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END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] JULY 2023

Paper Code: ETCS-308 **Subject: Web Engineering/Web Technology**

Time: 3 Hours **Maximum Marks: 75**

Note: Attempt five questions in all including Q. No.1 which is compulsory. Select one question from each unit.

Q1 (a) State the lifecycle of Servlet. (5)
(b) How to prevent Cross site Scripting? (5)
(c) Explain the components of CSS with example. (5)
(d) Describe BIBA security model. (5)
(e) Explain how Fuzzers work. (5)

UNIT-I

Q2 (a) Compare POP3 and IMAP. (5)
(b) Design a webpage for railway ticket reservation using XHTML. (7.5)

Q3 (a) Briefly explain HTTP request messages. (2.5)
(b) Illustrate with an example styling of an HTML webpage. (5)
(c) What is the difference between XML DTD and XML schema. (5)

UNIT-II

Q4 (a) Write a program to add and display cookies using JSP. (8)
(b) Explain event handling in JavaScript. (4.5)

Q5 (a) Display HELLO *name*, where the name is retrieved from a "user form". (6.5)
(b) What is JSTL? (2.5)
(c) Describe Servlet architecture. (3.5)

UNIT-III

Q6 (a) What is a Cookie? What is Cookie Poisoning? How can it be prevented? (6.5)
(b) Explain the term "Session management". (3)
(c) How Certification works? (3)

Q7 (a) What is the purpose of a web application firewall? What are its limitations? (6.5)
(b) Discuss and differentiate authentication and authorization. (6)

UNIT-IV

Q8 (a) Illustrate the latest trends in Web Technology. (6.5)
(b) State the key features of semantic web. (6)

Q9 (a) Describe briefly how ubiquitous web affects our society. (6.5)
(b) Discuss the evolution of Web Technology. (6)

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END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] JULY 2023

Paper Code: ETEE-310 ***Subject: Microprocessors & Microcontrollers***

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt five questions in all including Q.No1 which is compulsory. Select one question from each unit.

Q1 Attempt all questions: **[5x5=25]**

a) Write any five features of 8085.
b) Explain MVI, LDA, XCHG, STA, LEA instructions.
c) Explain flag register of 8086.
d) What are the SFRs in 8051?
e) What is instruction cycle & machine cycle?

UNIT–I

Q2 a) Explain how interrupts are executed in 8085. **[6]**
b) Explain how data buses & address buses are de-multiplexed with the help of diagram? **[6.5]**

Q3 Draw & explain architecture of 8085 in detail. **[12.5]**

UNIT–II

Q4 Describe all pins of 8086 (maximum mode as well as minimum mode) with the help of diagram. **[12.5]**

Q5 a) Explain why it is always better to locate the word data at an even address in 8086? **[6]**
b) Describe how physical address is computed in 8086 with a suitable example. **[6.5]**

UNIT–III

Q6 Explain block diagram of PPI (8255) in detail? **[12.5]**

Q7 a) Interface DAC with 8086 microprocessor with a clock frequency of 5MHz. **[6]**
b) Explain block diagram of programmable interrupt controller in detail. **[6.5]**

UNIT–IV

Q8 a) Explain program status word of 8051. **[6]**
b) Describe memory organization of 8051. **[6.5]**

Q9 Explain programming model of 8051 in detail with proper diagram. **[12.5]**

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END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] JULY 2023

Paper Code: ETCS-306 **Subject: Computer Networks**

Time: 3 Hours **Maximum Marks: 75**

Note: Attempt five questions in all including Q.No1 which is compulsory. Select one question from each unit.

Q1 Answer the following in brief: **(2.5x10=25)**

a) Differentiate between LAN, MAN & WAN?
b) What is Packet Switching?
c) State the role of Multiple Access Protocols?
d) Define Subnetting & its role?
e) What is IPv4 and IPv6?
f) Differentiate between UDP and TCP?
g) Explain PDH Networks?
h) Describe Routing Protocols?
i) Define the terms bit rate in terms of data transmission?
j) Differentiate between TDM and WDM?

