Bachelor of Engineering
Seventh Semester Main Examination, Dec-2020
Compiler Design [CS-701]
Branch: CSE

Time: 3:00 Hrs   **Max Marks 70**

Note : 1. Attempt any five questions out of eight.
          2. All question carry equal marks.

Q.1   (a) Write the production rules to eliminate the left recursion and left factoring problems.
        (b) Consider the grammar: $E \rightarrow 2E2 \mid 3E3 \mid 4$
Perform Shift Reduce Parsing for input string "32423".

Q.2   (a) Write Three Address Code for the following expression-
$- (a \times b) + (c + d) - (a + b + c + d)$
        (b) Write Rules to construct FIRST Function and FOLLOW Function.

Q.3   (a) Differentiate LR, SLR, CLR and LALR. Which one is more powerfull?
        (b) Construct syntax tree and postfix notation for the following expression:
$(a+(b*c)\^d-e/(f+g)$

Q.4   (a) Consider the grammar $S \rightarrow aAd \mid bBd \mid aBe \mid bA$ $A \rightarrow C$ $B \rightarrow C$
Find out that the given grammar is LALR (1) parser or not?
        (b) Write quadruples, triples and indirect triples for the expression: -
$(a*b)+(c+d)-$

Q.5   (a) Consider the given grammar- $S \rightarrow (L) \mid a$
                                     $L \rightarrow L , S \mid S$
Construct the operator precedence parser and parse the string (a , (a , a)).
        (b) Write the short note on:

i) Abstract syntax tree   ii) Polish notation
iii) Three address code   iv) backpatching

Q.6   (a) What is parse tree? Construct parse tree for s $\rightarrow$ SS* I ss+ I a
        (b) What are the properties of code generation phase? Also explain the Design Issues of this Phase.

Q.7   (a) What is code optimization? Explain machine dependent and independent code optimization.
        (b) Show the following Grammar: $S \rightarrow AaAb \mid BbBa$ $A \rightarrow \epsilon$ $B \rightarrow \epsilon$ Is LL(1) and parse the input string "ba".

Q.8   (a) What is common sub-expression and how to eliminate it? Explain with example.
        (b) Draw the syntax tree and DAG for the following expression: $(a*b)+(c-d)*(a*b)+b$

Distributed System [CS-702]
Branch: CSE

<u>Time: 3:00 Hrs</u>   **Max Marks 70**

Note : 1. Attempt any five questions out of eight.
2. All question carry equal marks.

Q.1   (a) What are the main objectives and challenges of distributed systems?
         (b) Differentiate between caching and replication.

Q.2   (a) What is Distributed Shared Memory (DSM)? Describe its architecture.
         (b) Why architectural model is important in the distributed system design? Also discuss the resource sharing and its importance?

Q.3   (a) What is false sharing? When it is likely to occur? What should be done to   minimize the false sharing problem? Can this problem be completely eliminated?   Explain.
         (b) Explain significance of a fault tolerant service with fragmented and replicated   data system?

Q.4   (a) What is API for internet protocol?
         (b) Discuss the various concurrency control protocols.

Q.5   (a) Explain in brief different types of load distributing algorithms.
         (b) What is Concurrency control in distributed databases?

Q.6   (a) Discuss the major issues in designing a distributed operating system? Explain the   main characteristics of a distributed event based system?
         (b) Compare and explain times for Synchronous and Asynchronous remote   procedure calls with suitable diagrams.

Q.7   (a) What are the requirements for distributed mutual exclusion algorithms?
         (b) Explain in detail the deadlock handling strategy?

Q.8   Short note on: (Any three define with example)
         (a) Homogeneous and heterogeneous DBMS
         (b) CORBA
         (c) RPC
         (d) Middle Ware

Bachelor of Engineering
Seventh Semester Main Examination, Dec- 2020
Cloud Computing [CS-703]
Branch: CSE

<u>Time: 3:00 Hrs</u>   **Max Marks 70**

Note : 1. Attempt any five questions out of eight.
2. All question carry equal marks.

Q.1   Explain cloud and dynamic infrastructure?

Q.2   List the different cloud application available in the market? Explain the scenarios" when to not used cloud" ?

Q.3   Write short note on cloud adoption and cloud rudiments. What do you mean by social network analysis?

Q.4   What are the fundamental components introduced in cloud reference model.

Q.5   What is clouds scalability? Explain the terms of "virtual desktop infrastructure".

Q.6   Write a brief note on cloud ecosystem along with the example.

Q.7   What is need of virtualization? Discuss the architecture of hyper -V and discuss use in cloud computing.

Q.8   Write the different between block and file level storage virtualization.

Bachelor of Engineering
Seventh Semester Main Examination, Dec-2020
Information Storage & Management [CS-704]
Branch: CSE

<u>Time: 3:00 Hrs</u>   <u>Max Marks 70</u>

Note : 1. Attempt any five questions out of eight.
        2. All question carry equal marks.

Q.1.   Discuss the evolution of various storage technology and architecture   Explain briefly?

Q.2   Describe followings? (Any-3)
       i) JBOD   ii) DAS
       iii) NAS   iv) SAN
       v) CAS

Q.3   Discuss basic principles of security?

Q.4   Compare between NAS/SAN hybrid storage?

Q.5   Compare the RAID Levels?

Q.6   Explain the Disaster recovery.

Q.7   Describe followings:
       (a) Cloud service providers and models
       (b) ILM benefits

Q.8   Write a short notes on the following:
       (a) Cloud security and integration

(b) Application and services on cloud

Bachelor of Engineering
Seventh Semester Main Examination, Dec-2020
Network and Web Security [CS-7101]
Branch: CSE

<u>**Time: 3:00 Hrs**</u>   **Max Marks 70**

Note : 1. Attempt any five questions out of eight.
         2. Each question having two parts and each part carries 7 marks.

Q.1   (a) What do you understand by network security attack? Describe with examples.
        (b) Describe active and passive attacks. Discuss different types of active attack and passive attack?

Q.2   (a) List different types of cryptanalytic attacks based on what is known to the attacker.
        (b) Discuss model for internetwork security. Describe each component in detail.

Q.3   (a) What is cipher? Discuss any two substitution cipher (Caesar cipher and Hill cipher).
        (b) What is the difference between an unconditionally secure cipher and computationally secure cipher?

Q.4   (a) Describe different security attack (passive and active) with detail subcategories from each.
        (b) Describe different possible security services provided by a system

Q.5   (a) What is digital signature? How public key cryptography is used for digital signature.
        (b) Describe Diffie-Hellman key exchange algorithm, discuss the basis of the strength of this algorithm.

Q.6   (a) What is confusion and diffusion in Shannon theory of block cipher.
        (b)What is permutation and substitution in DES. What is avalanche effect in DES.

Q.7   (a) What is X.509 authentication services. What is X.509 certificate format? Discuss 1-way, 2-way, 3-way communication using X.509 certificate.
        (b) Describe RSA algorithm with an example, discuss the basis of the strength of this algorithm.

Q.8   (a) Describe the following:-
        (i) Authentication
        (ii) Access control
        (iii) Data confidentiality
        (iv) Data integrity
        (b) What is a computer virus? Different phases of computer virus that it goes through in its lifetime. Describe its structure