1. Identify the letter of the choice that best completes the statement or answers the question.
   (1) ____ is an unsolicited e-mail message or newsgroup posting sent to many recipients or newsgroups at once.
      a. A flame                   c. A spoiler
      b. An emoteicon              d. Spam
   (2) Flash memory, also called flash ROM or flash RAM, is different from PROM because _____.
      a. unlike flash memory, PROM can be erased electronically and reprogrammed
      b. flash ROM is volatile, but PROM is nonvolatile
      c. unlike PROM, flash memory can be erased electronically and reprogrammed
      d. flash ROM is nonvolatile, but PROM is volatile
   (3) An IrDA (Infrared Data Association) port _____.
      a. is a special type of serial port that connects the system unit to a musical instrument
      b. can connect up to 127 different peripheral devices with a single connector type
      c. is a special high-speed parallel port used to attach peripheral devices
      d. allows wireless devices to transmit signals to a computer via infrared light waves
   (4) If a hard disk has 4 platters (8 sides), each with 1,000 tracks, then it will have _____.
      a. 1,000 cylinders with each cylinder consisting of 8 tracks (2 for each side)
      b. 8 cylinders with each cylinder consisting of 1,000 tracks (125 for each side)
      c. 1,000 cylinders with each cylinder consisting of 4 tracks (1 for each side)
      d. 8 cylinders with each cylinder consisting of 2,000 tracks (62.5 for each side)
   (5) Because the data dictionary contains data about data, some call it _____.
      a. dataset                   c. datastream
      b. metadata                  d. postdata
   (6) The data model and the schema of a DBMS are often defined in the _____. level.
      a. external                  c. internal
      b. conceptual                d. physical
   (7) In an abstract data type, _____.
      a. the ADT implementation is known.
      b. the ADT implementation is hidden.
      c. the ADT functions are hidden.
      d. none of the above.
   (8) Defining the users, needs, requirements, and methods is part of the _____. phase.
      a. analysis                  c. implementation
      b. design                    d. testing
   (9) To prevent _____. an operating system can put resource restrictions on processes.
      a. starvation                c. paging
      b. synchronization           d. deadlock
   (10) The transport layer protocol of TCP/IP is called _____.
      a. TCP                      c. IP
      b. UDP                      d. a and b

2. Terminology Explanation
   (a) ADT (abstract data type) (f) GIGO (garbage in, garbage out)
   (b) deadlock                  (g) WAN (wide area network)
   (c) starvation                (h) NAS (network attached storage)
   (d) demand segmentation       (i) SSL (secure socket layer)
   (e) DMA (direct memory access) (j) Digital cash
3. Please compare B2B (B-to-B), B2C (B-to-C), C2C (C-to-C) and B2E (B-to-Employee) in e-commerce.

4. Convert the following numbers:
   (a) \(6A_{16}\) into base 8
   (b) \(12345_{10}\) into base 16
   (c) \(1.02_{10}\) into base 2
   (d) \(-127_{10}\) into base 2 with 2’s complement (8 bits)
   (e) \(37_{10}\) into base 7

5. Please design an algorithm or a program to convert a decimal number into its binary form. For example, when input is \(25_{10}\) the output will be \(11001_{2}\).

6. You have relations A, B, and C as shown in follows.

<table>
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<th>A3</th>
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<td>1025</td>
</tr>
<tr>
<td>33</td>
<td>405</td>
<td>1065</td>
</tr>
</tbody>
</table>

Show the resulting relation if you apply the following SQL statements:

(1) `select * from A where A2=16`  
(2) `select A1, A2 from A where A2=16`  
(3) `select A3 from A where A2=16`  
(4) `select B1 from B where B2=216`  
(5) `update C set C1=37 where C1=31`

7. Give the binary tree representation of the following tree:

   A
   / \  
  B   C
   / \  
  E   F
   / \  
 G H
   / \  
J K

8. A binary tree has seven nodes. The inorder and postorder traversal of the tree follow. Can you draw the tree? If not, explain.

   Postorder: GFDABEC  
   Inorder: ABDCEFG