**ICT concepts**

**Impact of ICT systems, computers and other devices on our lives, global economy and business**

ICT caused a transformation in all spheres of our lives. With the Internet the whole world is now connected. Businesses use computer to execute complex calculations, store valuable data for as long as needed and to provide better services, faster. ICT systems are used in education to provide a more interactive and comprehensive learning experience. Electronic commerce as part of the digital revolution has changed the way we shop for goods too.

**Nature of ICT, it’s application and core attributes**

ICT stands for Information and Communications Technologies. It generally refers to the devices which facilitate interaction with the digital world, and networking devices, applications, and systems. ICT is more comprehensive than IT. ICT includes data, domestic appliances and software and hardware. ICT has impact on all spheres of our lives. It opened new market opportunities and new cost-cutting procedures but it opened new levels of crimes and people might be replaced by AI soon.

**Difference between data and information**

Data is raw material, information is processed data.

**Core characteristics of a computer and how it works with data**

Main characteristics are that they are fast, accurate, versatile and multi-tasking.

They are able to multi-task due to usage of instruction sets: RISC or CISC.

RISC is used in mobile devices, while CISC is used in desktops.

An instruction set is a predefined set of instructions.

Data is stored in a digital format and represented as a series of zeros and ones, in binary number system. 1 means on, 0 means off in the circuitry of the computer.

**Phases of digital revolution and main features of each**

1. Data processing (computers were huge, expensive, used in large enterprises and governments), they were operated by specialized technicians
2. Personal computing is when standalone computers with local software appeared, regular users began to use them, but they were not connected to networks
3. Network computing is when computers became networked and Internet first appeared. No wireless networks were existing yet.
4. Cloud computing – everything can be accessed on the Internet, apps can run from the Internet, data can be stored in the cloud
5. Ubiquitous computing – manipulating real-world tangible objects (IOT, VR, AR)

**Definition and types of computers**

Computers are devices which input data, process data, store data and output information. Types of computers: Workstation, supercomputer, mainframe computer, desktop computer, tablet, laptop computer or notebook, smartphone

**Basic components of a computer**

CPU (Central Processing Unit) – chip which executes instructions and coordinates activities in computer system. Consists of ALU (Arithmetic logic unit), CU (Control unit) and registers. Control unit analyses instructions, interprets them, fetch instructions from RAM, fetch data, clear registers. ALU performs mathematical and logical operations. Registers keep track of the next instruction, and the instruction being executed.

Motherboard – backbone of computer, links all components together

System clock sends signals at fixed intervals to synchronize the flow of data

RAM is volatile. It holds the raw data waiting to be processed and program instructions and results of processing.

All types of memes: RAM (holds data while it’s processed), ROM (stores BIOS), CMOS (Complementary metal–oxide–semiconductor, stores basic computer and BIOS settings), Virtual Memory (some unneeded parts of programs’ data is unloaded to hard disk), Cache Memory (stores frequently used data and programs), HDD, SSD (+may be registers)

SSD, HDD. Solid State Drive – uses charged and discharged capacitors. Hard Disk Drive – has magnetic platters, where magnetic head is reading and writing the data. It uses positive and negative-oriented particles to work.

**Input/output devices**

Mouse, keyboard, monitor, printer, scanner

**Processing device**

**C P U**

**Types of storage, secondary storage**

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**Definition of e-waste, state of the e-waste issue today**

**E-waste is short for**

**Threats of e-waste**

**Obstacles for tackling the e-waste problem**

**Solutions of the e-waste issue**

E-waste is short for electronic waste. E-waste is high-tech trash, electronic scrap, discarded electrical devices. Reasons of e-waste are availability of new devices, tech boom, growing consumerism. People buy gadgets because new products are widely available and repair cost are high. E-waste contains hazardous materials such as lead, cadmium. E-waste leads to health problems, water pollution, soil pollution. To solve this people should get replacement parts, upgrade devices they have themselves, care about proper scrap disposal.

Design better products

Extended Producer responsibility

Better recycling