UNIT-I

Q2 a) Explain various network topologies? What is OSI Model? What are the different layers of OSI Model? Explain each layer and its role in a network? **(12.5)**

OR

b) Explain Multiplexing and its types? Differentiate between PSTN and ISDN? Also mention the role of transmission media **(12.5)**

UNIT-II

Q3 a) Explain Leaky bucket algorithm. What kind of problems addressed using Leaky bucket algorithm? Explain Error Detection and Correction Techniques used by Data Link Layer? **(12.5)**

OR

b) Write a note on the following: **(12.5)**

i) PPP
ii) HDLC
iii) Bridges
iv) Channel Allocation Problem
v) IEEE 802.3

UNIT-III

Q4 a) Draw and explain packet format of Transmission control protocol. Explain various steps that are followed in releasing a TCP connection? Compare Link State routing and Distance Vector Routing using suitable diagram? **(12.5)**

OR

b) Explain Congestion Control Algorithm? What are Queueing Models? Describe SONET **(12.5)**

P.T.O.

UNIT-IV

Q5 a) Explain CSMA/CD and CSMA/CA random access protocols? How does ATM differ from Frame Relay? Describe role of UDP in a network? **(12.5)**

OR

b) Discuss Transport Layer Services? Also discuss Elements of Transport Protocols? Explain advantage of GO-Back-N ARQ protocol over stop-and-wait ARQ? **(12.5)**

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END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] JULY-2023

Paper Code: ETCS-304 **Subject: Operating Systems**

Time: 3 Hours **Maximum Marks:75**

Note: Attempt five questions in all including.Qno.1 which is compulsory. Select one question from each unit.

Q1 **Attempt any Five** **[5x5=25]**

(a) What is the meaning of the term *busy waiting*? What other kinds of waiting are there in an operating system? Can busy waiting be avoided altogether? Explain your answer.

(b) What is multiprogramming operating system? How it is different from Multiprocessing. Explain.

(c) Explain Process Control Block with the help of suitable diagram in detail.

(d) Explain race condition with suitable example?

(e) What are the four conditions that must be present for a deadlock to be possible?

(f) What are various file attributes?

UNIT-I

Q2 (a) Explain the layered approach of Operating System? What are main task of OS? **[6]**

(b) Given Memory Partitions of 100K,500K,200K,300K and 600K (in order), how would each of the first fit, best fit, and worst fit algorithms place processes of 212K,417K,112K and 426K (in order)? Which algorithms make the most efficient use of memory? **[6.5]**

Q3 (a) Explain the difference between logical and physical addresses. **[3]**

(b) Why are pages sizes always power of 2? **[3]**

(c) Consider there are 4 frames allocated to a process and the page reference string is:

7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1

Calculate the number of page faults for the FIFO and LRU page replacement algorithms. **[6.5]**

UNIT-II

Q4 (a) Consider the following set of processes with the CPU burst & arrival time in milliseconds. **[6.5]**

Process	Arrival Time	Burst Time
A	0	12
B	1	7
C	2	9
D	3	4
E	4	11

Draw the Gantt chart & find:

P.T.O.

i Average waiting time for these processes with the Shortest Remaining Time First, Round Robin (Time quantum = 3ms) & FCFS scheduling algorithm.

ii Average turnaround time for these processes with the SRTF, Round Robin & FCFS Algo.

(b) Explain the Dining Philosophers classical IPC problem and its solution. **[6]**

Q5 (a) What is thread? What are the differences between user-level threads and kernel-level threads? Under what circumstances is one type better than the other? **[6]**

(b) Explain bakery algorithm. Prove that it satisfy all the three requirements for critical section problem. **[6.5]**

UNIT-III

Q6 (a) A disk with 1000 cylinders, numbered 0 to 999, compute the number of tracks the disk arms must move to satisfy the entire request in the disk queue. Assume the current request serviced is at track 345 and head is moving towards track 0.The queue in FIFO order contains request for the following tracks: 123,874,692,400,475,105,376. Perform the computation for the following scheduling algorithm- **[6.5]**

(1) FIFO (2) SSTF (3) SCAN (4) C-SCAN (5) LOOK

(b) Explain resource allocation graph. **[3]**

(c) What is Safe state? Explain with the help of suitable example. **[3]**

Q7 (a) Explain Bankar's Algorithm including safety algorithm & resource request algorithm? **[6]**

(b) Consider the following snapshot of a system- **[6.5]**

	Allocation				**Maximum**			
Process	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**
P1	0	0	1	2	0	0	1	2
P2	1	0	0	0	1	7	5	0
P3	1	3	5	4	2	3	5	6
P4	0	6	3	2	0	6	5	2
P5	0	0	1	4	0	6	5	6

Let the available number of resources be given by avail vector as (1, 5, 2, 0). Use banker's algorithm and answer.

