T.Y.B.SC (COMPUTER SCIENCE)

COMPUTER HARDWARE, ASSEMBLY LANGUAGE PROGRAMMING & OPERATING SYSTEM

(PAPER-I) (MAY - 2018)

Q.P.Code:08708

(3 Hours) [Total Marks : 60

N.B. (1) **All** questions are **compulsory**
(2) Figures to the right indicate maximum marks to question/sub question
(3) Draw neat **diagrams** wherever **necessary**

1. Attempt **any two** of the following :- **12**

(a) State and explain the **bus** and the **mesh topologies used in computer networking.**
(b) What is floating point notation ? Explain it with 16 bit or 32 bit floating point number.
(c) Explain in brief the use of **MS PowerPoint** application software in presentations.

2. Attempt **any two** of the following :- **12**

(a) Describe the use and importance of **stack pointer** with reference to 8085 microprocessor.
(a) Explain the functions of the following pins in 8085 (i) HLDA (ii)READY (iii) CLK IN
(c) Draw the **functional block diagram** of 8085 microprocessor.

3. Attempt **any two** of the following :- **12**

(a) What are single byte, two byte and three byte instructions? State the example of each type
(b) Explain the **operations** of the following commands :
(i) LDAX D (ii) CMP B (iii) ADC C
(c) Explain with at least **two examples, indirect addressing mode** used in 8085 microprocessor

4. Attempt **any two** of the following :- **12**

(a) Explain the construction and working of **color monitor**
(b) What is a web search engine ? Describe in brief any two characteristics of a good search engine.
(c) What do you understand by **computer virus** ? Give symptoms and remedies when a computer is infected with virus.

5. Attempt **any four** of the following :- **12**

(a) With reference to 8085 , explain the function of ALE pin.
(b) Convert $(256)_{10}$ to **octal** number system.
(c) Write a short note on primary memory of the computer
(d) Give features of INTEL 8085 microprocessor
(e) Explain the USB port
(f) Write a short note on sound card

T.Y.B.SC (COMPUTER SCIENCE)

DATA COMMUNICATIONS, NETWORKING & SECURITY

(PAPER-I) (MAY - 2018)

Q.P. Code : 38408

Time : 3 hrs **Total Marks : 100**

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

Q.1. Attempt any four. 20 M

a. Write a short note on forwarding.
b. Discuss the various layers in OSI model.
c. Advantages of IPv6 over IPv4.
d. Discuss key Management in detail.
e. State & explain types of Guided Media with neat and labeled diagram.
f. Write a short note on Digital Certificate.

Q.2. Attempt any four. 20 M

a. Explain in detail types of Addressing with example.
b. Write a short note on Transmission Modes.
c. Explain packet switching with a suitable diagram.
d. Explain characteristics of Digital signals.
e. Define Multiplexing. Explain WDM with diagram.
f. Describe Digital-to-Digital conversion.

Q.3. Attempt any four. 20 M

a. Explain types of Errors with an example.
b. Write a short note on Framing & flow control mechanism.
c. State & explain any two HDLC frame formats.
d. Explain sliding window concept with a suitable diagram.
e. Write a short note on Reservation & polling of Controlled Access.
f. Explain Components of Data Communication with a suitable diagram.

Q.4. Attempt any four. 20 M

a. Explain IPv4 packet format with a diagram.
b. Write a short note on.
   (i) RARP
   (ii) BOOTP
c. Explain process to process delivery.

d. Write a short note on DNS with a diagram.
e. State & explain types of closed loop congestion control.
f. Describe BGP in detail.

Q.5. Attempt any four. 20 M

a. State & explain the types of security attacks.
b. Explain any two Transposition Ciphers with an example.
c. Write down the limitations of firewalls.
d. Explain the steps in Diffie – Hellman key exchange algorithm with example.
e. Explain Handshake protocol in SSL layer.
f. Write a short note on Email-Security.

****

T.Y.B.SC (COMPUTER SCIENCE)

ADVANCED JAVA

(PAPER-II) (MAY - 2018)

QP Code : 36865

(3 Hours) **[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 Write a short note on (any FOUR): (20)

(A) JFrame class.
(B) JPanel class
(C) life cycle of a Thread
(D) JDBC-ODBC Driver
(E) JSP Include Directive
(F) ResultSet

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

(A) Write a short note on features of JFC.
(B) Explain different types of Text Entry components.
(C) What is the use of JTree? Explain any four classes or interfaces to create a JTree.
(D) What is synchronization? What are various ways to synchronize a thread? Explain using programming snippet.
(E) Explain the role of Action interface.
(F) Write a Swing program containing a button with the caption "Now" and a text field. On click of the button current date and time should be displayed in the text field.

