International Islamic University Chittagong

Center for General Education (CGED)

Semester End Examination, Spring–2023

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

Course Title: Political Thoughts and Social Behavior

Full Marks: 50 ***Time: 2:30 Hours***

Answer the following questions

(All questions are of equal value)

#	Questions	Marks	CLOs	Bloom's taxonomy domain
1	Discuss the nature, objectives and the procedure of Muslim marriage elaborately. **Or** Describe the special circumstances in which Islam allows polygamy.	10	4	Evaluate
2	Compare the status of women in Islam and the same given to them by other existing communities.	10	3	Create & Analyze
3	Evaluate five fundamental principles of Islamic Economic system.	10	5	Evaluate
4	Islamic law has provided mankind with appropriate instructions and guideline regarding dress for man and woman. Elaborate those guidelines.	10	4	Create
5.	Discuss the duties of Parents towards their children in the light of *Qur'an* and *Sunnah*. **Or** Write very briefly what we should say in the following situations (any five): **a.** When we go to bed for sleeping **b.** When we go to the wash room **c.** When we enter the *Masjid* **d.** If a sneezer said '*Alhamdu lillah*' **e.** In reply to the *salam* **f.** If we want to do something later.	10	3	Evaluate & Create

International Islamic University Chittagong (IIUC)

Morality Development Program (MDP)

Semester End Examination: Spring 2023

5th Semester (Other than Shariah Faculty)

Course Code: MDP-3505 **Course Title: Concepts of Moral Development-II**

Time: 2.5 Hours **Full Marks: 50**

Answer any 5 (Five) of the following questions. All parts of a question must be answered sequentially. Figures in the right margin indicate full marks.

1.		Explain the guidelines of dress code for both male and female in Islamic point of view..	10
2.	(a)	Distinguish between Islamic and western concepts of entertainment. Is music, sports and dancing allowed as a means of entertainment in Islamic Shariah?	5
	(b)	Present some disadvantages of pornography, gambling, and free mixing and illustrate how these bad activities spoil a society.	5
3.	(a)	Evaluate the rights of relatives, neighbors, orphans in the light of Quran and Sunnah.	6
	(b)	What are the special rights mentioned in Quran and Sunnah for women?	4
4.	(a)	Mention some characteristics of Islamic culture. Write down some demerits of following western culture specially by young generation.	6
	(b)	Propose some suggestions how to demotivate young generation not to follow western culture.	4
5.	(a)	Mention some glorious aspects of Muslim Ummahs' history.	4
	(b)	Explain the importance of family in the light of Islam. Figure out the reasons of breaking the family.	6
6.		Briefly explain the conspiracies against Islam in the period of Prophet (Sm) and the Khulafe Rashedeen from the Holy Quran and Sunnah.	10
7.	(a)	"Islam does not support militancy" Justify it in the light of Quran and Hadith.	6
	(b)	"Islam ensures peaceful co-existence" Justify this statement.	4

Morality

International Islamic University Chittagong

Department of Computer Science & Engineering

B.Sc. in CSE, Final Exam, Spring 2023

Course Code: CSE-3527 **Course Title:** Compiler

Total Marks: 50 **Time:** 2.5 Hr.

Figures in the right-hand margin indicate full marks

Group A

			M	CO	DI
1	a.	Define left factoring with equation. Write down the algorithm of Left Recursion.	3	CO3	C3
	b.	Write down the role of parser.	3		
		Do left factoring for the following grammar: `A-> aAB	aA	a` `B-> bB	b`			
	c.	Consider the grammar to find the First and Follow and parsing table: `S -> B d	C b` `B -> a B	ε` `C -> cC	ε`	4		
		OR,			
		Consider the grammar to find the First and Follow and parsing table: `S -> iEtss'	a` `S' -> ε	eS` `E -> b`			
2	a.	Eliminate left recursion for the following grammar: i. `E → E + T	T` ii. `T → T * F	F` iii. `F → (E)	id` iv. `S → (L)	a	b` `L → L, S	S`	4	CO3	C3
	b.	Determine if the following grammar is suitable for LL (1) parsing, then check whether the string "qqqqr" can be generated from the grammar by showing step by step operations. `A → Q` `Q → St	Rr` `S → sS	ϵ` `R → qR	ϵ`	6		
		OR,			
		Create an Operator Precedence Table for the following grammar: `A → A+A	A*A	a` Using the Operator Precedence Table justify the following string by showing step by step operations: `a + a * a * a + a * a`				

Group B

3	a.	Define synthesized attribute and inherited attribute.	2	CO3	C2
	b.	Draw the syntax tree and DAG for the expression `(a*b)+(c-d)*(a*b)+b`	4		
		OR, `((a + b) * (c - d)) + ((e - f) * (g + h))`			
	c.	Considering the following declaration `D → TL` `T → int	real` `L → L1, id	id` i. Give semantic rule.	4		

ii. Draw a noted parse tree with inherited attributes and dependency graph for the sentence real `id1, id2, id3` by considering grammar.

