COMPUTER SCIENCE HSSC–I
SECTION – A (Marks 13)
Time allowed: 20 Minutes

Section – A is compulsory. All parts of this section are to be answered on this page and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. **Do not use lead pencil.**

Q.1 Fill the relevant bubble for each part on the bubble sheet. Each part carries one mark.

1. Which one of the following is the most suitable to print salary slips of 2000 employees on a very cheap cost?
   a) Dot matrix printer
   b) Desk jet printer
   c) Laser printer
   d) Plotter

2. Cache Memory works between:
   a) RAM and Processor
   b) RAM and ROM
   c) Processor and Hard Disk
   d) ROM and Hard Disk

3. In which of the following categories a memory card lies?
   a) Magnetic Memory
   b) Secondary Memory
   c) Optical Memory
   d) Flash Memory

4. How many memory locations can be addressed with 64-bit address bus?
   a) 32
   b) 64
   c) 2^{32}
   d) 2^{64}

5. Which one of the following expansion slots has highest video performance?
   a) PCI
   b) PCI Express
   c) SATA
   d) AGP

6. Which one of the following registers holds the address of the next instruction to be executed?

a) Program Counter
b) Instruction Register
c) Counter Register
d) Data Register

7. The IP Address 191.10.1.0 lies in:
   a) Class A
   b) Class B
   c) Class C
   d) Class D

8. Email sending mechanism is an example of the following mode of___ communication.
   a) Simplex
   b) Simple Duplex
   c) Half Duplex
   d) Full Duplex

9. Cellular communication dividing the physical region into sections us called:
   a) Pods
   b) Cells
   c) Cubes
   d) Sectors

10. Which one of the following wireless technologies is used in TV remotes and TV?
    a) Infrared
    b) Bluetooth
    c) Wi-Fi
    d) Wi-Max

11. What is the type of this statement? "**Create table Student**"
    a) DCL
    b) DDL
    c) DXL
    d) DML

12. The relationship between entities AUTHOR and BOOK is:
    a) Unary
    b) Binary
    c) Ternary
    d) Recursive

13. Identify the cardinality of the following relationship:
    One COLLEGE can have many DEPARTMENTs, One DEPARTMENT belongs to one COLLEGE.
    a) One-to-One
    b) One-to-Many
   c) Many-to-Many
    d) Many-to-One

Time allowed: 2.40 hours

Total Marks: 62

Note: Answer all parts from Section 'B' and all questions from Section 'C' on the **E-sheet**. Write your answers on the allotted/given spaces.

SECTION – B (Marks 42)

Q2. Attempt all parts. All parts carry equal marks. (14×3=42)

    i. Write down purpose of any three (03) ribbon cables. (3)

OR

    Write down the purpose of BIOS in system unit. (3)

    ii. Write down any one application of the following scanner types: (3)
        a. Handheld scanner   b. Flatbed scanner   c. Optical scanner

OR

    Write down any one application of the following software: (3)
        a. Licensed software   b. Shareware   c. Freeware

    iii. Give one (01) advantage and two(02) disadvantages of wireless network card. (3)

OR

    Give any three (03) examples of Data processing instruction. (3)

    iv. Differentiate between Intel P4 and AMD Athlon processors with reference to clock speed, bus width and architecture. (3)

OR

    Give three differences between impact and non-impact printers. (3)

    v. What is an Instruction Cycle? Illustrate with diagram. (2+1)

OR

    Write down three differences between SIMM and DIMM memory chips. (3)

    vi. The following Microprocessor diagram has three internal system buses, observe the diagram carefully and name the Buses shown in the diagram. (3)

