the essential elements of a design pattern?

d) What is software Architecture? Why software Architecture is important?

e) Give intent, collaboration and implementation of command design pattern.

Q3) Write short note on (any four): **[4×4=16]**

a) Transition phase.

b) Decorator pattern.

c) Idioms.

d) Activity diagram.

e) Cohesion.

Q4) Attempt following (Any four): **[4×4=16]**

a) Give structure and participants of facade design pattern.

b) State characteristics of framework.

c) Give structure and collaborations of stratergy design pattern.

d) Write short note on Indirection GRASP.

e) Which are the common forms of coupling?

Q5) Attempt following (Any four): **[4×4=16]**

a) Explain the concept of container in struts framework.

b) Write short note on RMI.

c) "Design patterns help to solve system designing problems". Justify.

d) Why we need validator framework.

e) Explain interpreters in brief.

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Total No. of Questions :5]

SEAT No. :

P2335

[Total No. of Pages :3

[4937] - 31

M.Sc.

COMPUTER SCIENCE

CS 21 - 301 : Software Metrics & Project Management

(Old & New) (Semester - III)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Figures to the right indicate full marks.***

***Q1*) Attempt the following:** **[8×2=16]**

a) What is project management?

b) Define software metric & measure.

c) What is CPM? State its use in project management.

d) State any two attributes to measure software size.

e) Define CPIF & CPPC?

f) State output of quality control process.

g) Define direct cost & intangible cost.

h) What is Risk tolerance.

P.T.O.

Q2) Attempt any four of the following: **[4×4=16]**

a) Explain project & product life cycle.

b) Write a note on configuration management.

c) What is WBS? State the principles of creating good WBS.

d) State the differences between PDM and AOA.

e) Which problems are occure with information technology cost estimation project.

Q3) Attempt any four of the following: **[4×4=16]**

a) Discuss key issues related to staff acquisition & team building.

b) Write a note on types of contract.

c) Write a note on quality control.

d) As a group size increases, management challenges increases. Justify.

e) Write a short note on communication planning.

Q4) Attempt any four of the following: **[4×4=16]**

a) Explain main processes of scope management.

b) Define

i) Risk Utility

ii) Risk Factor

iii) Risk event

iv) Risk symptom

c) Define

i) EVA

ii) SV

iii) CPI

iv) SPI

d) Write a short note on ISO 9000.

e) Write a short note on scope of software Metrics.

Q5) Attempt any four of the following: **[4×4=16]**

a) Why revising metric plan is necessary.

b) A single error can result in one or more faults. Justify.

c) GQM approach is helpful to managers and developers. Justify.

d) Software reliability measurement is a prediction problem. Justify.

e) Write a note on internal & external attributes.

Total No. of Questions :5]

SEAT No. :

P2336

[Total No. of Pages :3

[4937] - 32

M.Sc.

COMPUTER SCIENCE

CS - 302 : Mobile Computing

(2008 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Attempt ALL of the following: **[16]**

a) What is cell breathing?

b) What is hidden terminal and exposed terminal problem?

c) List any two functions of base station controller (BSC) used in Gsm.

d) How the memory management of Palm os divides available memory?

e) What is good code for CDMA?

f) What is the purpose of destroy App ( ) function in J2ME?

g) What is the purpose of Record Enumeration in J2ME?

h) Name different command types available in J2ME.

P.T.O.

Q2) Attempt any Four of the following: **[16]**

a) Explain frequency hopping with its advantages and disadvantages.

b) What are the services Gsm implements?

c) Why is routing in multihop ad hoc network complicated?

d) What is snooping? Why it is used in Top? What are its limitations?

e) Explain J2ME architecture.

Q3) Attempt any Four of the following: **[16]**

a) Explain handover scenarios in GSM.

b) What are the requirements from mobile IP?

c) Explain the functionality of WTLS?

d) What is the purpose of Indirect TCP? What are its advantages and disadvantages?

e) What are the types of user intertaces provided by J2ME?

Q4) Attempt any Four of the following: **[16]**

a) How Care - of - Address (COA) mechanism is used in Mobile IP?

b) Explain logical reference model of location services.

c) What are the advantages of CDMA? What are its disadvantages?

d) What information following entities hold in GSM?

i) HLR

ii) AUC

iii) VLR

iv) EIR

e) What advantages does the use of IPV6 offer for mobility?

Q5) Attempt any Four of the following: **[16]**

a) What is the effect of mobility on traditional TCP?

b) Explain architecture of WAP.

c) "J2ME is not similar to J2SE" Discuss.

d) What are the different network communication protocols J2ME supports? Which method from connector class can be used to establish network connection?

e) What is tunneling? Why it is used in mobile IP? What is reverse tunneling?

Total No. of Questions :5]

SEAT No. :

P2337

[Total No. of Pages :3

[4937] - 33

M.Sc.

COMPUTER SCIENCE

CS - 23 - 303 : Information Systems Security

(2008 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Attempt all of the following: **[8×2=16]**

a) What is stegnography?

b) Distinguish between confusion an diffusion.

c) What is security mechanism and packet spoofing.

d) What is masquerade attack?

e) Explain Homophonic substitution cipher.

f) Explain substitution cipher.

g) What is roaming certificates?

h) Why passive attacks are difficult to detect?

P.T.O.

Q2) Attempt any four of the following: **[4×4=16]**

a) Explain the relationship of strength of cryptographic key with key size.

b) Explain the working of MD5.

c) How IPSEC does key management?

d) Explain the concept of Rey rings in PGP.

e) Given two prime numbers p = 7 & Q = 13. Find out N, E R D in an RSA encryption process.

Q3) Attempt any four of the following: **[4×4=16]**

a) Discuss the working of HMAC and also explain its advantages and disadvantages.

b) Explain the Rey transformation & Expanison permutation process in DES.

c) How SSL achieves confidentiality & integrity?

d) How firewall performs Network Address translation.

e) Explain the working of RCS-

Q4) Attempt any four of the following: **[4×4=16]**

a) By using verman cipher convert the plaintext into cipher text.

Plain text : University of Pune

One time pad : QACDZMOUXGIJNVBP

b) Explain the broad level steps in PEM.

c) Explain the working of secure hash algorithm.

d) Explain digital certificate with example.

e) Explain the ESP's mode of operation.

Q5) Attempt any four of the following: **[4×4=16]**

a) Explain how birthday attack is used to detect collisions in message digest algorithms.

b) Why internetwork security is called fascinating & complex?

c) Explain VPN architecture in detail

d) Discuss the different types of intruders. Explain any one intrusion detection mechanism.

e) Explain cipher block chaining mode's encryption & decryption process.