1. Find the contents of the matrix "NEED".
2. Is the system in a safe state?
3. If a request from process P1 for (0, 4, 2, 0) arrives, can it be granted immediately?

UNIT-IV

Q8 (a) Explain various types of file and file access methods? **[6.5]**

(b) What do you mean by directory structure? Explain various directory structures with suitable diagram? **[6]**

Q9 Write short notes on **any two**: - **[6.25x2=12.5]**

(a) Logical file system v/s Physical file system

(b) FAT v/s NTFS

(c) Explain various file allocation strategies

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END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] JULY 2023

Paper Code: ETCS-302 **Subject: Compiler Design**

Time: 3 Hours **Maximum Marks: 75**

Note: Attempt five questions including Q. No. 1 which is compulsory. Assume missing data. Select one question from each unit.

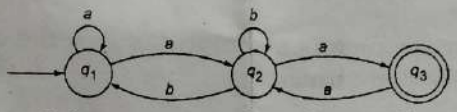
Q1. Answer the following questions: **(5*5=25)**

a) What is Backpatching? Explain with the help of example.
b) Distinguish between Compiler and Interpreter briefly.
c) Explain various principle sources of Code Optimization.
d) What is DAG? What are the advantages of DAG?
e) What is the role and various functions of Lexical analyser? Explain briefly.

UNIT-I

Q2. a) Discuss the architecture of Compiler with its phases in details **(7.5)**

b) Consider the transition diagram **(5)**



Convert the above finite automata into the regular expression.

Q3. a) What is bottom-up parsing? How to construct the SLR parsing table? Explain with the help of an example. **(6.5)**

b) For the Grammar give below: **(6)**

E-> TE'
E'->+TE'/ε
T->FT'
F->*FT'/ε
F->(E)/id

Construct the Predictive Parsing Table. Whether this grammar is LL(1) or not?

UNIT-II

Q4. a) What is syntax directed translation? How the syntax directedtranslation schemes aredescribed. Explain with the help of example. **(6)**

b) What is intermediate code? What are the various ways to represent the intermediate code? Explain postfix notation, parse trees and syntax trees, three address code, quadruples, and triples with the help of examples. **(6.5)**

Q5. a) Describe the language for specifying Lexical Analyzer with the help of example. **(6)**

b) Write a short note on: Type Checker, Type Conversion and Boolean Expressions. **(6.5)**

UNIT-III

Q6. a) What information is contained by the Symbol Table? Explain the contents and its capabilities of symbol table. **(7)**

b) What is error? Explain sources of errors and explain various types of errors at each phase of compiler. **(5.5)**

Q7. a) Describe various data structures of symbol tables in detail. **(5.5)**

b) What are the different storage allocation strategies in the runtime environment of the compiler? Explain. **(7)**

UNIT-IV

Q8. a) What is code generation? Explain various issues of Code Generation. **(6.5)**

b) Briefly explaina) code generation from DAGs b) Value number and algebraic laws **(6)**

Q9. a) How Peep Hole Optimization is useful in Code Optimization& Code Generation phase. Explain briefly. **(5.5)**

b) What are basic blocks and Flow Graphs? Explain with the help of examples. **(7)**

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END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] JULY-2023

Paper Code: ETCS-310/312 **Subject: Artificial Intelligence**

Time: 3 Hours **Maximum Marks :75**

Note: Attempt five questions in all including Qno. 1 which is compulsory. Select one question from each unit.