OR
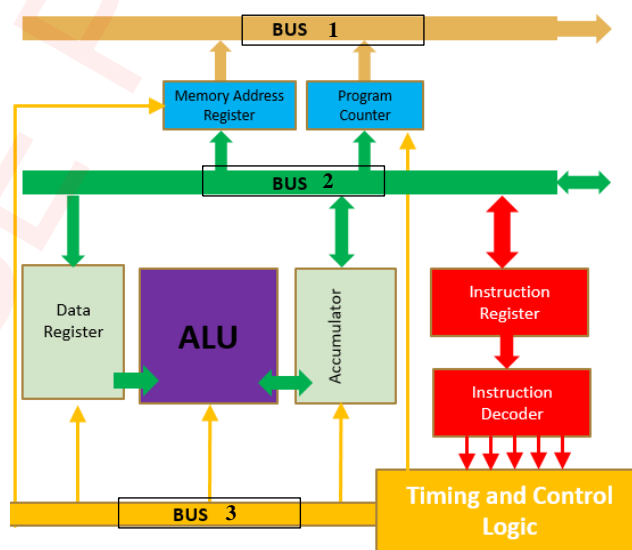
Draw a labelled diagram that shows working of Arithmetic Logic Unit. (3)

vii. Write down any three (03) differences between Client-Server and Peer-to-Peer network architecture. (3)

OR

Categorize the following topologies as per their characteristics (Star, Ring, Bus, Mesh). (1.5+1.5)

Expensive	Least Cabling

viii. Give any three limitations of Mobile Communication System. (3)

OR

Write any three differences between volatile and non-volatile memory. (3)

ix. Complete the required information in the following table against the said satellites. (3)

Satellites	Distance from the Earth	Purpose
GEO		
MEO		
LEO		

OR

Complete the following table: (3)

Register	General/ Special Purpose	Use
Data register		
Base Register		
MBR		

x. Write down any one usage each of Wi Max, Bluetooth, and Infra-red technologies. (3)

OR

A team consists of many players and a player plays for only one team. Draw an Entity Relationship Diagram and identify cardinality for the said situation. (2+1)

xi. Give any three differences between synchronous and asynchronous transmission. (3)

OR

Differentiate between Circuit switching and Packet switching with example. (3)

xii. What are Columnar, Tabular and Datasheet Form views? (3)

OR

What is the purpose of following types of queries? (3)

a. Update   b. Select   c. Delete

xiii. Write down any three (03) advantages of using DBMS over file management system?

OR (3)

Compare the Relational database model with Network database model. (any 3) (3)

xiv. Differentiate between soft copy and hard copy with example. (3)

OR

Specify the suitable data types for Roll No, DOB and Address. Identify the suitable Primary key. Also write down the number of tuples and attributes in the table.

(1.5+0.5+1)

Registration No	Roll No	Name	DOB	Address	Phone
CS12/05	1	ALI	12-05-1999	G-7 Islamabad	9233658721
CS34/21	2	AMNA	26-08-1999	Cantt Rawalpindi	9234737536

Note: Attempt all questions. Marks of each question are given within brackets. (5x4 =20)

Q.3 Define port. Discuss any two (02) different types of ports. (1+4)
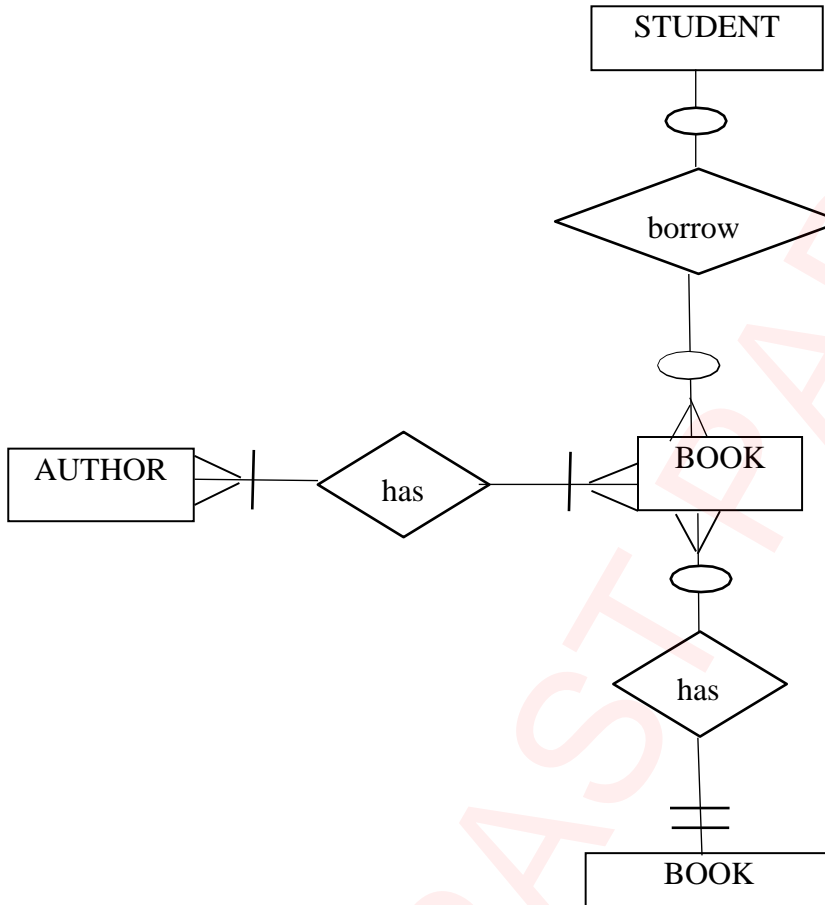
OR