4 a. Write the algorithm for portioning three address instructions into basic blocks 2 CO3

b. Derive the 3-address code, Quadruples, Triples and Indirect Triples for the following statement: `a: = b * - c + b * - c` 6

OR,

Derive the 3-address code, Quadruples, Triples and Indirect Triples for the following statement: `z: = x *(-y) + x*(-y) + x*y`

c. Show the position if code generator in the compiler process. 2

5 a. Consider the following C code and answer the question (i) to (iii): 7 CO1 C

```
int dec = 0, i = 0, count=0;
  while (n!=0) {
    rem = n % 10;
    n /= 10;
    dec += (rem * 2)/i);
    ++i;
  }
do {
    n /= 10;
    ++count;
  } while (n != 0);
```

i. Translate the C code into three address code
ii. Identify the basic block in three address code
iii. Construct the flow graph from the three-address code

b. Write the differences between Recursive Predictive Descent Parser and Non-Recursive Predictive Descent Parser 3

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. Engineering in CSE

Final Examination, Spring 2023

Course Code: **EEE 2421** Course Title: **Electrical Drives and Instrumentation**

Time: 2 hour 30 minutes Full Marks: 50

(i) Answer all the questions. The figures in the right-hand margin indicate full marks.

(ii) Course Outcomes (COs) and Bloom's Levels are mentioned in additional Columns.

Part -A

1)	a)	Explain the key principles and techniques involved in the operation of an inverter, which coverts DC into AC power effectively and reliably.	C01	5
1)	b)	Explain the working principle of a Variable Frequency Drive using a block diagram.	C01	5
		Or		
1)	a)	"An induction motor can't run at synchronous speed"- verify the statement with proper mathematical expression.	C01	5
1)	b)	A three-phase induction motor has a synchronous speed of 1800 RPM and a slip of 4%. Determine the actual speed of the motor in RPM.	C01	3
1)	c)	Write a short note on the constructional features of an induction motor.	C01	2
2)	a)	Explain how does a synchronous motor operate, and what mechanism does it employ to remain in sync with the rotating magnetic field?	C01	5
2)	b)	Write how many driving techniques are there for stepper motor. Discuss the half-step mode steps operation of Stepper motor with diagrams.	C01	5

Part-B

3)	a)	Write down the necessity of measurement.	C03	3
3)	b)	What are the different types of errors that can occur in the process of measurement? Briefly explain systematic errors.	C03	5
3)	c)	Differentiate between the term accuracy and precision.	C03	2
4)	a)	Draw a neat diagram of a logarithmic amplifier and derive the equation $V_o = -\eta V_T \ln (V_i / I_o R)$	C04	5
4)	b)	Explain the operation of differential amplifier using BJT.	C04	5
		Or		
4)	a)	Explain the Biomedical application of a chopper amplifier with proper block diagram and brief description.	C04	4
4)	b)	What is CMRR? Provide proper equation.	C04	3
4)	c)	Sketch 7-segment display with its truth table.	C04	3
5)	a)	Explain the operation of Solar cell with proper diagram.	C04	4
5)	b)	In what ways are piezoelectric transducers are used in different industries and fields?	C04	3
5)	c)	Mention different types of optoelectronic devices and explain optical fiber.	C04	3

International Islamic University Chittagong

Department of Computer Science & Engineering (CSE)
Final Examination, Spring-2023
Course Code: CSE 3523
Course Title: Microprocessors, Microcontrollers and Embedded Systems
Total Marks: 50 **Time: 2 Hour 30 minutes**
[Answer three of the following questions. Figures in the right-hand margin indicate full marks.]