Q1 Attempt **any Five** **(5x5=25)**

(a) What is an intelligent agent? Explain different categories of intelligent agents.
(b) Differentiate between uninformed and informed search algorithms.
(c) What is morpheme? What is its importance in the language?
(d) Explain Turing Test.
(e) Justify the need for computable functions and predicates in logic.
(f) Explain AI Techniques –search and abstraction.
(g) Explain Decision tree learning with example.

Unit – I

Q2 (a) What are the problems of Hill climbing? In what ways they can be dealt with? **(6)**

(b) Explain the Constraint Satisfaction algorithm. Trace the Constraint Satisfaction procedure solving the following crypto arithmetic problem. **(6.5)**

```
  SOME
  TIME
 SPENT
```

Q3 (a) Write and explain A* algorithm. Is A* algorithm guaranteed to find an optimal goal path if one exists? Explain by giving examples. **(6)**

(b) Solve the 8 puzzle problem using hill climbing. **(6.5)**

Start:

1	2	3
8	5	6
4	7	

Goal:

1	2	3
4	5	6
7	8	

Unit – II

Q4 (a) Explain the inference rules in propositional logic. Explain the rules to unify two predicates. **(6)**

(b) Assume that "Mr. Jane is neither hardworking nor intelligent". Using resolution to prove that Mr. Jane does not get a job. **(6.5)**

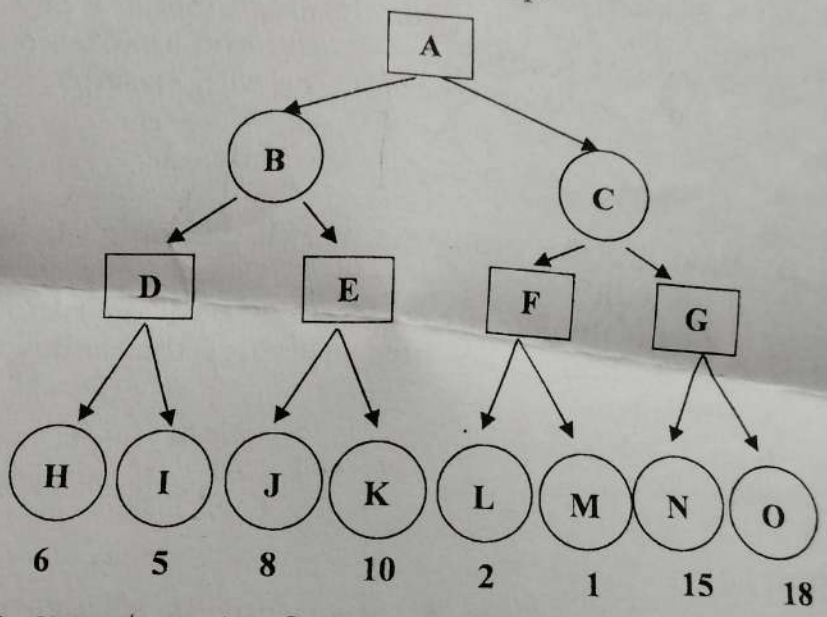
P.T.O.

Q5 (a) Assume the following facts :-
(i) Steve only likes easy courses.
(ii) Science course are hard
(iii) All the courses in the bioscience department are easy.
(iv) BE391 is a bioscience course.
Use resolution to answer the question, "What course would Steve like? (6)

(b) Distinguish between Forward Chaining and backward chaining using examples. (6.5)

Unit – III

Q6 (a) Explain Minmax algorithm for game tree. Is the minimax procedure a depth-first or breadth first search procedure? Solve the following with alpha beta pruning. Explain each step. (6)



(b) What is an expert system? Describe various components of an expert system. Mention some advantages. (6.5)

Q7 (a) Explain Different methods of theorem proving. (6)

(b) Explain Natural Language processing (NLP) and its analysis techniques. Discuss some applications of NLP. (6.5)

Unit – IV

Q8 (a) What are the different applications of Artificial Intelligence? (6)

(b) Explain the learning process in Artificial Neural Networks (ANN) and Genetic Algorithms (GA). (6.5)

Q9 (a) Explain inductive learning. How it is different from deductive learning. (6)

(b) What are the different applications of Artificial Intelligence? (6.5)

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