What is OSI layer model? Discuss any two (02) layers of OSI layer model. (1+4)

Q. 4 What are input pointing devices? Discuss any two (02) input pointing devices. (1+4)

OR

Explain the purpose and application of any two types of short distance wireless communication.

(2.5+2.5)

Q.5 Understand the Entity Relationship Diagram and answer the following questions: (5)

i. Identify one example of one-to-many relationship.
ii. Indicate the degree of relationship between BOOK and AUTHOR.
iii. Identify the maximum cardinality between BOOK and BOOK CATEGORY.
iv. How many maximum STUDENTs borrow a BOOK?
v. How many minimum BOOKs available in a BOOK CATEGORY?

OR

Normalize the following table data up to 2NFand 3NF. Table is already in 1NF. (2+3)

SID	CID	S-NAME	COURSE	GRADE	TEACHER	CONTACT NO
1	IS318	AHMED	DATABASE	A	HARIS	9250415
1	IS301	AHMED	PROGRAMMING	B	MUDASSAR	9250416
2	IS318	JAWAD	DATABASE	A	HARIS	9250415
3	IS318	SAMAR	DATABASE	B	HARIS	9250415
4	IS301	BAJWA	PROGRAMMING	A	MUDASSAR	9250416
4	IS318	BAJWA	DATABASE	B	HARIS	9250415

Q.6 What is optical disk? Describe any two (02) types of optical disks? (1+4)

OR

Describe Flash memory and Memory card with one advantage and disadvantage. (2.5+2.5)

Sr No	Section: Q. No. (Part no.)	Contents and Scope	Student Learning Outcomes *	Cognitive Level **	Allocated Marks in Model Paper
1	A: 1(i)	1.3 Computer Hardware	• Printers - Impact printer (Dot Matrix, Drum, Chain) - Non Impact Printer (DeskJet , Laser)	A	1
2	A:1(ii)	2.2 Main Memory	• Internal processor memory - Cache (L1, L2)	U	1
3	A: 1(iii)	2.3 Second-ary Memory	Describe the following chip Memories with advantages and disadvantages: • Memory Cards	K	1
4	A: 1(iv)	3.1 Inside CPU	iii) Explain the system bus and its types: Address bus	U	1
5	A: 1(v)	4.1 Computer Casing/System Unit	iii) Explore the system unit • Mother Board - Expansion Slot (AGP, PCI, PCI Express)	U	1
6	A: 1(vi)	3.1 Inside CPU	ii) Describe the functions of the following types of registers: - Memory Address Register (MAR)	K	1
7	A: 1(vii)	5.3 TCP/IP	iv) Describe IP Addressing scheme (Classes, Subnets, Masks)	U	1
8	A: 1(viii)	5.1 Introduction	Explain the following: • Modes of Communication (simplex, half duplex, full duplex, Synchronous, Asynchronous)	A	1
9	A: 1(ix)	6.3 Long Distance Wireless Communica-tion	Explain the following types of long distance wireless communications: • Cellular Communication	K	1
10	A: 1(x)	6.2 Short Distance Wireless Communica-tions	Explain the following types of short distance wireless technologies: • Wi-Fi • Wi Max • Bluetooth • Infra-red	A	1
11	A: 1(xi)	7.1 Introduction	viii) Explain the following types of database languages for relational databases: • Data Definition Language (DDL) • Data Manipulation Language (DML) • Data Control Language (DCL)	U	1
12	A: 1(xii)	7.4 Data Modeling and EntityRelation-ship Diagram	i) Explain the following through pictorial ex-amples: • Relationship	U	1
13	A: 1(xiii)	7.4 Data Modeling and EntityRelation-ship Diagram	ii) Explain the cardinalities and modalities with the help of pictorial examples	U	1
16	B: 2(i)	4.1 Computer Cas-ing/System Unit	iii) Explore the system unit • Mother Board - Ribbon Cable (Data Cable, IDE, SATA 1, 2 , FD Cable) OR iii) Explore the system unit - BIOS(Basic Input Output System)	K	3

