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THINK MERIT | THINK TRANSPARENCY | THINK SASTRA



School of Computing
First CIA Exam - Aug 2024
Course Code: MGTN133
Course Name: Business Strategy
Duration: 90 minutes Max Marks: 50

PART A $10 \times 2 = 20$ marks

Answer all the questions

Q.no	Questions
1	What is the scope of strategic management?
2	List out at least two limitations of the concept of strategy.
3	What are the possible pitfalls in not having a vision for an organization?
4	Illustrate the problems can an imprecise and unclear mission create for an organization.
5	Relate the characteristics of objectives.
6	What is meant by "strategic intent"?
7	Compare and contrast general with relevant environment.
8	What aspects does environmental appraisal deal with?
9	Summarize the points need to be kept in mind while using a particular source of environmental information?
10	Outline the strategists-related factors affect environmental appraisal?

PART B $3 \times 10 = 30$ marks

Answer all the questions

Q.No	Questions
1	Explain the process of strategic management. Draw a neat chart showing comprehensively the different elements in the strategic management process.
2	Discuss the different aspects of environmental scanning necessary for identifying opportunities and threats in a company's environment.
3	Select any organization of your choice. Identify the high priority environmental factors in its relevant environment. Use this information to prepare a summary ETOP for the organization.



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Course Name: Business Strategy
Duration: 90 minutes Max Marks: 50

**School of Computing
Second CIA Exam – Sep 2024**

Course Code: MGTN133

Course Name: Business Strategy

Duration: 90 minutes Max Marks: 50

Part – A $10 \times 2 = 20$ marks

Answer all questions

Q.no	Questions
1	Define Business level strategy.
2	What are the advantages of low-cost strategy?
3	How do companies craft strategic business unit level strategies based on customer needs?
4	Explain the terms: (a) Competitive advantage (b) Competitive scope.
5	Compare and contrast broad target with narrow target in the context of competitive scope.
6	Define “Value-chain”.
7	Illustrate the term “Strategic group” with suitable examples.
8	In what way is the concept of life cycle helpful in making strategic choice at the business-level?
9	Relate the concept of corporate strategy.
10	Outline the conditions under which the following strategy is adopted: (a) Stability (b) Combination

PART B $3 \times 10 = 30$ marks

Answer all the questions

Q. No	Questions
11	Using Porter's five force model, analyze the competitive environment and suggest strategies need to be implemented.
12	Elaborate the different types of strategies under stability, expansion, retrenchment and combination corporate-level strategies. Quote examples to each these strategies.

13

Tesla entered the electric vehicle (EV) industry, during the introduction phase of the industry life cycle, when there were few players and electric vehicles were still considered niche products. Tesla chose to employ a Focus Differentiation strategy by targeting a small, high-end segment of the market: luxury electric cars for environmentally conscious and tech-savvy consumers. As the industry matured into the growth phase, Tesla expanded its product line with the more affordable Model 3, aiming to compete with traditional car manufacturers. While continuing to differentiate its products through innovation and sustainability, Tesla has also pursued Cost Leadership strategies by investing in battery technology and large-scale manufacturing (e.g., Gigafactories) to lower production costs. Tesla's use of both Differentiation and Cost Leadership strategies at different phases of the industry life cycle has allowed it to grow from a niche player to a mainstream competitor in the automotive industry.

Questions:

1. In which phase of the industry life cycle did Tesla initially adopt a Focus Differentiation strategy, and why was this strategy effective at that time?
2. How did Tesla adapt its strategy as the EV industry moved from the introduction phase to the growth phase?
3. What challenges might Tesla face as the EV industry moves into the maturity phase, and how could it adjust its strategy?
4. Can all companies successfully apply a dual strategy of Differentiation and Cost Leadership as Tesla did? Why or why not?



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School of Computing

Third CIA Exam – Nov 2024

Course Code: MGTN133

Course Name: Business Strategy

Duration: 90 minutes Max Marks: 50

PART A $10 \times 2 = 20$ marks

Answer all the questions

Q.no	Questions
1	What are some common challenges organizations face in the strategic management process?
2	How do firms decide which international markets to enter?
3	List out the two factors that help to classify the international strategies.
4	What are the reasons for using strategic alliances?
5	Under what conditions are joint ventures created?
6	Relate the limitations of “Cash Cow” in BCG matrix.
7	What are some practical steps an organization can take to implement the 7S Framework effectively?
8	Infer the potential limitations of using the McKinsey Framework for portfolio analysis.
9	How can strategic control help in resource allocation?
10	Compare and contrast strategic control with operational control.

PART B $3 \times 10 = 30$ marks

Answer all the questions

Q.No	Questions
11	Elaborate BCG matrix along with its components. List out the pros and cons of it.
12	Discuss the Porter's approach to defining generic competitive strategies.
13	Describe the various types of strategic control. Elaborate the evaluation process of operational control.

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End Semester Examinations

Nov 2024

Course Code: MGT133

Course: BUSINESS STRATEGY

QP No. :U317-5

Duration: 3 hours

Max. Marks:100

PART - A

Answer all the questions

$10 \times 2 = 20$ Marks

1. What is the concept of strategy?
2. Define the term “strategic intent”.
3. Outline the role of objectives in strategic management.
4. Compare and contrast general and relevant environment.
5. What are the pitfalls in using environmental scanning?
6. Infer low-cost focus strategy with example.
7. Summarize the barriers to entry in Porter’s five force model.
8. List the advantages of cost-leadership strategy.
9. Compare the backward and forward integration.
10. Relate the reasons for using “Strategic alliance”.

PART – B

Answer any Four questions

4 x 15 = 60 Marks

11. Explain the process of strategic management. Draw a neat chart showing comprehensively the different elements in the strategic management process.
12. Appraise the different aspects of environmental scanning necessary for identifying opportunities and threats in a company's environment.
13. Discuss Michael Porter's five force model and his approach to defining generic competitive strategies.
14. Determine the major concerns of functional level strategy. Show the significance of each functional area's plans and policies for strategy implementation.
15. Categorize the types of corporate level strategies with suitable examples.
16. Analyze the concept of BCG and GE matrix. Explain how it is applied in framing a corporate portfolio.

