AGA KHAN UNIVERSITY EXAMINATION BOARD

HIGHER SECONDARY SCHOOL CERTIFICATE

CLASS XI

MODEL EXAMINATION PAPER 2023 AND ONWARDS

Computer Science Paper I

Time: 1 hour 30 minutes   Marks: 50

INSTRUCTIONS

1. Read each question carefully.

2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.

3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 50 only.

4. In each question, there are four choices A, B, C, D. Choose ONE. On the answer grid, black out the circle for your choice with a pencil as shown below.

Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.

6. DO NOT write anything in the answer grid. The computer only records what is in the circles.

7. You may use a simple calculator if you wish.

1.   The MOST suitable type of computer that is used by the meteorological department for weather forecasting is the

     A.   mainframe computer.
     B.   microcomputer.
     C.   supercomputer.
     D.   minicomputer.

2.   Voice calls on a computer via an internet connection can be made by using a/ an

     A.   device driver.
     B.   utility software.
     C.   operating system.
     D.   application software.

3.   Consider the given sample of a bank cheque.

     The device that would read the numbers written at the bottom left of this cheque would be a/ an

     A.   optical mark reader.
     B.   optical character reader.
     C.   quick response code reader.
     D.   magnetic ink character reader.

4.   An example of a device that acts as both an input and output device is a

     A.   printer.
     B.   scanner.
     C.   touch pad.
     D.   touch screen.

5.   Resolution is used to measure the quality of a

     A.   printer.
     B.   light pen.
     C.   microphone.
     D.   digital camera.

6.   Which of the following devices uses an electron gun while displaying picture on a screen?

     I.   LED
     II.   LCD
     III. Monitors

     A.   I only
     B.   III only
     C.   I and II
     D.   II and III

7.   The CORRECT categorisation of devices that are used in four steps of data processing cycle is

	Input	Processing	Storage	Output
A	digital camera	control unit	RAM	projector
B	projector	control unit	RAM	digital camera
C	scanner	arithmetic logic unit	ROM	printer
D	printer	arithmetic logic unit	ROM	scanner

8.   The examples of an impact printer are

     A.   dot matrix and inkjet printers.
     B.   dot matrix and chain printers.
     C.   laser and chain printers.
     D.   laser and inkjet printers.

9.   The MOST common built-in pointing device in a laptop is a

     A.   mouse.
     B.   trackball.
     C.   light pen.
     D.   touchpad.

10. Which of the following stages requires an arithmetic logic unit (ALU)?

     A.   Input
     B.   Output
     C.   Storage
     D.   Process

11. As compared to dynamic RAM (DRAM), the static RAM (SRAM)

     A.   is faster.
     B.   is low-priced.
     C.   refreshes periodically.
     D.   requires less number of transistors.

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12.   An example of sequential access memory device is the

    A.   hard disk.
    B.   compact disc.
    C.   flash memory.
    D.   magnetic tape.

13.   In terms of their storage capacity, the CORRECT arrangement of optical discs is

	Low ──────────────────►		**High**
A	DVD	CD	BD
B	CD	DVD	BD
C	BD	CD	DVD
D	CD	BD	DVD

14.   Fatima purchased a CD which contains video files. She can copy video files from CD to her computer, but she cannot copy anything back on to the CD.

    The type of CD purchased is

    I.   CD-R
    II.   CD-RW
    III.   CD-ROM

    A.   II only.
    B.   III only.
    C.   I and II.
    D.   I and III.

15.   Flash memory is a type of

    A.   SRAM.
    B.   DRAM.
    C.   EPROM.
    D.   EEPROM.

16.   The number of gibibyte in 102223394 kibibytes are

    A.   97.488
    B.   102.223
    C.   102223
    D.   99827.533

17.   Which of the following memories exemplify the primary memory?

    A.   Cache and ROM
    B.   SD card and DVD
    C.   RAM and hard disk
    D.   Cache and flash drive

18.   A memory device having the smallest storage capacity is the

    A.   register.
    B.   compact disk.
    C.   cache memory.
    D.   random access memory.

19.   How many gigabytes are there in 2 petabytes?

    A.   2,400,000
    B.   2,000,000
    C.   2,400
    D.   2,000

20.   If ALU performs any operation, then the operand values are stored in two registers and the result of the operation is stored into one of the registers.

Based on the given description, which of the following identification is CORRECT?

	Registers that Store Operand Values	Register that Store Result of an Operation
A	Accumulator Register and Data Register	Accumulator Register
B	Accumulator Register and Data Register	Data Register
C	Instruction Register and Base Register	Instruction Register
D	Instruction Register and Base Register	Base Register

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21.   Consider the given table showing four memory address locations and content stored in them.