17	B: 2(ii)	1.3 Computer Hardware 1.2 Computer Software	ii) Describe the Input devices • Scanners - Hand held scanner - Flat-bed scanner - Optical scanner OR iv) Elaborate the following terms • Licensed software • Shareware • Freeware	A	3
18	B: 2(iii)	4.2 Ports and Slots on the Motherboard 3.2 CPU Operations	ii) Identify the following expansion cards: • Network card OR i) Define instruction and its types	K	3
19	B: 2(iv)	3.2 CPU Operations **OR** 1.3 Computer Hardware	v) Differentiate the following processors with reference to Clock speed, Bits, Bus width, Cache, Architecture: • Intel P4 • AMD Athlon **OR** iii) Describe the following output devices: • Printers - Impact printer (Dot Matrix, Drum, Chain) - Non Impact Printer (DeskJet , Laser)	U	3
20	B: 2(v)	3.2 CPU Operations **OR** 4.2 Ports and Slots on Motherboard	iii) Describe instruction cycle.(fetch, decode, execute) **OR** iii) Memory chips: • SIMM • DIMM	U	3
21	B: 2(vi)	3.1 Inside CPU	iii) Explain the system bus and its types: • Data bus • Address bus • Control bus OR i) Describe the basic components of CPU : • Arithmetic and Logic Unit(ALU)	U	3
22	B: 2(vii)	5.1 Introduction **OR** 5.1 Introduction	Explain the following: • Network Architecture (Client/Server, Peer to Peer) **OR** Explain the following: • Network Topologies (Star, Ring, Bus, Mesh)	U	3
23	B: 2(viii)	6.4 Mobile Device communication **OR** 2.2 Main Memory	ii) Identify features and limitations of mobile communication system **OR** ii) Differentiate between volatile and nonvolatile memory	U	3
24	B: 2(ix)	6.3 Long Distance Wireless Communication	Explain the following types of long distance wireless communications: • Global Positioning System (GPS) − Geostationary Earth Orbit (GEO) − Medium Earth Orbit (MEO) − Low Earth Orbit (LEO) OR ii) Describe the functions of the following types of registers: - Base register - Data Register (DR) - Memory Buffer Register (MBR)	U	3
25	B: 2(x)	6.2 Short Distance Wireless Communications **OR** 7.4 Data Modeling and EntityRelationship Diagram	Explain the following types of short distance wireless technologies: • Wi Max • Bluetooth • Infra-red **OR** ii) Explain the cardinalities and modalities with the help of pictorial examples	A	3
26	B: 2(xi)	5.1 Introduction 5.3 TCP/IP	• Modes of Communication (simplex, half duplex, full duplex, Synchronous, Asynchronous) OR iii) Differentiate between circuit switching and Packet switching	U	3