PART – C

Answer the following

1 x 20 = 20 Marks

17. Assume yourself as a business consultant; you are requested to do the following for an automobile manufacturing company.
 - a) Design SWOT analysis
 - b) Propose the strategies need to be implemented based on industry life cycle.
 - c) Formulate a suitable strategic control system.



PART – A

ANSWER ALL THE QUESTIONS

10 X 2 = 20 Marks

1. A lexical analyzer uses the following patterns to recognize three tokens T_1 , T_2 and T_3 over the alphabet {a, b, c}.

$T_1: a?(b|c)*a$

$T_2: b?(a|c)*b$

$T_3: c?(b|a)*c$

If the string "baabbcccab" is processes by the analyzer, what will be the sequence of tokens it produces?

2. Consider the following segment of python program,

float n

numbers = [11, 12, 13]

for n in numbers:

 print("{n} is a number")

Specify the tokens recognized by the Lexical Analyser during scanning.

3. Given the Expression grammar of a recent high-level programming language,

$E \rightarrow E * F \mid F + E \mid F$

$F \rightarrow F - F \mid id$

Find the precedence of operators with respect to the Grammar.

4. Consider the grammar

$E \rightarrow E + n \mid E * n \mid n.$

For a sentence $n + n * n$, identify the "handles" in the right-sentential form of the reduction technique?

5. Build the derivation tree for the string ((a, a), a) based on the following Context Free grammar

$S \rightarrow (L) \mid a$

$L \rightarrow L, S \mid S$

6. Illustrate the process of eliminating the Left Recursion from the given grammar:

$A \rightarrow ABb \mid Bb \mid a$

$B \rightarrow Bc \mid Acc \mid b$



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School of Computing

First CIA Exam – Aug 2024

Course Code: CSE320

Course Name: Compiler Design

Duration: 90 minutes

Max Marks: 50

7. Write the LEX specification to recognize the string w described as:
 - w begins and ends with digit. $|w|$ between 8 and 12 characters.
 - w contains atleast one Upper case letter and a special character (either # or @) in the middle.
8. Augment a Context Free Grammar to represent the syntactical correctness of while and do-while statement in C++.
9. Compare the behaviour of the Compiler and Interpreter upon detecting any error in the Source program during the translation.
10. Consider the language of all strings over {a, b, c} containing the substring "abcabb". Write a regular expression that describing this language.

PART – B

ANSWER ALL THE QUESTIONS

3 X 10 = 30 Marks

11. Construct a LL(1) Parsing Table for the given Context Free Grammar.

A → (B) | a

B → B , A | A

12. Design a Lexical Analyser Generator to recognize the patterns in the following LEX specification.

%%

aba {action sequence A₁ for pattern P₁}

ab*b {action sequence A₂ for pattern P₂}

b+a+ {action sequence A₃ for pattern P₃}

%%

int main ()

{ yylex();

return 0; }

int yywrap()

{ return 1; }

13. Show how the Deterministic Finite Automator is converted directly from an augmented regular expression $r=(0|1)^*(0|1)$

--- END---



SCHOOL OF COMPUTING
Second CIA Exam – Sep 2024
Course Code: CSE320
Course Name: Compiler Design
Duration: 90minutes Max. Marks: 50

PART A

ANSWER ALL THE QUESTIONS

10 MARKS

1. Consider the grammar $S \rightarrow aSbS \mid bSaS \mid \epsilon$. Show that the grammar is ambiguous for the string abab. (2)
2. What are the Inherited and Synthesized attributes. (2)
3. Write the significance of Augmented Grammar. (2)
4. What conflicts do LR parsers handle during syntax analysis? (2)
5. Illustrate the Three-Address Code (TAC) for the following Python procedure call statement
jump(x+y,n) (2)

PART B

ANSWER ALL THE QUESTIONS

25 MARKS

6. (a) Construct LALR Parsing table for the following grammar.

$$S \rightarrow Aa \mid bAc \mid Bc \mid bBa$$

$$A \rightarrow d$$

$$B \rightarrow a$$

(10)

OR

- (b) Construct CLR Parsing table for the following grammar

$$S \rightarrow (L) \mid id$$

$$L \rightarrow L^* S \mid S.$$

Also parse the input string (id*id*id). (10)

- (a) Check whether the given context free grammar is SLR (1) Grammar or not.

$$A \rightarrow B^* C \mid C$$

$$B \rightarrow *C \mid num$$

$$C \rightarrow B$$

(10)

OR

(b) Translate the given Boolean expression

$$(a < (c+d)) \&\& ((-(a+b)*(a+b)-(a+b)*d) >= MAX)$$

into the sequence of TAC Statements and represent with Quadruples,
Triples and Indirect Triples. (10)

8.(a) Specify the various levels of Errors in programming paradigm.
Discuss about the Error Recovery strategies adopted by the Parsers
when transforming a code into a parse tree. (5)

OR

(b) Show the Stack implementation of Shift Reduce Parser to validate
the string $(id+id)^*id$ from the grammar

$$E \rightarrow E + T \mid T$$

$$T \rightarrow T * id \mid (E) \mid id$$

(5)

PART C

ANSWER ALL THE QUESTION

15 MARKS

9. Write a LEX and YACC specification to evaluate the given expression involving only arithmetic operators in C++. Use the LEX code to validate the numbers and identifiers in the given input. With YACC, augment a context free grammar to validate the syntactical correctness of the expression then define the syntax directed translation rules to evaluate the resultant value of the given arithmetic expression. [note: Evaluation should be made as per the Rule of Precedence and Rule of associativity of Arithmetic operators defined in C++]. (15)

--- END ---

PART A

10 MARKS

ANSWER ALL THE QUESTIONS

1. What do you understand from the code generated by a Cross Compiler. (2)
2. Give the structure of an activation record. (2)
3. When does dangling reference occur? (2)
4. Discuss the properties of an optimizing compilers. (2)
5. For the given expression, write the TAC statements and build DAG for the sequence. $d = (a-b) + (a-c) + (a-c)$. (2)

PART B

25 MARKS

ANSWER ALL THE QUESTIONS

6. (a) Construct CLR Parsing table for the following grammar and parse the input string "abde".