Memory Address	Content
00000	11001100
00001	10101010
00010	10001001
00011	11000001

If a Program Counter (PC) holds memory address 00010 at the beginning of the fetch cycle, then what would be stored in the registers mentioned in the given table?

	MAR	MDR	IR
A	00011	11000001	11000001
B	00011	11000001	00011
C	00010	10001001	00010
D	00010	10001001	10001001

22.   As compared to RISC, the CISC architecture

A.   has complex instructions.
B.   typically has fewer instructions.
C.   instructions utilise less number of cycles.
D.   is typically used by smartphones and tablets.

23.   An example of one address instruction is

A.   HALT
B.   JMP
C.   MOV
D.   ADD

24.   When a processor writes data into the main memory, it sends a signal to initiate the data writing process. This signal is sent via a

A.   data bus.
B.   serial port.
C.   control bus.
D.   parallel port.

25.   In a fetch-decode-execute cycle, the fetch operation places the instruction fetched from the memory into the

    A.   program counter register.
    B.   data buffer register.
    C.   instruction register.
    D.   flag register.

26.   Read the given features of a port.

    •   It is round in shape.
    •   It is a type of serial port.
    •   The keyboard and mouse are connected to it.

The port that has all of the given features is the

    A.   PS/2 port.
    B.   USB port.
    C.   HDMI port.
    D.   fire wire port.

27.   As compared to the system unit, a CPU

    A.   is larger in size.
    B.   has a power supply unit.
    C.   is located on the motherboard.
    D.   protects and holds all components at a fixed point.

28.   A mouse can be connected to personal computers using all of the following ports EXCEPT the

    A.   USB.
    B.   PS/2.
    C.   serial.
    D.   parallel.

29.   A box with all the components installed inside it is known as a

    A.   CPU.
    B.   system unit.
    C.   motherboard.
    D.   computer casing.

30.   As compared to IPv4, the IPv6

    A.   has 32-bit address length.
    B.   has checksum field in its header.
    C.   provides encryption and authentication.
    D.   consists of 8 octets and each octet consists of 8 bits in its address.

31.   The CORRECT categorisation of protocols at the given layers of OSI model is

	Application Layer	Network Layer	Transport Layer
A	HTTP	IP	TCP
B	TCP	IP	HTTP
C	IP	TCP	HTTP
D	HTTP	TCP	IP

32.   Sana and Fatima are sitting in the same room and chatting with each other using a social media network service.

This network is an example of a

A.   BAN.
B.   PAN.
C.   LAN.
D.   NAN.

33.   The number of links required to connect 5 nodes in mesh topology are

A.   5
B.   7
C.   9
D.   10

34.   The option that CORRECTLY depicts the categorisation of examples of transmission modes is

	Simplex	Half-Duplex	Full-Duplex
A	transfer of data from the computer to printer	communication over telephone line	communication over walkie-talkie
B	transfer of data from the computer to printer	communication over walkie-talkie	communication over telephone line
C	communication over telephone line	communication over walkie-talkie	transfer of data from the computer to printer
D	communication over walkie-talkie	communication over telephone line	transfer of data from the computer to printer

35.   A system that can provide communication over the longest distance is

A.   Wi-Fi.
B.   cellular.
C.   infrared.
D.   WiMAX.

36.   Which of the following options is CORRECT regarding the frequencies used when mobile phones communicate to base stations (BS) and vice versa?

	Frequency to Communicate from Mobile Phone to BS	Frequency to Communicate from BS to Mobile Phone
A	Uplink	Uplink
B	Downlink	Uplink
C	Uplink	Downlink
D	Downlink	Downlink

37.   Which of the following arrangement shows the CORRECT number of satellites required to cover the entire Earth?

	Number of LEO Satellites	Number of MEO Satellites	Number of GEO Satellites
A	40 to 80	8 to 20	3
B	3	8 to 20	40 to 80
C	40 to 80	3	8 to 20
D	8 to 20	40 to 80	3

38.   In GPS, the MINIMUM number of satellites required to determine the location of a receiver is

A.   2
B.   3
C.   4
D.   5

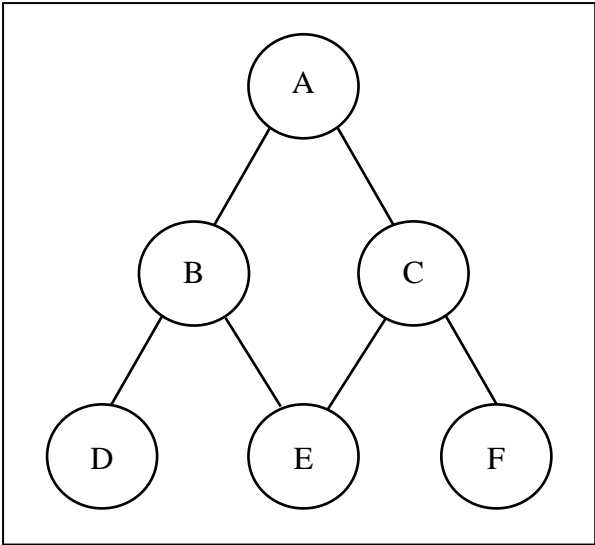39.   Read the following features:

