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
(a) $Y = x * r * r * r = 4x$
$r = 1.587$

(b) $x * r^{21}$
$50 = r^{21}$
$r = 1.205$

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 ststes 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