$A \rightarrow aB \mid Ad$

$B \rightarrow bBC \mid d$

$C \rightarrow e$

(10)

OR

- (b) Show how the minimized DFA is obtained directly from an augmented regular expression $r = (0|1)^* (0|1)$ (10)

7. (a) Write the Syntax directed translation scheme to generate the TAC statement for flow of control statements in C++. Illustrate your SDT with the following snippet of code

```
res[i][j] = mergeArrays (arr1, arr2);
```

```
for (int i = 0; i < n1 + n2; i++)
```

```
printArray (res[i][i+2]);
```

(10)

OR

- (b) (i) Elaborate the issues in the design of code generator. (5)
(ii) Write short notes on register allocation and register assignment during code generation phase. (5)

8.(a) Explain in detail the various transformations used in peephole optimization to improve the efficiency of target code. (5)

OR

(b) Describe the various Storage allocation strategies used to manage the Run-time memory allocated for the program. (5)

PART C

15 MARKS

ANSWER ALL THE QUESTION

9. Examine the sequence of Three Address Code statements given below and perform the following tasks.

(1) $i := m - 1$	(16) $t_7 := 4 * i$
(2) $j := n$	(17) $t_8 := 4 * j$
(3) $t_1 := 4 * n$	(18) $t_9 := a[t_8]$
(4) $v := a[t_1]$	(19) $a[t_7] := t_9$
(5) $i := i + 1$	(20) $t_{10} := 4 * j$
(6) $t_2 := 4 * i$	(21) $a[t_{10}] := x$
(7) $\underline{t_3 := a[t_2]}$	(22) goto (5)
(8) $\text{if } t_3 < v \text{ goto (5)}$	(23) $t_{11} := 4 * i$
(9) $j := j - 1$	(24) $x := a[t_{11}]$
(10) $\underline{t_4 := 4 * j}$	(25) $t_{12} := 4 * i$
(11) $\underline{t_5 := a[t_4]}$	(26) $t_{13} := 4 * n$
(12) $\text{if } t_5 > v \text{ goto (9)}$	(27) $t_{14} := a[t_{13}]$
(13) $\text{if } i \geq j \text{ goto (23)}$	(28) $a[t_{12}] := t_{14}$
(14) $t_6 := 4 * i$	(29) $t_{15} := 4 * n$
(15) $x := a[t_6]$	(30) $a[t_{15}] := x$

- (a) The Basic blocks of Instructions. (3)
- (b) Construct a flowgraph, specify the loops. (3)
- (c) For each variable, record its next-use and liveness at the end of each basic block. (3)
- (d) Apply the code improving transformations wherever possible and generate the optimized TAC sequence. (6)

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End Semester Examinations

Nov 2024

Course Code: CSE320

Course: COMPILER DESIGN

QP No. :U127-5

Duration: 3 hours

Max. Marks:100

PART - A

Answer all the question

$10 \times 2 = 20$ Marks

1. Define Cross compiler.
2. Write a regular expression to represent all possible numbers (integer, float, exponential).
3. How and why input buffering is occurring?
4. Prove that the given grammar $S \rightarrow aSbS \mid bSaS \mid \epsilon$ is ambiguous.
5. Write the Context free grammar for conditional statements in C++.
6. Give the structure of an activation record.
7. Write down the SDD for the design of simple desk calculator.
8. How is the liveness of the variable is calculated by the compiler?
9. Draw the Syntax tree and DAG for the expression $a=b^* -c + b^* -c$.
10. Can DAG be used for Optimization? Give Example.

PART - B

Answer all the question

4 x 15 = 60 Marks

11. Elaborate on the different phases of compiler with a neat sketch. Show the output of each phase of the compiler when the following statement is passed as an input:
 $SI = (p * n * r) / 100;$ where n should be an integer, p and r could be floating point numbers.

(OR)

12. Explain step by step procedure of constructing a minimized DFA directly from the given regular expression. Illustrate your procedure with the following regular expression $(a|b)^*a(a|b)$.

13. Check whether the following grammar can be implemented using a LL (1) parser. Also show the validation of the input string "ia<btd" by using the predictive parser.

S → iEtS | iEtSeS |d
E → id R id
R → < | >

(OR)

14. Construct LALR Parsing table for the following context free grammar. Parse the input string $(id+id)^*id$ is accepted by the LALR parser or not.

S → S + R | R
R → R * T | T
T → (S) | id

15. a) Write short notes on the various storage allocation strategies used by Run-Time memory management system during the translation and execution process. (9)
- b) Discuss about the Error Recovery strategies adopted by the Parser and Error handler when transforming a code from the token stream to parse tree. (6)

(OR)

16. Define TAC Statement. Specify the different type of TAC Statements. Transform the following Boolean expression $((-(a+b)*(a+b)-(a+b)*d)>MAX)$ into the sequence of Three Address Code Statements and also represent the sequence with Quadruples, Triples and Indirect Triples structure.

17. a) Write notes on the various issues in the design of Code Generation phase during Compilation process. (8)
- b) What are the characteristics of Peephole? Explain the transformations that can be performed on a Peephole window. (7)

(OR)

18. Translate the following snippet of PYTHON code into a sequence of Three Address Code Statements based on the Syntax Directed Translation schemes. Convert the sequence into a flow graph representing the flow of control between different basic blocks.

```
c=0
while((x+y)<=MAX-1):
    sum = sum + c
    if (x>0 && x<10):
        c=c+sum
        display(c)
    c=c+10
display(sum)
```

PART - C

Answer the following

1 x 20 = 20 Marks

19. a) An online shopping site has set up the following criteria for setting the password for viewing their products and its features:
- i) Password should be 5 to 8 characters long using alphabets and numerals.
 - ii) It should start with an alphabet.
 - iii) Two special symbols (%) and (#) are permitted.
 - iv) The last character should be a capital letter.

Write the LEX specification to validate the password given by the user of the site. (5)

- b) Consider the following sequence of TAC statements in a Basic Block, in which all variables are integers and ** denotes exponentiation operation.

$a=x^{**}2$

$b=3$

$c=x$

$d=c*c$

$e=b^{**}2$

$f=a+d$

$g=e*f$

Apply the following optimization techniques to the above basic block in order to compute the result of each transformation. (10)

- i) Algebraic simplification
 - ii) Copy propagation
 - iii) Common Sub expression elimination
 - iv) Constant folding
 - v) Specify the Nextuse information for every statement.
- c) Generate the target assembly code for the optimized code. (5)



PART A (10 MARKS)

Q1. Imagine you are a design thinking consultant. The Managing Director of the Cherrydrop Group of Companies approaches you with an issue. Cherrydrop is a popular brand that manufactures biscuits, cakes, and chocolates. For the past six months, they haven't been doing so well. A number of staff have resigned from the company and the profit margin has dropped low. Draft close-ended and open-ended questions (10 each) to interact with your target group and know their needs / problems.