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

(A) State the role of DriverManager class. Explain any two important methods
(B) . State and explain any two JDBC exception classes.
(C) Explain with an example how to create and use PreparedStatement.
(D) Write a short note on RMI Architecture
(E) Explain ServerSocket class with two constructors and three methods.
(F) Write a TCP server program which accepts a number from client and the server returns cube of that number.

Q. 4 Attempt the following (any FOUR): (20)

(A) Write a short note on Servlet Life Cycle.
(B) Write a note RequestDispatcher Interface.
(C) State and explain any five methods of HttpServletResponse.
(D) Explain error handling mechanism in JSP with code snippet.
(E) Explain page directive with any five attributes.
(F) Write a Java Server Page to display Current Date. Also display the counter showing number of time the JSP was requested.

[Turn over

Q. 5 Attempt the following (any FOUR): **(20)**

(A) What are various ways of passing parameters in EJB?
(B) State the difference between Java Beans and EJB.
(C) What is EJB? Explain benefits of EJB.

(D) Explain SOAP, UDDI and WSDL.
(E) Write a short note on JAX-WS technology.
(F) Write a web service method that accepts a number n and returns the value of reverse of a number.

T.Y.B.SC (COMPUTER SCIENCE)

PROGRAMMING IN C++

(PAPER-II) (MAY - 2018)

Q.P.Code:08710

(3 Hours) [Total Marks : 60

N.B. (1) **All** questions are **compulsory**
(2) Figures to the right indicate maximum marks to question/sub question
(3) Draw neat **diagrams** wherever **necessary**

1. Attempt **any two** of the following :- **12**

(a) With respect to **object oriented** programming , explain the following terms (i) object (ii) message passing

(b) How is an **escape sequence** formed in C++? Explain **any two** escape sequences in C++

(c) Develop a program in C++ that prompts the user to enter **three integer** numbers and determines the **smallest** among these numbers.

2. Attempt **any two** of the following :- **12**

(a) Develop a function in C++ that takes as input the three numbers. The function returns **true** if the first number to the power of the second number equals the third number; otherwise, it returns **false.** (Assume that the three numbers are of type double.)

(b) What is meant by an **array?** How do you **declare** and **initialize** a **one** dimensional array in C++?

(c) Construct a class named **Rectangle** that has floating point data members named length and width. The class should have member function named perimeter() and area() to calculate the perimeter and area of the rectangle, a member function named getdata() to set the rectangle's length and width, and a member function named showdata() that displays the rectangle's width , length , perimeter and area. Include a **Rectangle** class in a **working C++ program.**

3. Attempt **any two** of the following :- **12**

(a) Explain the notion of friendship in C++. Explain with an example how a friend function access private data members of a class.

(b) What is a **constructor?** What do you understand by **parametrized** constructors? In the presence of multiple constructors, how does a compiler know which **overloaded** constructor to call?

(c) Explain with a suitable example how to **overload** a **binary** operator in C++

4. Attempt **any two** of the following :- **12**

(a) Explain the different forms of **inheritance** supported by C++

(b) What is an **abstract base** class? List the advantage of using it in the program.

(c) Explain with an example, how polymorphism is achieved at **compile** time.

5. With **reference to C++,** answer the following **(any three)** **12**

(a) What is a **variable?** Give the **syntax** of declaring variable in C++?

(b) State the rules for naming **identifiers in C++.**

(c) Explain with correct **syntax**, **any one looping** structure.

(d) What do you understand by the term **copy constructor**?

(e) Explain the concept of **static** members.

(f) What is meant by the term **software reusability**?

T.Y.B.SC (COMPUTER SCIENCE)

OPERATING SYSTEMS AND LINUX

(PAPER-III)(MAY - 2018)

QP Code : 36866

(3 hours) **[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)**

(A) Explain the following operating system.
i) Batch operating system ii)Time Sharing
(B) Discuss briefly: Direct and indirect IPC.
(C) Explain the producer consumer problem.
(D) Explain the major features of Linux.
(E) Explain the following commands
(i) chown (ii) chgrp
(F) Explain the use of cat command with various options to display data inside the text file.