GROUP-A

1.(a)	Explain with figure how interrupts inputs are expanded with using 74ALS244 three state buffer. **Or,** Explain how microprocessor can program with 8259A and also explain function of the pin.	4	CLO2
1.(b)	Explain interrupt vector and its table with figure. What is interrupt service procedure? **Or,** Draw the circuit diagram for generating interrupts vector type number 1Ah in response to INTA.	4	CLO3
1.(c)	Show a timeline that indicates interrupt usage in a typical system.	2	CLO3
2.(a)	Why and how daisy chain interrupt is better than using 74ALS244 explain with proper diagram.	4	CLO3
2.(b)	Define the following terms: a) Bit slicing b) Multitasking c)Threads d)Core 2 Processors	4	CLO1
2.(c)	Write short note on INT and INTA. **Or,** Describe the function of Slave program/enable buffer pin.	2	CLO1

GROUP-B

3.(a)	Write the differences between IO-mapped I/O and Memory-mapped I/O	3	CLO1
3.(b)	Drawtheblockdiagramof8255A **Or,** Draw the block diagram of the Intel 80286 Microprocessor	3	CLO1
3.(c)	How can you perform Multiplication and Division operations in Microcontroller8051? Explain the process. **Or,** Differentiate between microprocessor and microcontroller with proper example.	4	CLO2
4	Recently, Amit and Arafat have learned about Microcontroller 8051. However, they know that there is a pin that separates address and data lines and another pin that discards internal ROM but the y is not able to recognize them. Help them by answering the following questions 4(a-b).		
4(a)	What are those two pins that are mentioned in the above passage? Briefly explain them.	7	CLO2
4(b)	Give them a visual representation of Microcontroller 8051 by drawing a block diagram.	3	CLO2
5(a)	What are the characteristics of an embedded system? What do you mean by hardware and software co-design?	4	CLO1
5(b)	Briefly explain the modeling of embedded system behavior with a finite state machine model.	3	CLO1
5(c)	What is a system on the chip? Explain with a diagram. **Or** Describe the components of Embedded system	3	CLO1

Bismillahir Rahmanir Rahim

International Islamic University Chittagong

Department of Computer Science & Engineering

B. Sc. in CSE Semester Final Examination, Spring 2023

Course Code:CSE 3521 Course Title: Computer Architecture

Total marks: 50 Time: 2.5 hours

[Answer all questions from **Group-A** and **Group-B**
Separate answer script must be used for Group-A and Group-B.]

Group-A

1.a)	Discuss the clocking methodology for datapath implementation.	3	CO1
b)	Suppose you are given an instruction **sub $s2,$t2,$t3**. Describe the complete operation of the datapath using the instruction with a figure.	4	CO1
	Or,		
	Suppose you are given an instruction **lw $s1,100($s3)**. Describe the complete operation of the datapath using the instruction with a figure		
c)	What are the advantages of multicycle implementation over single cycle?		
2.a)	Design a single cycle data path for handling R-type instruction of MIPS.	3	CO2
	Or,	4	CO
	Design a multi-cycle data path for handling basic instruction of MIPS.		
b)	Describe all temporary register and multiplexors of Multicycle Datapath.	4	CO
c)	Do you think that the functions of memory data register and instruction register are the same? If not then how?	2	CO
	Or,		
	Why a single-cycle implementation is not used? justify the answer.		

Group-B

3.a)	Does any Pipeline Stall arise here for the following instructions----- explain: **MUL R1, R2, R3** **SUB R3, R1, R4** **ADD R4,R5,R6**	3	CO
b)	What do you mean by pipelining? Describe advantages of pipelining architecture.	5	CO
c)	Dynamic pipelining is more complecated than the traditional or static pipelining – why?	2	CO
4.a)	Write short note on structural hazard. Or, Write short note on memory hierarchy.	2	CO
b)	Explain interrupt and its classes with necessary diagram. Or, What is TLB? Discuss the operation of paging and TLB using flow diagram?	4	CO
c)	What is DMA controller? Describe the configuration of DMA controller.	4	CO
5.a)	Discuss the clocking methodology with relevant diagram	6	CO
b)	Explain the handshaking protocol with diagram. Or, Explain the direct mapped cache system with figure.	4	CO

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE **Final term Examination,** **Spring 2023**

Course Code: CSE 3529 **Course Title:** System Analysis and Design

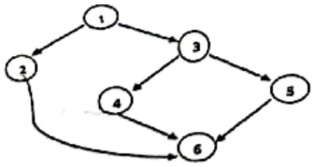
Time: 2-hours 30 minutes **Total marks:** 50