PART B (20 MARKS)

Q2. Create four insight capture grids for the situation given in Q1.

PART C (20 MARKS)

Q3. Formulate FOUR feasible and innovative human-centric solutions to the following case study by applying DT principles.

Imagine you are part of a management consultancy that operates on the principles of Design Thinking. You are approached by the Dean of Students' Welfare of XYZ University. He wants to promote unity and self-discipline amidst students. He also wants the students to crack through the campus interviews and make bright endeavors in life.

or

Imagine you are a DT consultant. The Director of the SWATHMA group of restaurants consults you to solve their problems. Their restaurants, which were at the top of the scale, are now facing major losses. The number of customers seem to be dwindling although they offer quality food. Their branches are located in the city and are close to theatres, malls, schools, colleges, and supermarkets. Yet, some of their branches are facing a huge problem. They are thinking of shutting them down. They approach you as a last resort to see if you can help them out.



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School of Computing

II CIA Exam – SEP. 2024

Course Code: ENG315

Course Name: Design Thinking

Duration: 90 minutes

Max Marks: 50

PART A (20 Marks)

Q1. Draft 10 HMW (How Might We) questions for the following Point of View Statements:

a) “*Lalitha, who is going to get married in Dec 2024, wants jewels which are traditional as well as modern to suit different festive occasions apart from wearing them on her wedding day.*

b) “*Vinod, an ambitious football player, wants a pair of comfortable sports shoes to minimize the chances of slipping down while running fast on the football ground.”*

PART B (30 Marks)

Q2. Imagine you are part of a management consultancy that operates on the principles of Design Thinking. You are approached by the XYZ Tea estate owner. The workers of his tea estate are late to work daily. They frequently go on strike for simple reasons. Apart from this, there is lack of unity amidst them. The estate owner wants to promote unity and self-discipline amidst his tea estate workers and increase their productivity level. Try to ideate using the Story Telling Strategy prescribed in DT. Use PIXAR Story Telling Rules for ideating here.



School of Computing
III CIA Exam – NOV. 2024
Course Code: ENG315
Course Name: Design Thinking
Duration: 90 minutes
Max Marks: 50

PART A (30 Marks)

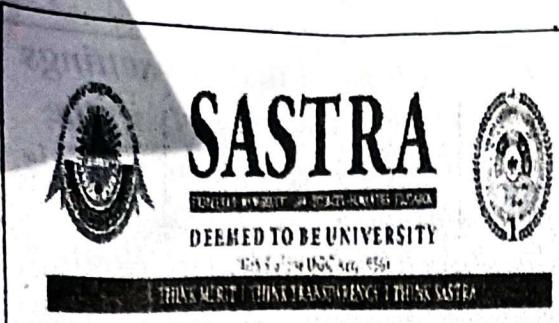
Q1. Imagine that you are part of a management consultancy that operates on the principles of Design Thinking. You are approached by the Director of Schema Textile Industries Pvt. Ltd. The Director wants to improve the customer services, and manufacture new and trendy fabrics to design dresses for college students. Your help is sought in this regard. You have completed the empathizing and defining phase. Use 6 Hats Technique and ideate.

PART B (20 Marks)

Q2. Ideate for the following HMW questions:

- 1. HMW design and manufacture light-weight, trendy, nifty and stylish spectacle frames so that the youngsters can wear them comfortably during all occasions without looking old-fashioned & out-moded?*

- 2. HMW design and manufacture light-weight, scratch & water proof, low-priced, classy, durable and handy spectacle frames so that the elderly customers can wear them comfortably during all occasions without looking old-fashioned & out-moded?*



School of Computing
First CIA Test – August 2024
Course Code: MGT 132
Course Name: FUNDAMENTALS OF
MANAGEMENT FOR ENGINEERS
Duration: 90 minutes

Max Marks: 50

PART A
Answer all the Questions

10 x 2 = 20 Marks

1. Why to study Management- justify
2. Management is multidisciplinary in nature –How? Justify.
3. Policy formulation is a function of top-level managers-Justify and comment
4. Replacing rule of thumb with science in management – How? Explain ?
5. Brief on the features of Modern organizational design theory
6. Distinguish theory X and Y with examples
7. Enumerate the importance of Hawthorne experiment in management history
8. In today's environment, explain which is more important to organizations—efficiency or effectiveness.
9. Weber's bureaucracy was the best-known means to achieve 'imperative control' over human beings-comment
10. State any two arguments for& against the social responsibility in business

PART B

3 x 10=30 Marks

Answer all the Questions

11. Critically examine the contributions of Henry Fayol's 14 Principles of Management in detail and explain their application in the contemporary era.
12. Distinguish classical and neo classical theory of organization .Describe any two classical theory or approach of management and its suitability for the contemporary era
13. *The workplace of tomorrow is likely to include workers that are faster, smarter, more responsible—and who just happen to be robots. -Are you at all surprised by this statement?*

Although robots have been used in factory and industrial settings for a long time, it's becoming more common to find robots in the office, and it's bringing about new ways of looking at how work is done and at what and how managers manage.

As machines have become smarter, researchers have been looking at human-machine interaction and how people interact with the smart devices that are now such an integral part of our professional and personal lives. One conclusion is that people find it easy to bond with a robot, even one that doesn't look or sound anything like a real person. In a workplace setting, if a robot moves around in a "purposeful way," people tend to view it, in some ways, as a co-worker. People name their robots and can even describe the robot's moods and tendencies. As telepresence robots become more common, the humanness becomes even more evident. For example, when Erwin Deininger, the electrical engineer at Reimers Electra Steam, a small company in Clear Brook, Virginia, moved to the Dominican Republic when his wife's job transferred her there, he was able to still be "present" at the company via his VGo robot. Now "robot" Deininger moves easily around the office and the shop floor, allowing the "real" Deininger to do his job just as if he were there in person. The company's president, satisfied with how the robot solution has worked out, has been surprised at how he acts around it, feeling at times that he's interacting with Deininger himself. There's no doubt that robot technology will continue to be incorporated into organizational settings. The manager's job will become even more exciting and challenging as humans and machines work together to accomplish an organization's goals.

