Model Paper (LMS)

① (a) Total capacity = (512 + 128) x 200
= 128000 bytes.
= 128 ~~kbytes~~ KB //

Useful capacity = 512 x 200
= 102400
= 102.4 kB //

(b) Total cylinder capacity = (512+128) x 200 x 15 x 2 = 3840000
= 384 kB //

Useful cylinder capacity = 512 x 200 x 15 x 2
= 3072000
= 3072 kB //

(c) Total ~~disk~~ capacity of disk pack
= (512 + 128) x 200 x 15 x 2 x ~~800~~ 800
= 3072000000
= 3072 MB //

Useful capacity of disk pack
= (512 x 200) x 15 x 2 x 800
= 2457600000
= 2457.6 MB //

② a) RAM

- RAM is used as main memory. It is accessed directly by CPU.
- RAM is volatile. If it loses power, the data will be lost.
- RAM holds billions of storage locations, each with its own memory address. These can be accessed in any order. This is why it is RANDOM Access Memory.

b) ROM

- ROM is a memory chip where essential system instructions (BIOS) are permanently stored.
- The data held on ROM can be read but not changed. The is done during manufacturing.
- ROM is non-Volatile, meaning that the data stored on it will not be lost when the computer is switched off.

c) Processor

- The processor is the part of the computer which processes or deals with the data and processes in the system.

d.) Optical and Magnetic Devices

- Optical means light. So an optical device makes use of light in order to work. For example, a DVD reader is an optical device because a laser beam is used to read the data from the disk.

- Magnetic devices use minute magnetic particles or domains to store data. A hard disk is an example of a magnetic storage device. It contains several platters on a spindle, spinning at high speed, with read/write heads floating just above the surface. Another example of magnetic storage is a magnetic tape cartridge.

(Hexa to binary) → $16 = 2^4$

③ (i) a.) 95_{10}

$2 \mid 95$
$2 \mid 47 - 1$
$2 \mid 23 - 1$
$2 \mid 11 - 1$
$2 \mid 5 - 1$
$2 \mid 2 - 1$
$1 - 0$

$= 1011111_2$ //

b.) 4109_{16}

$2 \mid 4$ | 1 | 0 | $2 \mid 9$
$2 \mid 2 - 0$ | | | $2 \mid 4 - 1$
$1 - 0$ | | | $2 \mid 2 - 0$
| | | $1 - 0$

0100 | 0001 | 0000 | 1001

$= 0100000100001001_2$ //

(octal to binary) → $8 = 2^3$

c.) 3120_8

$2 \mid 3$ | 1 | $2 \mid 2$ | 0
$1 - 1$ | | $1 - 0$ |

011 | 001 | 010 | 000

$= 011001010000_2$ //

* $1+1 = 10$ ← carried

* when borrowed 1 → 2 ones are taken

ii) $110011 + 101111 = 011100010$

ii) $100000 - 100111 = 0111001$

iii) (a) 110011

$2^5\ 2^4\ 2^3\ 2^2\ 2^1\ 2^0$

$32 + 16 + 2 + 1$

$= 51_{10}$

b) 11110011

$2^7\ 2^6\ 2^5\ 2^4\ 2^3\ 2^2\ 2^1\ 2^0$

$128 + 64 + 32 + 16 + 2 + 1$

$= 243_{10}$

c.) 1010101

$2^6\ 2^5\ 2^4\ 2^3\ 2^2\ 2^1\ 2^0$

$64 + 16 + 4 + 1$

$= 85_{10}$

(4)(a) A network is when two or more computers are connected together. They are linked toa share and exchange data with each other. A network can be any combination of LANs and WANs.

(b) Advantages

- Application sharing
- Connecting people
- Sharing information resources
- Reduces hardware cost.

Disadvantages

- Lack of privacy
- Security threats
- Loss of productivity

(c) - Internet is made up of millions of small computers networks.

- www is a collection of individual web sites which is accessed by a common protocol.

(5) 1.) AI.

Artificial Intelligente is the ability of a computer to perform task such as reasoning and learning that human intelligences is capable of doing.

A major thrust of AI is in the developingent of computer functions associated with human intelligence, such as problem solving and learning.

AI has dominant in various field such as Gaming, Speech recognition and vision systems.

2.) Robotics

- The field of computer science and engineering concerned with creating robots, devices that can move and react to sensory input. Robotics is one branch of AI.
- Robotics are now widely used in factories to perform high-precision jobs such as welding and riveting. They are used in special situations that would be dangerous for humans. i.e - in cleaning toxic waste or defusing bombs.

3.) Biometrics

- Biometrics means to measure and analyse some human characteristics in order to correctly identify an individual. Some characteristics ~~are~~ which are used are; fingerprint, voice patterns, face recongnition.

⑥ Desktop computer is sufficient for general office usage as it fit on a desk. It has more memory capacity than a laptop. Also ~~speed~~ processor speed is comparably high.

⑦ Types of computer networks are;

- Local Area Network (LAN) - The computers are connected in a building or office.
- Wide Area Network (WAN) - The computers are connected by telephone lines or radio waves accross country or continent.
- MAN (Metropolitan Area Network) - A network designed for a town or city.

- Personal Area Network (PAN) - A network contained within a user's home that connects a person's digital device eg:- by bluetooth.

→ Eg of Internet Applications
- E-mail
- Peer to peer services
- Web-browsing:

⑧ IT Applications
- In business field, Payroll calculations, managing employee database, financial forecasting, sales analysis.
- Banking; ATM machines and online accounting facility.
- Marketing field, advertising with computers Home shopping (online shopping).

⑨ Cloud computing
- The practise of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer.

Health Trends
- Wearable ~~watch~~ ~~gigi~~ digital watches - track the steps you have walked, calories burnt, other health related ditails can be tracked.
- 3D printers - can make artifical fingers and legs inorder of replacement of dislocation of it.

Internet Security

- It is a branch of computer security that deals specially with internet based threats. These include hacking. Viruses and other ~~software~~ malicious software which can damage data or make systems vulnerable to other threats. You can protect yourself from these threats with strong Internet Security, such as anti-virus software.

Digital sound & image

- Digital image uses pixels, the monitor uses red, green blue colour guns draws each dot based on the numbers of the colour (0-255) which we see as an image. A small box is called a pixel. No. of boxes in a picture (no. of pixels) is called resolution.

- Digital sound occus when we speak to a microphone a mechanical part moves based on our voice. An electrical part generates a sound signal based on this movement.

(10) 1.) Pay and go, - without dealing with ~~m~~ cash, by scanning the QR code which is at the merchant we can ~~purchase~~ ~~the go goods~~ pay for the ~~purchased~~ goods.

2.) Digital mobility - able to book online cabs and cars through an app ^ faster and safer, ~~Also can~~ live location tracking available. eg:- pickme and uber.

3.) Online order foods - eg:- pickme food.

4.) ~~ATM~~ ATM / 5.) Park and pay - find your parking and pay from your smartphone.