27	B: 2(xii)	8.3 Working with Forms **OR** 8.4 Working with queries and commands	ii) Know different Form views **OR** ii) Use following queries on database • SELECT(Where, Group by, Order by) • UPDATE • DELETE	K	3
28	B: 2(xiii)	7.1 Introduction	v) Identify the advantages of database management system over the file management system OR vii) Describe the following types of database models: • Network database • Relational database	U	3
29	B: 2(xiv)	1.3 Computer Hardware OR 7.2 Basic Database Terminologies	iv) Differentiate between soft copy and hard copy OR Define the following terms related to relational databases: • Field / Attribute / Column • Record / Tuple / Row • Data type • Key	U · · · A	3
32	C: 3	4.2 Ports and Slots on the Motherboard **OR** 5.2 Data Communication standards	i) Describe the following Ports: • Serial Ports • Parallel Ports • PS/2 Port • USB port • Fire Wire port **OR** ii) Define OSI model and explain concept of its layers	K	5
33	C: 4	1.3 Computer Hardware **OR** 6.1 Introduction	ii) Describe the Input devices • Pointing devices **OR** iv) Difference between short distance and long-distance wireless communications	K	5
34	C: 5	7.4 Data Modeling and EntityRelationship Diagram **OR** 7.5 Relational Schema	i) Explain the following through pictorial examples: • Entity • Attribute • Relationship • Keys ii) Explain the cardinalities and modalities with the help of pictorial examples **OR** ii) Normalize relations up to third normal form including integrity rules.	U · · · A	5
35	C:6	2.3 Secondary Memory	iii) Describe the following types of optical disk with their working mechanism, advantages and disadvantages: • Optical disks (CD, DVD, Blue Ray) OR Describe the following chip Memories with advantages and disadvantages: • Flash Memory • Memory Cards	K · · · · K	5

* Student Learning Outcomes

National Curriculum for Computer Sciences Grades IX-XII, 2009
(Page no. 26-36)

**Cognitive Level

K: Knowledge
U: Understanding
A: Application

ASSESSMENT GRID FOR COMPUTER SCIENCE HSSC-I MODEL PAPER 2023

SLOs Based Specification of the Cognitive Domains as Per Curriculum 2009

Assessment Objectives		Unit 1: Overview of Computer System **10%**	Unit 2: Computer Memory **10%**	Unit 3: Central Processing Unit **10%**	Unit 4: Inside System Unit **15%**	Unit 5: Network communication and Protocols **10%**	Unit 6: Wireless Communications **10%**	Unit 7: Database Fundamentals **15%**	Unit 8 *: Database Development (Major part cover in Practical) **20%**	Marks	Total marks	% Covered **100%**
Knowledgebased	Section- A		1-iii-(01)	1-vi-(01)			1-ix-(01)			**3**	**51**	37%
	Section - B			2-iii-(03)	2-i-(03) 2-i-(03) 2-iii-(03)				2-xii(3) 2-xii(3)	**18**		
	Section - C	4-(05)	6-(05) 6-(05)		3-(05)	3-(05)	4-(05)			**30**		
Understanding based	Section– A		1-ii-(01)	1-iv-(01)	1-v-(01)	1-vii-(01)		1-xi-(01) 1-xii-(01) 1-xiii-(01)		**7**	**66**	48%
	Section– B	2-iv-(03) 2-xiv-(03)	2-viii-(03)	2-iv-(03) 2-v-(03) 2-vi-(03) 2-vi-(03)	2-v-(03) 2-viii-(03)	2-vii-(03) 2-vii-(03) 2-xi-(03) 2-xi-(03)	2-ix-(03) 2-ix-(03)	2-xiii(03) 2-xiii(03) 2-xiv-(03)		**54**		
	Section - C							5-(05)		**5**		
Applicationbased	Section- A	1-i-(01)				1-viii-(01)	1-x-(01)			**3**	**20**	15%
	Section - B	2-ii-(03) 2-ii-(03)					2-x-(03)	2-x-(03)		**12**		
	Section - C							5-(05)		**5**		
Total marks		18	15	17	21	19	16	25	6		137	100
Percentage		13	11	12.4	15.3	13.9	11.7	18.2	4.3		100	

KEY: **1-i-(01)**
Question No - Part No - (Allocated Marks)