

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE, Midterm Exam, 5th Semester, Spring 2022

Course Code: CSE 3527

Total marks: 30

Course Title: Compiler

Time: 1 hours 30 minutes

[Answer all the questions; in some questions, there are options;
Figures in the right-hand margin indicate full marks.]

1. a. Specify each phase of a compiler explicitly with corresponding input and output while processing the following statement: 5

Expression := Term * factor + 128

- b. Consider the grammar: 5

$stmt \rightarrow if-stmt \mid other$
 $if-stmt \rightarrow if (exp) stmt$
 $\quad \quad \quad \mid if (exp) stmt else stmt$
 $exp \rightarrow 0 \mid 1$

- i. Now, show that the grammar is ambiguous by constructing two parse trees for the following string:
if (0) if (1) other else other
- ii. Rewrite the grammar so that it becomes unambiguous. 3
2. a. Consider the following grammar: 3

$E \rightarrow E \text{ or } T \mid T$
 $T \rightarrow T \text{ and } F \mid F$
 $F \rightarrow \text{not } F \mid (E) \mid \text{true} \mid \text{false}$

Now, construct a parse tree for the following sequence:

not (true or false)

- b. Suppose you are considering DFA from regular expression. Now, compute the followpositions for the following regular expression: 7

(alb)*ab*ab

OR

Convert the regular expression $R=(1|0)^*1$ to its equivalent NFA using Thompson construction.

3. a. i. What are the advantages of separating the analysis phase of compiling into lexical analysis and parsing? 5
- ii. Why context free grammar is preferred over regular expressions in parsing?
- b. Convert the regular expression $R=(alb)^*abb(alb)$ directly to its equivalent DFA. 5

OR

Prove that $0^*(10^*)^*$ is equivalent to $(1^*0)^*1^*$

Bismillahar Rahmanir Rahim
International Islamic University Chittagong
Department of Computer Science and Engineering
B. Sc. in CSE Midterm Examination, Spring-2022
Course Code: CSE-3521 Course Title: Computer Architecture
Time: 1 hour and 30 minutes Total marks: 30

[Answer all the questions. Figures in the right margin indicate full marks.]

- CO DL
- 1.
- a) In which points of view *computer architecture* subject is very essential to study you think? Describe briefly. 4 CO1 C1
- b) Which is more significant between RISC and CISC computers in the computer technology and why? 3 CO1 C2

OR

- b) What do you understand about ENIAC and Abacus? 3 CO1 C2
- c) Which technology is better between LSI and VLSI you think and why? 3 CO1 C2

OR

- c) Define the followings: 3 CO1 C2
- i) Computer organization, ii) Computer architecture, iii) Relative performance

- 2.
- a) Mention the *parameters* to measure the performance of a computer and describe one of those parameters. 3 CO1 C2
- b) Consider computing the overall CPI for a machine A for which the following performance measures were recorded when executing a set of benchmark programs. Assume that the clock rate of the CPU is 200 MHz: 3 CO2 C3

Instruction category	Percentage of occurrence	No. of cycles per instruction
ALU	25	2
Load & store	15	3
Branch	45	5
Others	20	2

Suppose 105 instructions will be executed. Find the overall CPI (Clock pulse per instruction) and MIPS.

- c) Suppose you have two machines X and Y. Prove that a higher MIPS machine compared to lower MIPS machine requires longer CPU time to execute the same set of benchmark programs of 2(b). Also mention your own comments in this regard. 4 CO2 C3

OR

- c) Translate the following instructions into machine instructions: 4 CO1 C1
- i) add \$t5, \$s3, \$s4 ii) beq \$t1, \$t2, 1000

9-241
0-272

- 3.
- a) Mention the *registers* used in *read* operation from memory (RAM) and how? 3 CO2 C1
 - b) Write the differences between Indirect, Direct addressing mode with example. 2 CO2 C2
 - c) How *relative* addressing mode works? Show example. 1 CO2 C1
 - d) Write a subroutine, SEARCH, to search for a value VAL in a list of N values and write the position as an output. 4 CO2 C2
- OR
- d) Draw the hardware design of second version Multiplication Algorithm and describe using flowchart. 4 CO2 C2

END

International Islamic University Chittagong
Department of Computer Science and Engineering
B.Sc in CSE Mid Term Examination, Spring-2022
Course Code: CSE-3523
Course Title: Microprocessors, Microcontrollers & Embedded Systems

Time: 1 hour 30 minutes

Total Marks: 30

- Answer all **Three** of the following questions.
- The figures in the right-hand margin indicate full marks.

