T.Y.B.SC. (COMPUTER SCIENCE)

Data Communication, Networking and Security

(OCT-16)

QP Code : 75248

(3 Hours) [Total Marks:100]

N.B: (1) All questions are compulsory.
(2) Figures to the right indicate marks.
(3) Illustrations, in-depth answers and diagrams will be appreciated.
(4) Mixing of sub-questions is not allowed.

Q1. **Write short notes on (any FOUR):** (20)
(A) Star Topology
(B) Sliding Window of Go – Back – N – ARQ
(C) SMTP
(D) Digital Signatures
(E) Time Division Switch
(F) DNS

Q2. **Attempt the following (any FOUR):** (20)
(A) State any five functions of physical layer.
(B) Explain types of transmission modes.
(C) Explain Direct Sequence Spread Spectrum.
(D) List and explain the characteristics of an Analog Signal.
(E) Write a note on Coaxial Cable.
(F) Encode the data sequence 0011001010 using both the NRZ schemes.

Q3. **Attempt the following (any FOUR):** (20)
(A) What is CRC? How CRC encoder works?
(B) Write a note on Polling.
(C) Explain any two types of connecting devices.
(D) What are Backbone Networks? Explain any one of its types in detail.
(E) Explain the concept of classes in classful addressing.
(F) Explain the structure of Ethernet MAC Frame.

Q4. **Attempt the following (any FOUR):** (20)
(A) Compare IPv4 and IPv6 header.
(B) Explain the various flow characteristics that determine Quality of Service.
(C) What is forwarding? Explain any two forwarding techniques.
(D) Discuss the applications of Multicast Routing.
(E) Explain the concept of port numbers with respect to networking.
(F) Write a short note on FTP.

Q5. **Attempt the following (any FOUR):** (20)
(A) Write a note on Packet Filters.
(B) Use additive cipher to encrypt the plain text "HELLO" with a key of 15.
(C) State and explain any five types of attacks.
(D) Explain the characteristics and limitations of a firewall.
(E) Explain IPSec in detail.
(F) Explain the following in brief:
a. Trapdoor
b. Zombie

———— X ————

T.Y.B.SC. (COMPUTER SCIENCE)

Advanced Java

(OCT-16)

QP Code : 75287

(3 Hours) [Total Marks:100]

N.B: (1) All questions are compulsory.
(2) Figures to the right indicate marks.
(3) Illustrations, in-depth answers and diagrams will be appreciated.
(4) Mixing of sub-questions is not allowed.

Q1. **Write short notes on (any FOUR):** (20)

(A) JDBC-ODBC Driver
(B) Life cycle of thread
(C) JSP Include directive
(D) Stateless session bean
(E) JFrame
(F) Lifecycle of Message-driven bean

Q2. **Attempt the following (any FOUR):** (20)

(A) Explain how to create and use JTree.
(B) List and explain any three Text-Entry Components.
(C) Explain any 5 swing features.
(D) Explain with example, how to create and use PreparedStatement.
(E) Write a JDBC program that counts the total number of managers from EMP table(empCode number, empName varchar, empDesign varchar).
(F) Write a swing program which adds JToolBar to a JFrame. Toolbar object includes three buttons on it.

Q3. **Attempt the following (any FOUR):** (20)

(A) Explain the steps to execute an RMI program.
(B) State and explain the methods used for Thread synchronization.
(C) Illustrate with an example, how to create thread using Runnable class.
(D) Explain the following:
(i) URLConnection (ii) InetAddress
(E) Explain Socket and ServerSocket classes.
(F) Write a program that displays even numbers between 1 and 50 after every 5 seconds.

Q4. **Attempt the following (any FOUR):** (20)

(A) State and explain any three methods of HttpServletResponse.
(B) What are cookies? Explain how servlets read data from cookies.
(C) Explain how control can be transferred from JSP to another web component.
(D) What is JSP? What are the advantages of JSP?
(E) Write a servlet program to display the current date.
(F) Write a JSP to print the sum of 1 to N numbers. Number N is accepted from num.html.

Q5. **Attempt the following (any FOUR):** (20)

(A) What is EJB? Explain the benefits of EJB.
(B) Explain the lifecycle of Stateful session bean.
(C) What are various ways of passing parameters in EJB?
(D) Explain the following:
(i) WSDL (ii) UDDI (iii) SOAP
(E) Differentiate between stateless and stateful session beans.
(F) Write a web service to determine if a given number is prime or not.

T.Y.B.SC. (COMPUTER SCIENCE)

Operating Systems and Linux

(OCT-16)

QP Code : 75336

(3 Hours) [Total Marks:100]

N.B: (1) All questions are compulsory.
(2) Figures to the right indicate marks.
(3) Illustrations, in-depth answers and diagrams will be appreciated.
(4) Mixing of sub-questions is not allowed.

