COMPUTER ORGANISATION
Exam preparation questions

1) Explain how the machine instruction cycle works.

2) Outline the role of the address bus, data bus and control bus during the machine execution cycle.

3) Outline how each of the following registers are used in the machine execution cycle.

   a) PC
   b) IR
   c) Acc
   d) MAR
   e) MDR

4) Explain the role of registers, cache memory and main memory during the running of a computer.

5) State three difference between RAM and ROM.

6) Explain the process that takes place during the booting of a computer. Your answer should include all the parts of the computer that play a role in the process.

7) Discuss the need for secondary storage. Your answer should make a comparison between primary and secondary memory.

8) Outline the difference between system software and application software.

9) Outline the responsibilities of an operating system.

10) Outline the use of three different kinds of application software.

11) Identify three common features of application software.

12) Outline the way in which data is represented inside a computer. Your answer should make reference any data stored inside a computer, such as characters, colours and images.

13) Explain the need of a translator when working with high and low-level languages.

14) Explain why computers use the base 2 number system.

15) Convert the following numbers.

   a) Binary number 11001010 to its decimal representation.
   b) Decimal number 56 to its binary representation.
   c) Binary number 11001010 to its hexadecimal representation.
   d) Decimal number 56 to its hexadecimal representation.
   e) Hexadecimal number B1 to its binary representation.
   f)   Hexadecimal 5C to its decimal representation.

16) Explain the need for Unicode.

17) Construct the logic diagram and truth table for the following expression.

$$X = 1 \text{ if } ((A = 1 \text{ OR } B = 1) \text{ XOR } (B \text{ NOT } 1 \text{ AND } C = 1))$$

18) Construct the logic diagram and truth table for the following expression.

$$(A \text{ AND } B) \text{ XOR NOT } C$$