

- N.B.** 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Draw diagrams wherever necessary.
4) Mixing of sub-questions is not allowed.

Q.1. Attempt any four.

20 M

- State & explain characteristics of Data Communication.
- Explain Analog-to-Analog conversion with suitable diagram.
- Write a short note on CRC with an example. List advantages of the same.
- Explain IPsec Header format.
- Write a short note on firewalls. State its types. Justify, why they are needed.
- Discuss Unicast Vs Multicast Routing.

Q.2. Attempt any four.

20 M

- Write a short note on Block coding.
- Explain Time Division Multiplexing with neat and labeled diagrams.
- Define Spread Spectrum. Explain DSSS with a suitable diagram.
- Describe Circuit-Switched Networks.
- State and explain characteristics of Analog signals.
- Write a short note on Unguided Media with its types.

Q.3. Attempt any four.

20 M

- Solve the following,
 - Find the Hamming distance - $d(101011, 010010)$
 - Find the class & default mask of IP address - 130.111.23.75
- State types of Errors. Explain Error Detection vs Correction.
- Write a short note on PPP Transition state.
- Explain any two types of connecting devices with example.
- Write a short note Bluetooth Architecture with diagram.
- Explain Line coding scheme.

Q.4. Attempt any four.

20 M

- Write a short note on classful addressing.
- Explain OSPF.
- What is congestion control? Explain types of open-loop congestion control.
- Write a short note on SMTP.
- Explain TCP – A connection oriented protocol.
- Describe ARP with its packet format.

Q. 5. Attempt any four.

20 M

- a. List and explain types of Security Attacks.
- b. Write down the steps in RSA algorithm with an example.
- c. Differentiate between Symmetric and Asymmetric key cryptography.
- d. Explain how PGP works?
- e. Explain any two types of Substitution ciphers with an example.
- f. Write a short note on Intruders?

- N.B.**
- 1) All questions are compulsory.
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- Q1.** Write short notes on: (**any FOUR**): (20)
- a) Action Interface.
 - b) ResultSet.
 - c) Thread scheduling.
 - d) Socket Direct protocol.
 - e) RMI Architecture.
 - f) HttpServlet class.
- Q2.** Attempt the following (**any FOUR**): (20)
- a) State and Explain various classes/interfaces used to create tree.
 - b) Explain any three text entry components.
 - c) State the role of JPanel class and explain it with code snippet.
 - d) Write a note on Prepared Statement interface.
 - e) Write a swing program containing text field, a combo box and button. On click of button the contents of a text field should be added in combo box.
 - f) Write a JDBC program that accepts an employee name and searches the respective employee record into the Employee table. (Assume: Emp: ename, salary, designation)
- Q3.** Attempt the following (**any FOUR**): (20)
- a) Write a short note on Life Cycle of thread.
 - b) Explain URL and URLConnection classes.
 - c) List and explain various network interface parameters.
 - d) Give the significance of Socket and ServerSocket.
 - e) State role of UnicastRemoteObject and RemoteException Classes.
 - f) Write a server program to send welcome note to client which connects to it.
- Q4.** Attempt the following (**any FOUR**): (20)
- a) What are cookies? How to create and read values from cookies in servlet.
 - b) State and explain various methods of HttpServletRequest class.
 - c) What are implicit objects? Explain any 4 implicit objects of jsp.
 - d) Explain page directive along with its attributes.
 - e) Write a servlet that accepts an integer value from html file and calculates the factorial of that value.
 - f) Write a JSP program that prints the sum of natural number series up to 'N'. (N should be accepted from user).
- Q5.** Attempt the following (**any FOUR**): (20)
- a) Explain the lifecycle of Stateful session bean.
 - b) What factors should be considered before giving local or remote access to beans.
 - c) What are annotations? Give its significance. explain any three annotations of enterprise beans.
 - d) Write a note on web service client.
 - e) Write a note on JAX-WS technology.
 - f) Write a web service method that returns the length of input string.

T.Y.B.SC. (COMPUTER SCIENCE)**Operating Systems and Linux****(DEC - 2018)**

3 hours)

QP Code : 36867**[Total Marks: 100]**

- Note:**
1. All the questions are compulsory.
 2. Figures to right indicate full marks.
 3. Draw suitable diagrams whenever necessary.
 4. Mixing of sub-questions are not allowed.

Q. 1 Attempt the following (any FOUR):**(20)**

- Write a note on services provided by an OS.
- Describe Layered approach. Explain in short how this approach is different than kernel approach.
- State and explain different types of system call.
- Explain the read command with option and suitable example.
- Explain at and crontab commands.
- Write a short note on Firewall and Iptable.

