

Q 2(a) Explain design metrics used for embedded systems.

Answer Page Number 04 of Text Book – I

Q 2(b) Compute the annual growth rate of IC capacity and designer productivity.

Answer

$$\begin{aligned} \text{(a)} \quad Y &= x * r * r * r * r = 4x \\ r &= 1.587 \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad x * r^{21} \\ 50 &= r^{21} \\ r &= 1.205 \end{aligned}$$

Q 3(b) Briefly explain the following:

- 1. Combinational & Sequential Circuit**
- 2. Single purpose Processor and general purpose processor**

Answer Page Number 09 of Text Book - I

Q 4(a) With example explain how program & data memory can be overlapped in Harvard architecture.

Answer Page Number 58 of Text Book - I

Q 4(b) Explain the following:

- 1. Device programmers**
- 2. Linker**
- 3. Cross compiler**
- 4. System call**
- 5. pipelining**

Answer

- 1. Page Number 73 of Text Book - I**
- 2. Page Number 71 of Text Book - I**
- 3. Page Number 71 of Text Book - I**
- 4. Page Number 68 of Text Book - I**
- 5. Page Number 60 of Text Book - I**

Q 6(a) Explain direct and fully associative cache mapping technique.

Answer Page Number 126 of Text Book - I

Q 7(a) Compare the serial protocols, parallel protocols and wireless protocols in terms of formats, speed, performance and security issues.

+ $\{(2*4=8m)\}$
each point-2m

Answer Figure 6.1, Page Number 138-139 of Text Book - I

Q 7(b) Briefly explain two popular parallel protocols used in embedded system.

Answer Page Number 173 of Text Book - I

Q 8(a) List the detailed functions inside the digital camera.

Answer Article 11.2.1, Page Number 531-532 of Text Book - III

Q 8(b) List the requirements of a sub-system for application, which is transmitting a TCP/IP stack.

Answer Article 11.3.1, Page Number 538 of Text Book - III

Q 9(a) Describe Task, Task states and RTOS.

Answer Page Number 159-160 of Text Book - II

Q 9(b) Explain the following terms in brief.

1. Scheduler
2. Semaphore

Answer

1. Page Number 147 to 149 of Text Book - II
2. Page Number 173 to 174 of Text Book - II

Text Books

1. Embedded Systems Design, A Unified Hardware/Software Introduction, Frank Vahid/Tony Givargis, 2006 reprint, John Wiley Student Edition

2. An Embedded Software Primer, David .E. Simpson, Fourth Impression 2007, Pearson Education

3. Embedded Systems, Raj Kamal, 13th reprint 2007, Tata-McGraw Hill Publications