Question

Describe the manager's role in managing both human and robot employees and describe the challenges in interactions between human, robot co-workers in a futuristic organization.



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School of Computing
Second CIA Test – September 2024

Course Code: MGT 132

Course Name: **FUNDAMENTALS OF
MANAGEMENT FOR ENGINEERS**

Duration: 90 minutes

Max Marks: 50

PART A

10 x 2 = 20 Marks

Answer all the Questions

1. Enumerate the features of the Matrix organizational structure.
2. Define organization and state the importance of organization.
3. Outline the key characteristics of Sigmund Freud's personality theory.
4. Enumerate the important features of social learning theory.
5. Explain the key characteristics and significance of perception.
6. Define Emotional Intelligence (EI) and state the importance of EI in the workplace.
7. Brief on the features of Attitude
8. Write a short note on learning styles.
9. Distinguish theory X and theory Y of motivation.
10. Write a short note on social loafing with examples.

PART B

3 x 10=30 Marks

Answer all the Questions

11. Describe the factors that influence the individual behavior in the organization.
12. Describe in detail the classical theory of learning and its applications.
13. Explain the Big Five Personality Theory and its relevance to leadership assessment. Suppose your company is recruiting for a leadership role, and you are responsible for evaluating candidates using the Big Five Personality Traits. How would you prioritize each of the five traits in terms of their importance for effective leadership? Also discuss how each trait contributes to leadership success and which ones you would emphasize most in the selection process.



School of Computing
Third CIA Test – November 2024
Course Code: MGT 132
Course Name: **FUNDAMENTALS OF
MANAGEMENT FOR ENGINEERS**
Duration: 90 minutes

Max Marks: 50

PART A $10 \times 2 = 20$ Marks

Answer all the Questions

1. Distinguish management and administration
2. State the key managerial roles given by Henry Mintzberg.
3. State Maslow's need hierarchy theory with examples.
4. Define bureaucracy
5. State the stages of the organizational lifecycle.
6. Brief on the three organizational control strategies?
7. Distinguish leader and manager.
8. Brief any two group decision-making techniques.
9. Brief on eustress with example
10. What is impression management?

PART B

$3 \times 10 = 30$ Marks

Answer all the Questions

11. Describe the stages of group formation with diagram.
12. Distinguish functional and dysfunctional conflict. Enumerate the strategies to resolve conflict
13. Distinguish organizational culture and organizational Climate. Suppose you have been tasked with improving the organizational culture of a company facing high employee turnover and low employee engagement. What key elements would you focus on to foster a positive and productive work environment? What factors would you consider most critical in shaping the organizational culture?

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End Semester Examinations

Nov 2024

Course Code: MGT132

**Course: FUNDAMENTALS OF MANAGEMENT FOR
ENGINEERS**

QP No. :U234-5

Duration: 3 hours

Max. Marks:100

PART - A

Answer all the questions

$10 \times 2 = 20$ Marks

1. Enumerate the primary focus of Elton Mayo's Hawthorne experiments.
2. State the significance of Corporate Social Responsibility (CSR) in modern businesses.
3. State the key dimensions and features of organizational design.
4. How does the neoclassical approach to organizational design differ from the classical approach?
5. State the main differences between intrinsic and extrinsic motivation with examples.
6. Write a short on the Delphi technique.
7. Differentiate between transactional leadership and transformational leadership.
8. Write a short on Group Think and Social Loafing.

9. Write a short on Eustress with an example.
10. Distinguish functional and dysfunctional conflict.

PART - B

Answer any FOUR questions

$4 \times 15 = 60$ Marks

11. Discuss the evolution of management theories and their relevance in today's business environment.
12. Describe the five functions of management and explain how each function contributes to achieving organizational goals.
13. Discuss the different types of contemporary organizational structures and analyze their strengths and weaknesses
14. Discuss the different theories of leadership. How can these theories and approaches be applied to other organizational scenarios to enhance leadership effectiveness?
15. Compare and contrast Abraham Maslow and Herzberg's theory of motivation with examples.
16. Discuss the elements of organizational culture and their influence on employee behavior.

PART - C

17. Answer the following

$1 \times 20 = 20$ Marks

Case Study:

Tata Group, one of India's largest and most respected conglomerates, is known for its ethical approach to business, employee welfare, and social responsibility. The group's culture has been deeply influenced by its founder, Jamshedji Tata, whose vision was to create an organization that balanced profitability with a

strong sense of social responsibility. The Tata Group's core values—integrity, commitment, excellence, pioneering, and unity—are ingrained in its culture and reflected in its business practices.

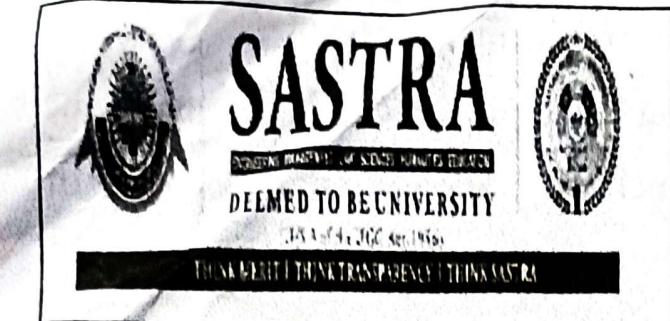
One of the notable examples of Tata's organizational culture is the company's approach to employee welfare. The group was one of the first in India to introduce pension schemes, maternity benefits, and medical facilities for its workers, which created a strong sense of loyalty and commitment among employees. This "people-first" culture is a cornerstone of Tata's organizational ethos.

In addition to its employee-centric policies, Tata's culture places a strong emphasis on ethical business practices. For instance, during the 2008 global recession, when many companies laid off workers to cut costs, Tata Group, under the leadership of Ratan Tata, decided to retain its workforce. The group believed that it had a moral responsibility to its employees, even during tough economic times. This decision, though financially challenging in the short term, helped the company build long-term trust and loyalty among its employees and stakeholders.

Furthermore, Tata Group's emphasis on corporate social responsibility (CSR) is a key part of its culture. Through initiatives like Tata Trusts, the group has contributed significantly to education, healthcare, and rural development in India, reinforcing its commitment to nation-building alongside business success.