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

(A) Discuss the different types of system calls.
(B) With a state transition diagram explain the concept of process states.
(C) What are user level thread and kernel level threads? Compare them.
(D) Explain context switching with a diagram.
(E) 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	0	24
P2	0	3
P3	0	3

Illustrate the execution of these process using Round robin scheduling algorithm. Calculate waiting time, Average waiting time and turn around time, average turn around time of each process also draw the Gantt chart. Consider time quantum = 4.
(F) Discuss the Peterson's solution to critical section.

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

(A) State the Dining Philosopher's problem.
(B) What is deadlock? State the necessary conditions for deadlock.
(C) Explain Swapping and Contiguous Memory Allocation.
(D) Explain the Banker's algorithm in detail.

[Turn over

(E) Consider the following reference String:
6 0 1 2 0 4 3 0 2 6 3 2 0 1 6
Calculate the number of page faults if FIFO, OPT page replacement were used with three page frames.

(F) Explain free space management techniques of file system.

Q. 4 Attempt the following (any FOUR): (20)

(A) Describe Linux architecture in detail.
(B) Define a link. State different types of links. Explain them in brief.
(C) Explain startup and shutdown processes in linux.
(D) Write a short note on Linux File System.
(E) Write a short note on ls Command in Linux with options.
(F) Explain vi editor in Linux with its modes.

Q. 5 Attempt the following (any FOUR): (20)

(A) What is Role of system administrator in Linux?
(B) How to change the file permission with the help of chmod command by giving suitable example.
(C) Describe the init Run levels of a Linux System.
(D) Write a short note on case statement with example.
(E) Explain different shell environment variables.
(F) Explain the content of /etc/passwd file.

****

B.SC (I.T.) (SEM-VI) (OLD)

DBMS II & SOFTWARE ENGINEERING

(PAPER-IV)((MAY - 2018)

Q. P. Code: 36770

(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) Conflict Serializability
(B) Locking Scheduler
(C) Data Type
(D) System Catalog
(E) Acceptance Testing
(F) Validation Testing

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

(A) Explain the concept of functional dependency with the help of an example.

(B) Consider the given schedule below and identify whether the given schedule is conflict serializable or not. Explain your answer.

S: r2(X) r1(Y) r1(Z) r5(V) r5(W) r5(W) r2(Y) w2(Y) w3(Z) r1(U) r4(Y) w4(Y) r4(Z) w4(Z) r1(U) w1(U)

(C) Define Aries Algorithm. Explain its main principles.
(D) Explain the problem of Uncommitted Dependency caused by concurrency.
(E) Explain the concept of Write Ahead Log Protocol.
(F) Explain 4NF with the help of example.

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

(A) Write a note on sequence.
(B) Explain EXIT statement with example.
(C) Write a PL/SQL block to display the name of an employee whose emp no is given by user.
(D) What is Implicit Cursor? Explain the attributes of Implicit cursor.
(E) Explain the concept of save points.

(F) Give the output of the following given code:

```
DECLARE
  a number(2) := 10;
BEGIN
  <<loopstart>>
  -- while loop execution
  WHILE a < 20 LOOP
  dbms_output.put_line ('value of a: ' || a);
    a := a + 1;
    IF a = 15 THEN
      a := a + 1;
      GOTO loopstart;
    END IF;
  END LOOP;
END;
/
```

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

(A) List the phases of project management and explain them.

(B) Explain the role of project manager.

(C) Explain the various levels of CMM with diagram.

(D) Define XP with its core values.

(E) What is software metrics? Explain its types.

(F) The following table gives activities of duration of construction project work

ACTIVITY	1-2	1-3	2-3	2-4	3-4	4-3
DURATION	20	25	10	12	6	10

i) Draw the network diagram
ii) Find the critical path

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

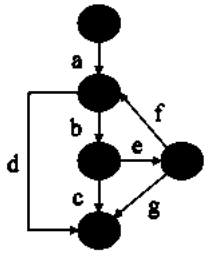
(A) Explain Six Sigma with its three core steps.

(B) Define the terms: Error, Bug, Defect, Fault, Failure

(C) Explain the objectives of testing.

(D) Write a note on Integration Testing

(E) Define graph matrix and draw the graph matrix for the given graph



(F) Write a note on Object Oriented Testing strategy.

****