1 a) In the microprocessor, what is the function of *IP* and *ALU*? 2 (CLO1)

b) Consider a machine language instruction that moves a copy of the contents of register *BX* in the CPU to a memory word. What happens during
I. the fetch cycle?
II. the execution cycle? 4 (CLO1)

c) What is the use of a register in a microprocessor? Briefly describe the registers of Microprocessor 8086. 4 (CLO1)

or, Why is memory divided into segments? Explain according to Microprocessor 8086.

2 a) Draw the internal architecture of the 8086 microprocessor. 4 (CLO1)

b) Calculate the physical address from the following Segment: Offset pairs - 4 (CLO3)
I. 2900H: 3A00H
II. 1239H: 0000A900H

or, If the stack segment register contains 56C0H and the stack pointer register contains 1358H, what is the physical address of the top stack?

c) Find out the memory size in MB when address lines are - 2 (CLO1)
I. 34 bits
II. 128 bits

3 a) What types of programs are usually written in assembly language? 2 (CLO1)

or, What is Opcode? Give an example.

- b) Write whether each of the following instructions is **Legal** or **Illegal**. 2 (CLO3)
W1 & W2 \doteq word variables
- I. ADD B1, 122
 - II. MOV DS, 100H
 - III. XCHG W1, W2
 - IV. MOV CS, DS
- c) Write the types (Decimal, Octal, etc) of the following numbers in assembly language. Put 'x' for the Illegal number(s). 2 (CLO3)
- I. 1,101 ✓
 - II. 1010 D
 - III. FFFFH x
 - IV. -55D D
- d) Translate the High-Level Language into Assembly Language. Add proper comments for each instruction. 4 (CLO3)

A = 2B - 3A

International Islamic University Chittagong (IIUC)

Dept. of Computer Science & Engineering (CSE)

Midterm Examination: Spring 2022

Program: B.Sc. in CSE

Course Code: CSE-3529

Course Title: System Analysis & Design.

Time: 1.5 Hours

Full Marks: 30

Answer all the *three* questions. All parts of a question must be answered sequentially. Figures in the right margin indicate full marks.

COL2 1.(a) What are various fact finding techniques? Discuss the advantages and Disadvantages of using of these techniques. 4

COL2 (b) Define System Prototype. Explain System Prototype Method (SPM). What are the features of prototyping. 4

OR

COL1 (c) Discuss Linear Sequential VS Waterfall model with feedback
Describe system and information system with example. Why computer based information system is needed? 2

COL2 2.(a) What is the System Development Life Cycle? Discuss the steps of SDLC in details. 4

COL1 (b) Define the following terms: 4
(i)Boundary & Environment
(ii)Sub system
(iii)Black box
(iv)Feedback Control

OR

COL1 (c) What is System? What are the various components of System? Describe the different types of System.
Consider that you need to build online library management software for IIUC.To develop this software which techniques do you prefer from direct observation or document analysis. Justify your answer. 2

COL3 3.(a) Write short notes on: 4
(i)Breakeven Point (ii)Return on Investment
(iii) Net Present Value (iv)Profitability Index

COL3 (b) What is feasibility study? What are different types of feasibility study? Write different steps of Feasibility analysis. 4

COL3 (c) Differentiate between System analysis and design. 2

OR

Difference between RAD & JAD.

International Islamic University Chittagong

Department of Computer Science and Engineering

Mid-term Examination, Spring-2022

Program: BSc in CSE

Course Title: Electrical Drives and Instrumentation

Course Code: EEE-2421

Time: 1 hour 30 minutes

Full Marks: 30

- 1(a) State Fleming Left Hand Law. Why Motor sizing is important? U CO2 2
- 1(b) Describe the different types of motor duty class with proper timing diagram. R CO2 4
- 1(c) State the four basic principle of magnetic fields applied on electrical machines and justify the statement - 'Magnetic fields are the fundamental mechanism by which energy is converted from one form to another in transformer'. An CO1 4
- 2(a) "A DC machine can work as both the generator and the motor" - Justify the statement. U CO2 2
- 2(b) The load torque profile shown in Fig. 2(b) is measured for a constant speed load. Choose an appropriately sized motor to drive this load. (Assume a service factor of 25%). You do not need to consider starting performance. An CO1 3