Questions:

- a) How has Tata Group's commitment to employee welfare contributed to its organizational culture and long-term success?
- b) Discuss the role of ethical decision-making in shaping Tata Group's corporate identity and reputation, especially during economic downturns such as the global recession.



School of Computing
First CIA Exam – Aug 2024
Course Code: INT316
Course Name: Modern Web Applications
Duration: 90 minutes Max Marks: 50

PART A

Answer all the Questions

5 x 10 = 50

1. Define the following terms and specify its functionality:-

W3C, DNS, Frameset, Web Server, Static & Dynamic web application.

2. Write a HTML code and apply CSS to achieve the following:

- a) Transform the text to uppercase and change the text color while moving the mouse pointer on the text.
- b) Use inline style to change the inner space of `<h1>` element.
- c) Use an internal style for an element, to load an image as background and change text color.
- d) Design a table as given below:-

1	2
3	4

3. Your project manager has assigned you the task of creating a feedback form for a new client who runs an online e-commerce store. The form will be used to collect user feedback on various aspects of the website, such as design, ease of use, and overall user experience. Design a feedback form to collect

- **user information** : user's name, comments, email
 - **feedback categories** (allowing users to select more than one aspects of the site they liked, including: Site design, Links, Ease of use, Images, Source code)
 - Referral sources (asking user to select any of the following: Search engine, Links from another site, friends, other)
 - Site Rating: (allowing users to select rating values between 0 and 5)
 - **Submission:** A submit button that allows users to send their feedback.
4. Create an external CSS file and include any five CSS selectors to apply the styles on <div> tag. What will be the output for each selector?
 5. Write a JavaScript to get the learner's detail as follows: - Use prompt dialog to get Regno, Name and three subject marks. Compute the letter Grade as S, A, B, C, D and F. Display the learner detail on the browser using inline styles.



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**School of Computing
Second CIA Exam – Sep 2024**

Course Code: INT316

Course Name: Modern Web Applications

Duration: 90 minutes Max Marks: 50

PART A

Answer any Five Questions

$5 \times 10 = 50$

1. Write your answer for the following:
 - a) Create XML document: "I am passionate to develop modern web applications".
 - b) Write a JavaScript function to show your name for a button click.
 - c) How does a JavaScript function can be called using addEventListener? Give an example code.
 - d) Define XSLT. State its application.
2. Design a HTML form to swap the content of two text box using DOM: create two text box, a button and relevant labels using DOM and swap the content.
3. Write a JavaScript code to populate the employee id in the drop-down box. The employee ids should be between 1111 and 2222 and starts with '#' symbol. eg:- #1115
4. Create an XML document for the following: The root tag has three different types of child elements (element with child, element with text, element with text and child element). Include attributes with

ID, CDATA and NMTOKEN types. Validate your XML document using Document Type Definition.

5. (a) Brief about the role of Web Client and Web Server in the three tier architecture. (3)
- (b) Write a PHP code to store 'N' number of fruits using an array and find the location of a particular fruit in the array. The output should be shown on <h1> tag with color style. (7)
6. You are tasked with creating a simple web application that checks if a user-entered city exists in a predefined list of cities. A PHP script is used to process the form and return a message indicating whether the entered city is found or not. The list of cities can be created using array.



School of Computing
Third CIA Exam – Nov 2024
Course Code: INT316
Course Name: Modern Web Applications
Duration: 90 minutes Max Marks: 50

PART A

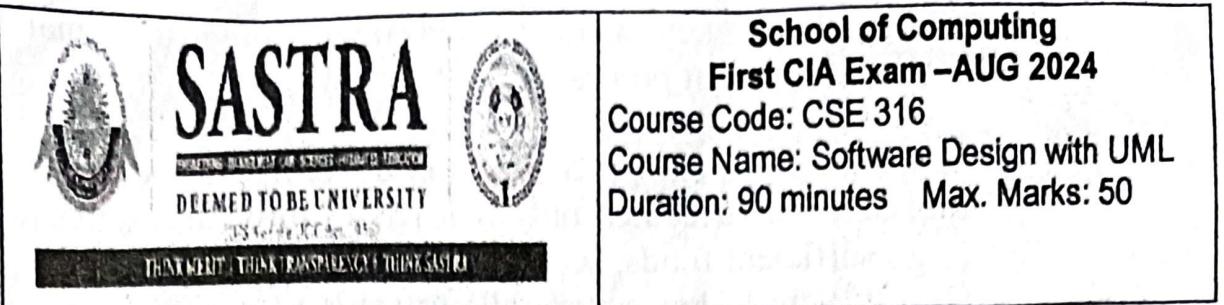
Answer any FIVE Questions

5 x 10 = 50

1. (a) How can you split the browser into two screens to show different web pages? Design HTML code.
(b) What are the types of CSS can be included for the HTML pages? Give an example code.
(c) Write a JavaScript function to find whether the given text is palindrome or not.
(d) Validate the following element using internal DTD:

```
<Participant participantId="P101"> <event Name="debugging" />
</Participant>
```
2. Design a HTML page with external CSS: Include table, unordered list, image, formatting and heading tags. Apply necessary styling attributes for the above mentioned tags and explore about online Programmes at SASTRA.
3. Write a client side script to validate the following fields available in the book issue form of Library system.
Book Id : should be 5 digits, starting with letter 'B'
Book Title: should be a string with minimum 5 characters and maximum 50 characters
Issue Date: should not be less than or greater than current date.
StudRegno: should start with 'BT' and followed by 4 digits. The number should be between 2000 and 4000
Stud Name: should not be blank and symbols not allowed.

4. Create an XML document to explore your personal and academic details. Associate your XML document with internal DTD. The XML document should have the following:
- Two child elements for the root element as <personal> and <academic>.
 - Explore the <personal> element with minimum two child elements and optional attributes.
 - The <academic> element posses <schooling>, <graduation> and <placement> child elements. Explore the elements with proper details.
 - Any one of the parent elements should carry an attribute with mandatory value.
5. Create a Database 'MyDB' with login and register table using MySQL. Design a Login form for the students, with username and password fields. Students can enter regno as username and mobileNo as password. Validate username and password using PHP. The valid students only can enter their regno, name, placedCompany, mobileNo and emailId in the registration page. Use sessions and include necessary validations taken place in the client side using JavaScript.
6. Imagine you are tasked with developing a modern web application to fulfil a client's business requirements. What technologies would you use to enhance the appearance, functionality, and interactivity of the application? Additionally, explain the roles of web browsers, web servers, and database management systems in the overall web development process.