Q. 2 Attempt the following (any FOUR):**(20)**

- Distinguish between process and thread.
- Write a short note on Process Control Block.
- Explain five state process model with neat diagram.
- Explain indirect communication in message passing system.
- Define the following: CPU utilization, waiting time, response time, turnaround time and throughput.
- Consider the following set of processes with the length of CPU arrival time and burst time given in milliseconds

Process	Arrival Time	Burst Time
P1	1	2
P2	2	4
P3	0	8

Illustrate the execution of these process using FCFS scheduling algorithm. Calculate waiting time, Average waiting time and turnaround time, average turnaround time of each process also draw the Gantt chart.

Q. 3 Attempt the following (any FOUR):**(20)**

- Discuss the Banker's algorithm.
- Explain the deadlock prevention techniques.
- Explain the following
 - Swapping
 - Fragmentation
- Explain Dining Philosopher's problem and its solution.
- Discuss the following page replacement algorithms: FIFO, OPT and LRU in terms of their advantages and disadvantages.
- Describe the basic file attributes.

[Turn over

Q. 4 Attempt the following (any FOUR):

(20)

- (A) Write a short note on Linux File permissions.
- (B) Explain the grep command used for searching a pattern with any four options.
- (C) Explain the standard file descriptors with suitable commands.
- (D) Define a link. State different types of links. Explain them in brief.
- (E) Explain the use of tar and zip command.
- (F) How to redirect output in script? Explain by giving example.

Q. 5 Attempt the following (any FOUR):

(20)

- (A) Explain tail command with any 4 options.
- (B) What is job control? Explain in detail.
- (C) Explain the following linux directories
(i) /root (ii)/boot (iii)/tmp (iv)/var (v)/bin
- (D) Explain sed command with its options
- (E) Write a shell script to accept the file name and check whether the file exists or not and print appropriate message.
- (F) Explain system administrator privileges.

T.Y.B.SC. (COMPUTER SCIENCE)
DBMS II and Software Engineering
(DEC - 2018)

Q. P. Code : 36771

(3 Hours)

[Total Marks: 100]

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

Q1. Write short note on (any FOUR): (20)

- (A) View serializability
- (B) Website Testing
- (C) While loop
- (D) Assignment Operator
- (E) Gantt Chart
- (F) LOC

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

- (A) Name the property which guarantees that the execution of one transaction should not interfere with the execution of another transaction and explain it.
- (B) What is a lock? Explain shared and exclusive locks with a suitable example.
- (C) Discuss the two tables where the recovery related information is stored in addition to the logs.
- (D) Explain the different actions written in a log.
- (E) State the properties of decomposition and explain any one of it.
- (F) Identify whether the given schedule is conflict serializable or not? Explain your answer

R1(B) R3(C) R1(A) W2(A) W1(A) W2(B) W3(B) W1(B) W3(B) W3(C)

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

- (A) Using explicit cursor, write a PL/SQL block to display the name of the employees.
- (B) Explain the concept of NULL statement with example.
- (C) Create a sequence seqid for productid having range between 1 to 30 with an increment of 2.
- (D) Explain the concept of nested table.
- (E) Write a PL/SQL block to update the salary of Blake and Adam by 1000. Make the changes committed only if the total salary is greater than 2500 otherwise discard the changes.

(F) Give the output of the following block

```

BEGIN
GOTO MIDDLE;
<<TOP>>
    DBMS_OUTPUT.PUT_LINE ('TOP STATEMENT');
    GOTO BOTTOM;
<<MIDDLE>>
    DBMS_OUTPUT.PUT_LINE ('MIDDLE STATEMENT');
    GOTO TOP;
<<BOTTOM>>
    DBMS_OUTPUT.PUT_LINE ('BOTTOM STATEMENT');
END;
    
```

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

- (A) Differentiate between PERT and CPM.
- (B) Define risk. List and explain its three classes.
- (C) Explain the significance of agile development.
- (D) Explain any five practices of XP.
- (E) Write a note on design pattern.
- (F) A project has the following times schedule

Activity	Times in Week	Activity	Times in Week
1-2	4	5-7	8
1-3	1	6-8	1
2-4	1	7-8	2
3-4	1	8-9	1
3-5	6	8-10	8
4-9	5	9-10	7
5-6	4		

Draw the network diagram.

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

- (A) Explain the fundamental principles of testing.
- (B) Write a note on Test Case Execution and Analysis.
- (C) What is Black Box testing? List its advantages.
- (D) Write a note Defect Logging and Tracking.
- (E) Write a note on function testing.
- (F) What is the significance of regression testing? Explain.