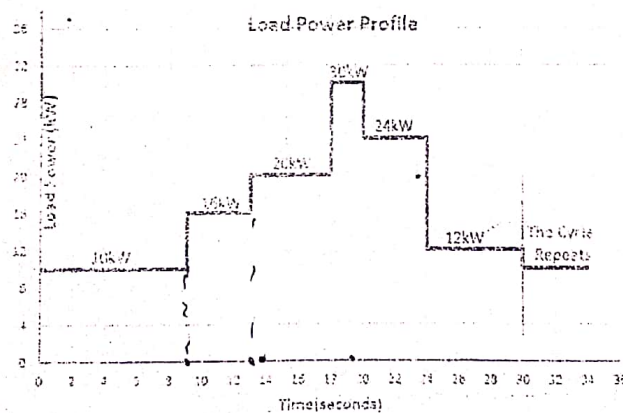


Fig. 2(b)

- 2(c) "A DC generator can be made from an AC generator" Describe the operation of DC generator with neat sketch and also justify the statement. An CO1 5
- OR
- 2(c) Draw the equivalent circuit of a transformer with proper notation. You build a 220V/9V transformer by yourself and want to draw an equivalent circuit of your transformer. How do you get values of all the parameters of the equivalent circuit? Write in detail. An CO1 5

- 3(a) "We cannot think of our modern power system without transformer." U CO2 2
Justify the statement.
- 3(b) Briefly explain the different types of losses in a transformer. Draw a three phase delta-wye connection. R CO2 3
- 3(c) The open circuit test and short circuit test were performed on the primary side of a 20-KVA, 8000/240-V, 50-Hz transformer and the following data were taken: An CO1 5

Open circuit test (on primary)

$$V_{OC} = 6000 \text{ V}$$

$$I_{OC} = 7.74 \text{ A}$$

$$P_{OC} = 300 \text{ W}$$

Short circuit test (on primary)

$$V_{SC} = 367 \text{ V}$$

$$I_{SC} = 2.5 \text{ A}$$

$$P_{SC} = 180 \text{ W}$$

Find the impedances of the approximate equivalent circuit referred to the primary side and sketch the circuit.

OR

- 3(c) A 100-KVA, 2000/440-V transformer has $R_1 = 3 \Omega$, $R_2 = 0.07 \Omega$. An CO1 5
The values of reactances are $X_1 = 5.2 \Omega$, $X_2 = 0.075 \Omega$.
- i) Calculate equivalent impedance referred to primary.
- ii) Calculate equivalent impedance referred to secondary.

R_1 R_2'

International Islamic University Chittagong
Center for General Education (CGED)

Midterm Examination, Spring 2022

Course Code: URED- 3503 (URED- 3101 for LLB)

Course Title: Political Thoughts and Social Behavior

Time: 1.5 Hours

Full Marks: 30

[Answer **any three** of the following. All questions are of equal value]

01. Define Islamic political system and discuss the main principles of it with proper evidences from the *Qur'an* and *Sunnah*.

02. What is *Shariah*? Explain the supremacy of *Shariah* in an Islamic Constitution.

03. How the three organs of an Islamic State are related with one another? Describe the Qualifications of the chief executive of an Islamic State.

04. Define judiciary and discuss its features of pre-Islamic and Islamic periods.

05. Write short notes on **any five** of the followings:

- a) Islamic Constitution
- b) Purposes of an Islamic State
- c) Basic principles of an Islamic State
- d) Importance of *Shura* in Islam
- e) Qualifications of Judges
- f) Fundamental Rights of Human Being
- g) Differences between Islamic and traditional political system.

Best of Luck!!!

International Islamic University Chittagong

Morality Development Program (MDP)

5th Semester, Mid Term Examination; Spring--2022

Course Code: MDP-3505 Course Title: Concept on Moral Development-II

Time: 1.5 hour

Marks: 30

Answer any **three** of the following questions:

1. Critically evaluate the necessity of students' politics in higher education of Bangladesh.. 10
2. "Students can play the important roles in building an ideal society"-Do you agree or not? Justify your answer. 10
3. a) Explain the prevalent dowry system in marriage from Islamic shariah. What measures to be taken to remove this dowry system from our society?
05
b) What is islamic entrepreneurship? Describe the concept of halal entrepreneurship with reference from Islamic shariah. 05
4. Briefly explain the concept of militancy in the light of Islam. What are the guidelines that can be followed to remove the bad impact of militancy from Islam and society? 10