- Creates a MAN
- Transmits information through microwave
- Provides services anywhere within a city

The wireless communication identified from the given features is a/ an

A.   Wi-Fi.
B.   infrared.
C.   WiMAX.
D.   Bluetooth.

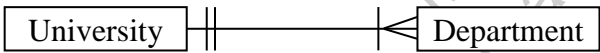40. Consider the given database model.

This model is an example of a/ an

A. network database.
B. relational database.
C. hierarchical database.
D. object oriented database.

41. Consider the given entity relationship diagram (ERD)

| University | ╫——————⊰ Department |

The cardinality and modality for the given Entity Relationship Diagram (ERD) are

	Cardinality between University and Department	**Modality between University and Department**
A	one-to-many	one-to-one
B	Many-to-one	one-to-many
C	one-to-one	one-to-one
D	one-to-many	one-to-many

42. Consider the given tasks.

    I.   Retrieving data from a database
    II.   Inserting data into a database
    III.   Deleting objects from the database
    IV.   Deleting records from a database

    The tasks performed by data manipulating language of SQL are

    A.   I, II and III.
    B.   II, III and IV.
    C.   I, II and IV.
    D.   I, III and IV.

43. The collection of related fields in a database table is treated as a single unit. The two names of this unit are

    I.   Tuple
    II.   Attribute
    III.   Column
    IV.   Record

    A.   I and II.
    B.   I and IV.
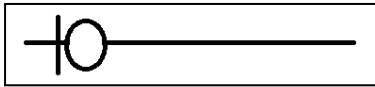   C.   II and III.
    D.   III and IV.

44. An employee database table has following fields. The Employee_ID is the primary key.

    I.   Employee_ID
    II.   Employee_Name
    III.   Employee_National_ID_Card_Number
    IV.   Employee_Age
    V.   Employee_Gender

    In this table, the MOST appropriate candidate key is

    A.   II only.
    B.   III only.
    C.   IV only.
    D.   V only.

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45. Consider the given image representing cardinality and modality.

The CORRECT interpretation of cardinality and modality from the given image is

A. cardinality is one and modality is zero.
B. cardinality is zero and modality is one.
C. cardinality is many and modality is zero.
D. cardinality is zero and modality is many.

Use the given database table to answer Q.46, Q.47 and Q.48

A database table named as **T20Data** shows the data of the top 5 men's T20I cricket team rankings as on August 26, 2019.

Position	Team Name	Matches	Points	Rating
1	Pakistan	26	7365	283
2	England	16	4253	266
3	South Africa	16	4196	262
4	India	31	8099	261
5	Australia	21	5471	261

46. If the descending sort is applied on the **Team Name** field of this table, then the team names that would appear above India in the table would be

A. South Africa and Pakistan.
B. England and South Africa.
C. England and Australia.
D. Australia and Pakistan.

47. The SQL query to delete the Rating column from the table is

A. ALTER TABLE T20Data DROP COLUMN Rating
B. DROP COLUMN Rating ALTER TABLE T20Data
C. ALTER TABLE T20Data DELETE COLUMN Points
D. DELETE COLUMN Points ALTER TABLE T20Data

48.   A query is constructed in the design view so that it would display the position number and the names of only those teams who have played more than 20 matches and have rating of less than 265.

This query is split into two parts. Given is the first part of the query.

Field:	Position		Team Name	
Table:	T20 Data		T20 Data	
Sort:				
Show:	☑		☑	
Criteria:				
or:				

To retrieve the required records, the second part of this query will be

		Matches	Points	Rating
A		T20Data	T20Data	T20Data
		☑	☑	☑
		>20		<265

		Matches	Points	Rating
B		T20Data	T20Data	T20Data
		☐	☐	☐
		<20		>265

		Matches	Points	Rating
C		T20Data	T20Data	T20Data
		☑	☐	☑
		>20		
				<265

		Matches	Points	Rating
D		T20Data	T20Data	T20Data
		☐	☐	☐
		>20		<265

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49.   Consider the given form.

The layout of the given form is

A.   tabular.
B.   justified.
C.   datasheet.
D.   columnar.

50.   To produce an MS Access report, the data is fetched with the help of

A.   tables and queries.
B.   forms and queries.
C.   tables and relationships.
D.   forms and relationships.

END OF PAPER

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