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

Group A

		M	CO
1.a)	Suppose, "X" is one of the most popular social networking sites in the world. This site bears the following characteristics: i. Users can open their personal account with necessary personal information, username and password to communicate with other registered users in the social media platform ii. Users can upload photos, videos and other types of media from their own personal profile iii. All users have to login in the site going through authentication process Draw a DFD (Data Flow Diagram) according to the above scenario including all necessary symbols of DFD and the following – A. Find all the external entities B. Design Context diagram or Level-0 Diagram C. Design Level-1 diagram using balancing and leveling techniques	5	CO3
b)	Assume you own a software firm named "T". To describe the workflow of your company a DFD has already been created. Considering the above context – What do you think which type of structured analysis technique will be suitable to keep record about the detailed descriptions of DFD? Explain briefly with example. ***Or,*** Describe the phases to design any kind of system.	2	CO3
c)	Define decision trees in structured analysis. Explain the mechanism of a decision table with proper example. ***Or,*** What are the four DFD symbols? Illustrate the rules for drawing DFD.	3	CO4
2.a)	State the objectives of a good form design. How can you differentiate between a good form design and a bad form design? Explain with an example. ***Or,*** Distinguish between bottom-up and top-down system design methodologies.	5	CO1
b)	*"Daraz"* is one of the leading e-commerce platforms in Bangladesh. Users can create their personal account in this site. It offers online marketplace for various products of different brands. With a few clicks people can select their products and pay for it easily. Draw an ERD for the above e-commerce site with proper symbols.	3	CO4
c)	Describe the steps in system's database design.	2	CO1

Group B

3.a)	 Considering the above graph, answer the following questions- i. Define flow graph. ii. Identify node, edge and region from the above graph. iii. Calculate cyclomatic complexity for the above flow graph in both ways. Also show that both ways generate same result. ***Or,*** How can calculate cyclomatic complexity using graph matrix and connection matrix? Illustrate with an example.	5	CO2

b) The requirement specification of a web-based software application stated that maximum 100 users may access simultaneously. After deployment the application failed to response properly when 90 users accessed at a time. It was recovered later and then on a certain occasion 150 users tried to access and again it crashed. Which two software testing methods could prevent those two failures respectively?

c) Briefly explain the two types of Black Box testing techniques with example.

4.a) Outline the success factors of implementation phase. Also name the six major types of activities required to accomplish the system implementation phase.

b) Demonstrate the four types of system maintenance with necessary example.

c) *"MedEasy"* is a website that provides 24/7 customer service and support to the customers by providing online pharmaceutical products. So, from the perspective of a system analyst, what do you think which kind of special considerations should be kept in mind for maintenance of such a website?

5.a) There are 4 types of issues in case of ensuring security. Relate those security issues for a university website like IIUC and mention them briefly.

b) In order to ensure a system's smooth performance, hardware and software design is of utmost importance. Write some criteria for software selection and hardware selection.

c) A system can be protected or secured from all security threats using four primary methods. State the methods and explain each of them shortly.

Or,

Explain the following terms –

i. Confidentiality
ii. Interception
iii. Data Vulnerability
iv. Alpha testing
v. Validation testing

International Islamic University Chittagong
Department of Computer Science & Engineering
B. Sc. in CSE Final Examination, Semester : Spring 2023
Course Code: CSE 3528 Course Title: Compiler Sessional
Total marks:50 Time: 1.45 hour

.Answer the Question Given Question Below (Any three) Write a C program to simulate lexical analyzer for validating operators. Write a C program to identify whether a given line is a comment or not. Write a C/C++ program to recognize strings under I) $aba^{+}b$ II) $abcb^{+}$ III) $(ab)^{+}ab$ ➢ Find the "First" of the given grammar. ➢ Find the "Follow" of the given grammar. Given grammar **E -> TE′** **E′ -> +TE′/ε** **T->FT′** **T->*FT′/ε** **F->(E)/id**	10+10
2. Write a program that apply Quick sort on given problem	10

You are given the ages (in years) of all people of a country with at least 1 year of age. You know that no individual in that country lives for 100 or more years. Now, you are given a very simple task of sorting all the ages in ascending order.

Input

There are multiple test cases in the input file. Each case starts with an integer n ($0 < n \leq 2000000$), the total number of people. In the next line, there are n integers indicating the ages. Input is terminated with a case where $n = 0$. This case should not be processed.

Output

For each case, print a line with n space separated integers. These integers are the ages of that country sorted in ascending order.

Warning: Input Data is pretty big (~ 25 MB) so use faster IO.

Sample Input

```
5
3 4 2 1 5
5
2 3 2 3 1
0
```

Sample Output

```
1 2 3 4 5
1 2 2 3 3
```

OR

Write a program that Calculate instruction cost of given instruction

```
LD R0, i
MUL R0, R0, 8
LD R1, a(R0)
ST b, R1
```

3. Write a program that will find out Quadruples or Triples of Given three address code

```
t1 = minus c
t2= b * t1
t3 = minus c
t4 = b * t3
t5 = t2 + t4
a = t5
```