National Institute of Technology Agartala
Computer Science & Engineering Department
B.Tech 6th Semester Mid Term Examination- 2024
Name of Subject: Computer Networks
Paper Code:Paper Code: UCS06B26/UCS06B30

Full Marks: 20   **Time: 1 Hour**

The figures in the margin indicate full marks for the questions

GROUP A

[2 + 2 = 4]

1. What is a Gateway? How is it different from a Bridge?

2. What are the number of cable links required for 10 devices connected in mesh and bus topology?

GROUP B

[2 X 4 = 8]

3. Sketch the Manchester and differential Manchester encoding for the bit stream:

   00011101.

4. Calculate the time taken to send a file of 2 Mb from node A to B over circuit switching that uses 8 slots with a bit rate of 1000 Mbps provided circuit setup time is 18 milliseconds.

5. Which layer is called the 'Heart of OSI'? What are the responsibilities of this layer?

6. What are the drawbacks of Fixed Size framing and how it can be resolved?
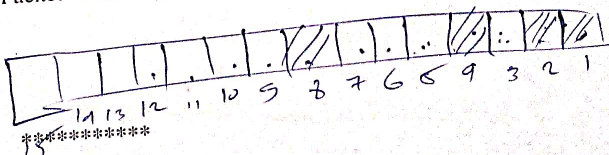
GROUP C

[4 X 2 = 8]

7. Using Hamming code, identify the error in the transmission 10101101110 where data and parity bits both are sent.

[1+2+1]

8. A) Define Burst Error.

   B) Mention two advantages of Packet Switching.

   C) What is Token?

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B. Tech. 6th Semester MID Term Examination-2024
S(06)(UCS06B01/B24/B28/C01)CSE
Subject: ARTIFICIAL INTELLIGENCE
(Paper Code: UCS06B01/B24/B28/C01)

Time: 1 hours

Maximum Marks: 20

This exam contains 2 pages (including this page) and 10 problems.

[Section A]

This section comprises of questions to deal with the theoretical knowledge of the subject.

1. The output of a problem-solving algorithm is either failure or a solution, also some algorithms might get stuck in an infinite loop and never return an output even though the solution exists. Under the above mentioned context, name the attributes to measure or evaluate the performance of a problem-solving algorithm. [1 marks]

2. A problem consists of four parts: the initial state, a set of ___actions___, a goal test function, and a ___path cost___ function. The environment of the problem is represented by a state space. A path through the ___state space___ from the initial state to a goal state is a solution. [1 marks]

3. Derive the Modus Tollens rule using a truth table. [1 marks]

4. Use a truth table to show that $(\delta \to \beta) \equiv (\sim \delta \vee \beta)$ is valid. [1 marks]

[Section B]

This section comprises of questions to identify the numerical know how in AI and problem solving ability.

5. Write the following proposition in conjunctive normal form: $P \vee Q \to R \wedge (R \to P)$ [2 marks]

6. Translate the following English sentences in to FOPL. Use relevant atomic symbols and appropriate quantifier. [2 marks]

   a. There can't be two different objects at the same vertex at the same time.
   b. There is exactly two purple mushroom in the world.

7. Consider the following sentence.
   a) Anyone passing AI exams and winning the lottery is happy.
   b) But anyone who studies or is lucky can pass all his exams.
   c) Kapil did not study but is lucky.
   d) Anyone who is lucky wins the lottery. [2 marks]
   Show that Kapil is happy using forward chaining method.

8. Draw the schematic of Goal Based Agents and Utility-Based Agents and explain in short. [2 marks]

[Section C]

This section comprises of short answer type questions, including all chapters of syllabus, AI General knowledge and AI current affairs and logical thinking.

9. Let us assume that the environment is fully observable and deterministic and that the agent knows what the effects of each action are. Therefore, the agent can calculate exactly which state results from any sequence of actions and always knows which state it is in. On the contrary if the percepts provide no new information after each action then the knowledge of the states or actions is incomplete. Explain how this incompleteness lead to the following distinct problem types as

i) Sensorless problems or conformant problems
ii) Contingency problems
iii) Adversarial Problem
iv) Exploration problems

[4 marks]

10. a) Considering the CLIPS system, write with an expression how to retract more than one fact from fact base within rules by binding them to variables.
b)Illustrate with a brief example the insertion of fact and firing rules which will insert a new fact in CLIPS.