PART A (5 × 10 = 50 Marks)

Answer all the questions

1. Anjali works at a technology firm where she's been assigned to lead a team to deliver an elaborate software program within a very tight schedule. At first, Anjali tries to coordinate with her associates and create her own model. But as the pressure mounts, her model crumbles and the entire team is rattled. Anjali spends a couple of days researching solutions and discovers the waterfall model. She goes through the waterfall model in detail and distributes the responsibilities for the project among several departments, based on the different phases of the model.
 - (i) When the Waterfall Model Used? (2 Marks)
 - (ii) At what situation, Waterfall Model is challenging one? (4 Marks)
 - (iii) How can the application of software engineering principles help the software development team? (4 Marks)
2. A software development team is tasked with building a new mobile app for a client. The team decides to follow an Agile process to deliver the app quickly and respond to changing requirements.
 - (i) Compare and contrast between any two software process models, and justify which model will be best applied to the software development team to build a new mobile app for a client in a quick time. (5 Marks)
 - (ii) List out the possible crisis Software Crisis faced by the developed team in building a new mobile app. (5 Marks)
3. Imagine you are working on a project to develop a new customer relationship management (CRM) system. Compare how you would approach the development using Booch, Jacobson, and Rumbaugh methodologies.
 - (i) What are the strengths and weaknesses of each methodology in this context? (5 Marks)

- (ii) Find the key artifacts and how would the final design development process differ? (5 M)
4. A banking system processes transactions and needs to ensure transaction is executed only if it passes through a series of validation (e.g., sufficient funds, account status, transaction limits).
(i) Which design pattern allows setting up a sequence of process elements? (3 M)
(ii) Provide a UML diagrammatic representation for the implementation for this scenario along with Use Case Diagram for the transaction process. (7 M)
5. At the start of each semester a student can request a prospectus containing a course list. Information about a course is provided, such as the tutor, department and prerequisites. The new system will allow students to create a schedule, then select four courses. Each student chooses two others in case their first choices become full or cancelled. No course can have more than 30 students.
No course can have less than 10 students or it will be cancelled. The system will be the same functionality as available to other internal users of the system. When registration is complete, the registration system sends a message to the payment system to send out a payment bill to the student.
Tutors use the system to find which course they are teaching as well as the students are. The registrar will administer the system.
For a period at the beginning of the semester the student can change their schedule. Students must be allowed to access the system at this time to add or delete courses.
(i) Analyze the 'Course Registration' requirements and represent them as a Use Case Diagram with preconditions, trigger, etc. (5 M)
(ii) Draw a suitable interaction diagram to show how the various components communicate with each other? (5 M)



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**School of Computing
Second CIA Exam - SEP 2024**
Course Code: CSE 316
Course Name: Software Design with UML
Duration: 90 minutes Max. Marks: 50

PART A

Answer any five of the following questions (5x10=50 Marks)

1. A library management system needs to manage books, members, and staff. The system should allow:
 - Staff to add, remove, and update books.
 - Members to borrow and return books.
 - Tracking of books, including details like the author, ISBN, and availability.
 - Staff to issue and return books.Identify the list of classes, its relationships and explain the concepts of Generalization, Dependency, Composition, Aggregation and Association and illustrate this concepts for library management system. (10 Marks)
2. An online e-commerce application consists of the following modules such as **Product Management** - handling product details, categories, and inventory, **Order Management** - handling order placement, tracking, and returns, **User Management** - managing user profiles, authentication, and roles and **Payment Processing** - handling different payment gateways, invoices, and receipts.
 - (i) How would you represent the organization of these modules using a UML package diagram? (5 Marks)
 - (ii) List the importance of Package Diagram in this context with package notation? (5 Marks)
3. Consider the collaboration as defined below in a bank ATM. A customer wants to draw money from his bank account. He enters his card into an ATM (automated teller machine). The ATM machine prompts "Enter PIN". The customer enters his PIN. The ATM (internally) retrieves the bank account number from the card. The ATM encrypts the PIN and the account number and sends it over to the bank.

The bank verifies the encrypted Account and PIN number. If the PIN number is correct, the ATM displays “Enter amount”, draws money from the bank account and pays out the amount.

- (i) Create a collaboration diagram and incorporate all the steps and its relationships. (5 Marks)
 - (ii) Draw an activity diagram for an ATM and incorporating all the Scenarios in activity. (5 Marks)
4. Design an e-commerce platform that needs to support user registration, product browsing, shopping cart management and order processing. The system architecture includes several key components such as user interface, product catalog, shopping cart service, order processing service and payment gateway.
- (i) Develop a Component Diagram that represents the key components such as e-commerce system by including the elements such as Components, Interfaces and Relationships? (5 Marks)
 - (ii) Explain the purpose and usage of Component Diagram? (5 Marks)
5. Design the Deployment architecture for an online banking system. The system needs to handle user interactions and manage transactions. The components of the system include bank web server, application server, DB server and an external payment gateway.
- (i) Create a Deployment Diagram that represents the physical deployment of the Online Banking System by including the following elements such as nodes, artifacts and relationships. (5 Marks)
 - (ii) List the common types of Deployment Diagram and its purpose. (5 Marks)
6. Design a State Diagram for a Traffic Light Control System by including states, events (time lapsed, emergency vehicle, manual override) and transitions.. The System controls traffic lights for four directions namely North, South, East and West. Each Direction has a traffic light that can be in one of the several states: Red, Amber and Green. The System needs to handle transitions between these states to ensure the smooth traffic flow and safety. (10 Marks)



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School of Computing

Third CIA Exam -NOV 2024

Course Code: CSE 316

Course Name: Software Design with UML

Duration: 90 minutes Max. Marks: 50

PART A

Answer any four of the following six Questions (4x10=40 Marks)