Q1. Attempt the following (any FOUR): (20)

(A) Discuss following operating system,
i) Real time ii) Time sharing
(B) Discuss SSTF disk scheduling algorithm with an example.
(C) Explain Primary advantages and Features of Linux.
(D) Write short note on security in operating system
(E) Explain the following commands,
i) ln ii) nl iii)touch iv)mv v) mkdir
(F) Write any five openSSH components.

Q2. Attempt the following (any FOUR): (20)

(A) Write a short note on process control block.
(B) Discuss activities of operating system with respect to,
i) Process management
ii) File management
(C) Describe five state process models with a neat diagram.
(D) Explain the difference between layered approach and kernel approach in operating system.
(E) Consider the following set of processes with the length of CPU burst time and arrival time given in ms. Illustrate the execution of the processes using round robin algorithm. Draw Gantt Chart; also calculate average waiting time and turnaround time. Time Quantum is 3 ms.

Process	Burst Time	Arrival Time
P1	4	0
P2	2	1
P3	5	1
P4	3	2
P5	1	0

(F) State producer consumer problem, develop pseudo-code for the same.

Q3. Attempt the following (any FOUR): (20)

(A) Diagrammatically explain Dining Philosopher's problem.
(B) Discuss Banker's Algorithm.
(C) Consider following reference string : g a b c a c a d c d a d b a e d a g a
Find the number of page faults using LRU and OPT algorithm.
(D) Explain index allocation technique with respect to file.
(E) Define following :
i) Rotational latency
ii) Seek time
iii) Transfer time
iv) Swapping
v) Fragmentation
(F) Describe with a neat diagram, steps in handling page faults.

Q4. **Attempt the following (any FOUR):** (20)

(A) What is redirection? Explain following redirection symbols with an example
   i) <
   ii) <<
   iii) >
   iv) |

(B) Explain the octal codes used in 'chmod' command for setting file permissions in Linux.

(C) Why do we need to suppress the command output? Explain command to suppress command output.

(D) Write short note on standard file descriptor.

(E) Explain 'grep' command with an example.

(F) Explain 'tail' command with any four options.

Q5. **Attempt the following (any FOUR):** (20)

(A) Discuss Privileges of Linux administrator.

(B) Explain the significance of **'/tmp'** directory. Also explain the command to create local temporary file.

(C) Explain NAT , mangle and filter tables with respect to firewalls.

(D) Explain following jobs scheduling commands,
   i) at
   ii) batch

(E) How to run scripts in background? What is the need of doing so ? Explain with suitable example.

(F) Write the use and syntax of case statement with an example.

T.Y.B.SC. (COMPUTER SCIENCE)

DBMS II & Software Engineering

(OCT-16)

QP Code : 75390

[Total Marks:100]

N.B: (1) All questions are compulsory.
(2) Figures to the right indicate marks.
(3) Illustrations, in-depth answers and diagrams will be appreciated.
(4) Mixing of sub-questions is not allowed.

Q1. Write short notes **(any FOUR):** (20)

(A) Redo Phase of ARIES
(B) CASE statement in PL/SQL
(C) Project Management knowledge areas
(D) WBS
(E) MVD
(F) CMM

Q2. **Attempt the following (any FOUR):** (20)

(A) Explain the need of decomposition, also explain loss-less property of decomposition
(B) Explain ACID properties of transaction.
(C) With respect to following schedule draw precedence graph. Suppose last action in schedule added for T3 as W(A). What will be the new graph & status of schedule?

T1	R(A)		R(B)			
T2		W(B)			W(C)	
T3				R (C)		
T4						W(B)

(D) Explain the concept of dead lock.
(E) What is Join dependency? Explain with example.
(F) Explain the principles behind ARIES recovery algorithm?

Q3. **Attempt the following (any FOUR):** (20)

(A) What is Sequence? Explain creation, modification with example.
(B) Assume Book table consisting of columns bookno, name, number of copies & price. Write a PL/SQL code to accept bookno & display the existing copies & cost of copies for specified book.
(C) What is system catalog? Explain its structure.
(D) With example explain query evaluation plan.
(E) State & explain transaction management commands.
(F) What is cursor? Explain cursor attributes.

Q4. **Attempt the following (any FOUR):** (20)

(A) Which activities are involved in project management process? How these activities are grouped?
(B) What is the use of charts like Gantt & PERT/CPM, give example.
(C) Which functionalities are needed from Configuration management process?
(D) What is risk? Explain risk management activities.
(E) Explain principles of agile development.
(F) What is CASE? Explain in brief CASE Tools.

Q5. **Attempt the following (any FOUR):** (20)

(A) State & explain the principles of software testing.
(B) Explain following types of testing: Unit Testing, System Testing.
(C) What is Six Sigma?
(D) What is Black box testing? Discuss its advantages.

[TURN OVER

(E) What is cyclomatic complexcity? How to calculate it? Give example.

(F) List the challenges in software testing. Suggest the solution to meet these challenges.