[4 marks]

This is for the student's reference

Question:	1	2	3	4	5	6	7	8	9	10	Total
Marks:	1	1	1	1	2	2	2	2	4	4	20
Score:											

B. Tech. 6th Semester Mid Term Examination 2024
Management And Managerial Economics
UCS06C05/C06

Full Mark: 20

Time: 1Hour

The figures in the margin indicate full marks for the questions

Answer all the questions:

Group A

1. Define Break Even Analysis.   (2)

2. Define Market. Mention any two objectives of Market.   (2)

Group B

3. Discuss the behavior of fixed cost and variable cost in respect of volume of output.   (4)

4. How market can be classified on the basis of degree of competition? What is the shape of MR curve in Perfect Competition?   (4)

Group C

5. a)   Sales Volume: 12,000 units

              Variable Cost per unit Rs.10

              Selling price per unit Rs.20

              Fixed Cost Rs. 1,00,000

      Calculate: (i) Profit Volume Ratio and (ii) Break Even point (iii) Margin of safety

   b) Discuss the long run equilibrium of firm under Perfect Competition.   (4+4=8)

B.TECH / M.TECH / M.SC.....6ᵗʰ.....SEMESTER, ...MID......TERM EXAMINATION..2024

UCS06E01

NAME OF SUBJECT :
CODE NO:

Computer & Network Security
UCS06E01

[for both NITA & IIIT students]

Full Marks :20

Time:1 Hrs

Section – A

Attempt any Three parts

3 * 1 = 3

1. Define Risk.
2. Name one significant difference between a threat and a vulnerability.
3. Contrast a stream cipher to a block cipher?
4. What is the difference between a "virus" and a "worm"?

Section – B

Attempt any Three parts

3 * 3 = 9

5. Illustrate few major Security Threats on Information Systems.
6. Do we typically apply HMAC to symmetric or asymmetric cryptographic statements to protect integrity and provide authenticity? Why?
7. Why Digital certificates are revoked? Explain with example.
8. How do the vulnerabilities manifest?

Section – C

Attempt any One parts

1 * 8 = 8

9. Explain in details the Threat Modelling Process related to an organization.
10. What is a one- way hash function? Explain in details the working principle of SHA-512 with suitable diagram.

S₄ (UCS06B29): CSE

NIT Agartala, Dept of CSE
B Tech 6th Semester Mid-Term Examination, 2024
COMPILER DESIGN (UCS06B29)
The figures in the margin indicate full marks

Max marks 20

Time 1 hour

1. a) In which of the phase of the compiler design the characters are grouped into tokens?
b) The bottom-up parsing method is also called _____ parsing.
c) Which of the following are Lexemes?
i) Identifiers
ii) Constants
iii) Keywords
iv) All of the mentioned
d) Which of the following class of statement usually produces no executable code when compiled?
i) Assignment statement
ii) Structural statements
iii) Input and output statements
iv) Declaration statement

[1+1+ 1+1]=4

2. a) Consider the following 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) i) Design a FA from given regular expression $10 \mid (0 \mid 11)0^* 1$
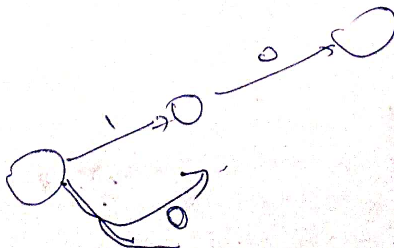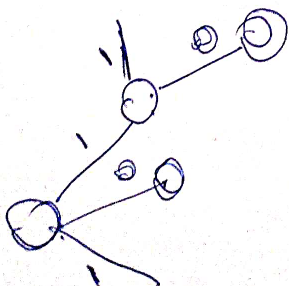ii) Define term, factor and expression used in context free grammar.

[(2+2) + (2+2)]=8

3. a) Define with example sentence and sentential form in language L(G) generated by a grammar G.
b) Define a handle in derivation from a grammar.
How does the handle specify the grammar is ambiguous or not.

[(2+2) + (2+2)]=8

S₆ (UCS06B31) CSE

B. Tech. 6th Semester Mid-Term Examination 2024
National Institute of Technology Agartala
Department of Computer Science and Engineering
Software Engineering
UCS06B31

Full Marks: 20

Time: 1 hour

[The figures in the margin indicate full marks for the question]
All Questions are Compulsory.

PART – A   (4 X 1 mark = 4 marks)

1. Define software engineering.
2. What is the V model?
3. What are the different phases of the classical waterfall model?
4. List different metrics for project estimation.

PART – B   (4 X 2 marks = 8 marks)

5. Compare software and program.
6. Why exploratory program development style was important?
7. "Prototyping model cannot be used for all types of risks"-Justify this statement.
8. Why a project manager must have the required skills?

PART – C   (2 X 4 marks = 8 marks)

9. What are the differences between the spiral model and evolutionary model? Why spiral model is called as the meta model?
10. Discuss a Software Project Management Plan (SPMP) document for a real-life use case.