IN1006 Systems Architecture (PRD1 A 2022/23)

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Grade	6.67 out of 10.00 (67%)

Question 1

Incorrect

Mark -0.50 out of 1.00

The von Neumann model suffers from the single datapath bottleneck. Which components does the bottleneck datapath connect together?

Select one:

- a. Control Unit and Main Memory
- b. Don't Know/No answer
- c. Registers and ALU
- d. Main Memory and ALU
- e. Control Unit and Input/Output Subsystem.

✖ This is wrong. The bottleneck datapath connects the control unit with the main memory.

The correct answer is: Control Unit and Main Memory

Question 2

Correct

Mark 1.00 out of 1.00

Which of the following are true for vacuum tubes (VT) and silicon transistors (ST):

Select one or more:

- [ ] a. VTs and ST were used to build different parts of 3rd generation computers.
- [ ] b. VTs unlike STs can be integrated on single chip.
- [x] c. VTs and STs are both externally controllable means for allowing the flow of electricity. ✔ Correct.
- [ ] d. VTs were as fast as STs but occupied much more space and thus they could not be used to build small personal computers.
- [x] e. VTs like STs can control the flow of electricity through them. ✔ Correct answer.

Your answer is correct.

The correct answers are:
VTs like STs can control the flow of electricity through them.,

VTs and STs are both externally controllable means for allowing the flow of electricity.

Question 3

Partially correct

Mark 0.67 out of 1.00

Which of the following statements are correct about the system bus model?

- [x] a. The system bus model involves separate buses for transferring data and instructions between different components of a computer system. ✔ Correct.
- [ ] b. The system bus model improved the capability of computers because it enabled the parallel execution of statements in the CPU of the computer.
- [x] c. The control bus in the system bus model is responsible for the parallel execution of statements in the CPU of the computer. ✖ Not correct. System buses are not responsible for the execution of statements in the CPU.
- [ ] d. The separate buses that form the system bus of a computer connect only the CPU with the main memory of the computer.

Your answer is partially correct.

You have selected too many options.
The correct answer is:
The system bus model involves separate buses for transferring data and instructions between different components of a computer system.

Question 4

Correct

Mark 1.00 out of 1.00

Which of the following is not a component of a computer system according to the von Neumann model?

Select one:

- a. Don't Know/No answer
- b. ALU
- c. Operating System ✔ The Operating System (OS) is not part of the von Neumann model. It is the main software that controls the execution of all the components of the von Neumann model.
- d. Control unit
- e. Display

The von Neummann model has the following components: control unit, ALU, registers, main memory system and I/O system.

The correct answer is: Operating System

Question 5

Incorrect

Mark -0.50 out of 1.00

A simplisitc but essentially complete layering of a computer system is (from lower, left, to higher layers, right:

Select one:

- a. Instruction Set Architecture, OS, Application, Users ✖ This is a correct desription of increasing abstraction but there are layers missing, like the hardware, and so it is not complete and there are better answers.
- b. Hardware, Systems Software and OS, Application Software, Users
- c. Don't Know/No answer
- d. Transistors, Operating System, Low level programs, Users, Applications
- e. Hardware, Instruction set, Applications, Users

Understanding the various ways in which a system can be presented is an important part of the principle of abstraction.

The correct answer is: Hardware, Systems Software and OS, Application Software, Users

Question 6

Correct

Mark 1.00 out of 1.00

Given the principle of abstraction, which of the following statements is correct (select all statements which are correct in your opinion)?

- [x] a. A programmer can program a computer using either a high level programming language or a low level programming language. ✔ This is correct.
- [ ] b. People can use computers only through applications or through high level computer programmes.
- [ ] c. A programmer is no longer able to use the instructions used in the Instruction Set Architecture in order to program a computer.
- [x] d. People can use computers through high level applications without any need to know the circuits that constitute the computer's hardware. ✔ This is correct.
- [ ] e. A programmer can program a computer using a high level programming language but should use within his/her programmes also instructions from the Instruction Set Architecture of the computer.

Your answer is correct.

The correct answers are:
A programmer can program a computer using either a high level programming language or a low level programming language.,

People can use computers through high level applications without any need to know the circuits that constitute the computer's hardware.

Question 7

Correct

Mark 1.00 out of 1.00

What is the meaning of ALU?

Select one:

- a. Arithmetic Logical Unit
- b. Arithmetical Logistics Unit
- c. Arithmetic Logic Unit ✔
- d. Arithmetical Liaison Unit
- e. Don't Know/No answer

The correct answer is: Arithmetic Logic Unit

Question 8

Correct

Mark 1.00 out of 1.00

Time sharing ...

Select one or more:

- [ ] a. was introduced in the second generation of computers.
- [ ] b. became possible only after mechanical computers were replaced by modern vacuum tube computers.
- [x] c. was introduced in the 3rd generation of computers. ✔ Correct.
- [ ] d. is a form of low level programs.
- [x] e. describes the ability of different programmes/users to use the same shared resources of a computer (e.g., CPU, memory etc). ✔ Correct.

Your answer is correct.

The correct answers are:
was introduced in the 3rd generation of computers.,

describes the ability of different programmes/users to use the same shared resources of a computer (e.g., CPU, memory etc).

Question 9

Correct

Mark 1.00 out of 1.00

Which of the following statements are correct about the ALU unit of the CPU?

- [x] a. It writes data to the registers of the CPU. ✔ Correct.
- [x] b. It can execute all the arithmetic and logic operations upon data that are supported by the particular computer it is a part of. ✔
- [x] c. It can execute binary statements. ✔ Correct.
- [ ] d. It is responsible for the transfer of data between the CPU and the main memory of the computer.
- [ ] e. It can execute statements drawn from the Instruction Set Architecture of the computer.

Your answer is correct.

The correct answers are:
It can execute binary statements.,

It can execute all the arithmetic and logic operations upon data that are supported by the particular computer it is a part of.,

It writes data to the registers of the CPU.

Question 10

Correct

Mark 1.00 out of 1.00

Consider vacuum tubes and transistors. Which of the following statements are correct regarding them?

- [ ] a. Transistors can be used to build memory circuits but vacuum tubes cannot.
- [ ] b. They can perform computations using the same amount of energy per computation unit.
- [x] c. Both of them can be used to build logic circuits that perform elementary computations (e.g., AND, OR of binary inputs). ✔ Correct.
- [x] d. The phenomenon that underpins their function is the controlled flow of electrons through them. ✔ Correct.
- [ ] e. They can be used to build the equivalent computation circuit and they need the same space for this purpose.

Your answer is correct.

The correct answers are:
Both of them can be used to build logic circuits that perform elementary computations (e.g., AND, OR of binary inputs).,

The phenomenon that underpins their function is the controlled flow of electrons through them.

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