

1. (a) Express the following numbers as indicated

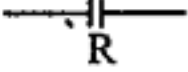
$$(7A9)_{16} = (?)_{10} = (?)_8 = (?)_2$$

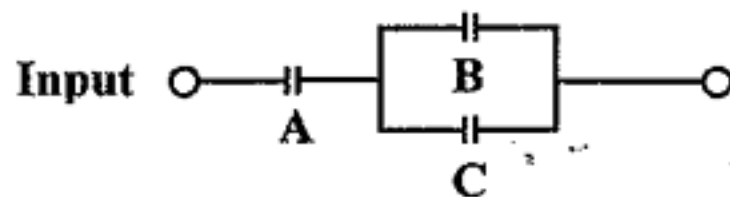
(b) What is called Binary-Coded Decimal (BCD) code, how to express the decimal number $(395)_{10}$ in BCD code. (10%)

2. What are the main units to organize a digital computer? (10%)

3. Explain the following terms (10%)
(a) compiler (b) numerical analysis (c) modem (modulator and demodulator)

4. Describe the different topologies and transmission media commonly used in Local Area Network (LAN). (10%)

5. A variable switch contact (or relay) can be expressed as , write the Boolean expression for the given circuit and its truth table. (10%)



6. Please draw a diagram to show clearly the translating process, which translates the source module of a program into the executable module. (10%)

7. Please describe the functionality of the two primary buses of a computer system, the **data bus** and the **address bus**. (10%)

8. Please describe the purpose and the functionality of the **cache** memory. (10%)

9. Describe in detail the three data transmission modes - **simplex**, **half-duplex**, and **full duplex** in general communication operations. (10%)

10. Please explain briefly the following terminology: (each 2% total 10%)
(a) HTTP (b) URL (c) Public Key and Private Key (d) TCP/IP (e) HTML