1. Discuss the scenarios where the Waterfall Model would be an ideal choice for software development. Provide an example project where the Waterfall Model's structured approach is beneficial? Highlighting its key phases? (10 Marks)
2. You are developing a travel ticket booking system where customers, agent, etc., are stakeholders and classes need to be represented as objects.
 - (i) How do you map real-world entities to object-oriented classes? Identify the core elements and steps involved? (6 Marks)
 - (ii) Apply software design principles to ensure good design practices? (4 Marks)
3. You are tasked with analyzing system requirements for an online ticket booking system for a travel agency. During the analysis phase, you discover that stakeholders have differing opinions about essential features.
 - (i) What are the key elements, relationships and its boundary entity do you included for creating a use case diagram? (5 Marks)
 - (ii) Draw use case diagram for online ticket booking system. (5 Marks)
4. You are tasked with designing a class diagram for an online travel ticket booking system.
 - (i) What key elements must you include in your class diagram and how do you represent the different relationships and explore multiplicity among different classes? (5 Marks)

- (ii) How would you describe the package diagram model and what is its significance in the overall system architecture of a travel booking system? (5 Marks)
5. (i) As part of your component diagram for Online Travel Ticket Booking application, how do you incorporate the user interface components and what role do they play in the overall system architecture? (5 Marks)
- (ii) How would you represent the processors and their connections? What types of connections should you include for the Online Travel Ticket Booking application? (5 Marks)
6. Discuss the role of Interaction Diagrams in transitioning from the analysis phase to the design phase in software development. Explain how sequence diagram help in understanding object interactions and message flows. How do these diagrams contribute to the characterization stage, where system behaviors and interactions are defined? Illustrate your explanation for online ticket booking system. (10 Marks)

Part - B : 1 x 10 = 10 Marks
(Answer the following Question)

7. (i) How does the Observer Design Pattern Work? Illustrate with UML class diagram showing Observer Pattern for online ticket booking system? (5 Marks)
- (ii) Compare and Contrast the Factory Method Pattern and Abstract Factory Pattern with UML Diagrams. (5 Marks)

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End Semester Examinations

Nov 2024

Course Code: CSE316

Course: SOFTWARE DESIGN WITH UML

QP No. :U052-5

Duration: 3 hours

Max. Marks:100

PART – A

Answer any Four questions

$4 \times 20 = 80$ Marks

1. Apply the Waterfall model for the development of web-based Train ticket reservation system.
 - a) Analyze the possible problems faced and software crisis while implementing a software development project using Waterfall Model. (10)
 - b) How does the software engineering principle help in the software development process? (5)
 - c) Which design pattern would you use it for web-based Train ticket reservation system? (5)
2. You've been tasked with designing the class structure for the software required to manage a pizza restaurant. First you will be working on the core Pizza / Recipe / Oven / Chef sub system.
 - a) You decide to create a class Pizza, with methods such as Bake (), and a class Chef responsible with creating Pizza classes. Draw the UML diagram for the two classes, and explain which association you would use? (5)
 - b) Draw the UML diagram explaining how you would support the creation of multiple types of pizza, and name the design pattern you would use? (5)

- c) Which design pattern would you use to enable the recipe of the pizza, captured e.g. in a Recipe class, to be used in the creation of the Pizza class? Draw the class diagram for your design? (5)
- d) Use UML diagrams to explain how the Composite design patterns and the Flyweight design patterns works? (5)
3. To design a use case scenario for students registering and taking an NPTEL (National Programme on Technology Enhanced Learning) four weeks course and register for examination. The use case focuses on the registration process, assignment submission, exam scheduling, and certification upon completion. No course can have less than 250 students or it reserves right to be cancelled. This will be the same functionality as available to other internal users of the system. When registration is complete, the registration system sends a message to the payment system to send out a payment bill to the student. Tutors use the system to find which course they are teaching and who the students are. The NPTEL admin will administer the system. The tutor posts the assignments and students will submit assignments in the given time. Students must be allowed to access the system to register for more courses and a time. If the students failed to register for examinations, students will not get Hall Ticket to write the examination.
- a) Analyze the 'NPTEL Course Registration' requirements and represent them as a Use Case Diagram with preconditions, trigger, etc. (5)
- b) Write the importance of use case diagram and when and where the use case diagram is used? (5)
- c) Draw a suitable Collaboration diagram to show how the objects communicate with each other? (5)
- d) Write down the steps to draw Collaboration Diagram? (5)
4. Create a domain class diagram for an Online Shopping Mart.
- a) Identify potential classes and determine attributes for each class and draw the class diagram? (5)
- b) Write down the steps of how to model the collaborations and logical database schema using class diagram? (5)

- c) Illustrate the process of creating a Package Diagram? (5)
- d) How packages are defined, connected and organized. Discuss the benefits of using Package Diagrams? (5)
5. a) Create an activity diagram for the Hotel Reservation System and how would you depict this process in an activity diagram for the following scenario? (10)
Scenario: You need to model a hotel room reservation process where:
- The user searches for available rooms.
 - The system checks availability.
 - If rooms are available, the user selects a room and proceeds to book.
 - If no rooms are available, the system offers an option to search again.
 - Once the booking is confirmed, the system sends a confirmation email.
- b) List out the components of Activity Diagram and when to use the Activity Diagram? (10)
6. Design an e-commerce platform that needs to support user registration, product browsing, shopping cart management, order processing and UPI payment. The system architecture includes several key components such as user interface, product catalog, shopping cart service, order processing service and payment gateway. such as e-commerce system by including the elements such as Components, Interfaces and relationships.
a) Develop a Component Diagram that represents the key components and its Relationships? (5)
b) Explain the purpose and when and where to use the Component Diagram? (5)
c) Convert the component diagram into deployment diagram? (5)
d) Identify the key element of deployment diagram? (5)

PART - B

Answer the following

1 x 20 = 20 Marks

7. For the payroll system, some common requirements are as follows:
- It should allow employees to record time card information electronically
 - It should automatically generate paychecks based on the number of hours worked & total amount of sales for commission-based employees
 - It should have a web-based interface to allow employees to interact with the system
 - It should allow employee to operate ONLY on their own data records
 - It should allow employees to choose payment type
 - For payment, employees can be paid by the hour or salaried
 - The calculated salary of the hourly workers must be paid every two weeks on the Friday, where for salaried employees, it should be paid at the end of the month (last Friday of the month)
 - The system must be able to provide various types of reports for employees and managers.
 - a) Draw an overall class diagram. Clearly identify dependencies, associations (aggregation & composition) and multiplicities? (10)
 - b) Draw a sequence diagram and how the system is interacted? (5)
 - c) Draw the component diagram and convert into deployment diagram? (5)
