ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL
School of Engineering & Technology

Subject: SPCC
Test: Unit Test 1
Class: TE COMPUTER

Marks: 30
Duration: 1 Hr

Instruction: Q1 is compulsory

Q1. Attempt the following [10 Marks]

i. Which of the following system software resides in the main memory
   a. Compiler    b. Linker    c. Loader    d. Assembler

ii. A software is to be developed for a system which has a small memory the Software should?
   a. Use recursion whenever possible    b. Avoid using recursion
   c. use macro instead of function     d. Not use macro instead of function
   e. b & d                             f. a & c

iii. What is bootstrapping?
   a. A language interpreting other language program
   b. A language compiling other language program
   c. A language compile itself
   d. All of the above

iv. Indicate which of the following is not true about interpreter
   a. Interpreter generates an object program from the source program
   b. Interpreter analysis each source statement every time which is to be executed
   c. Interpreter is a kind of translator
   d. All of the above
   e. None of the above

v. Assembler is machine dependent because of
   a. POT    b. MOT    c. LT    d. ST    e. BT

vi. Indicate the order in which the following system program are used from developing program upto its execution
   a. Assembler    b. Loader    c. Compiler    d. Macro Processor
   e. Linker    f. editor

vii. Attempt [any 4]

   Specify the corresponding passes (Pass 1 or Pass 2 or both) use of the following Function: 
   a. Keep a base register table
   b. Updates a location counter
   c. Stores symbol definition
   d. Process start pseudo-opcode
   e. Processes DS pseudo-opcode

Q2. What is Forward Reference Problem and how to solve it? Design flowchart for Pass II of two pass assembler with programming example and different database tables [10 Marks]

Q3. Explain Macro flowchart (Pass I and Pass II) with programming example and database table?  [10 Marks]
Note: Question 1 is compulsory and answer any one from the remaining two.

I. Following questions are compulsory – 10 Marks
   1. Explain the concept of time complexity of an algorithm. - 4 Marks
   2. What is meant by analysis of algorithms and what is the time complexity of insertion, sequential and merge sort. - 6 Marks

II. Prove that time complexity of merge sort is $O(n \log n)$ - 10 Marks

III. Derive time complexity of insertion sort with step counting method. - 10 Marks

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III. Derive time complexity of insertion sort with step counting method. - 10 Marks
Instruction: Q1 is compulsory

Q1. Attempt the following
   a. Draw a use case diagram for the online airline reservation system
   b. Draw a class diagram for Engineering College

Q2. Attempt (any two) of the following:
   a. Explain spiral Model of software development
   b. Explain different levels of CMM
   c. Explain RAD model of software development

[All the Best]
Instructions: Q No. 1 is compulsory and attempt any two out of remaining three.

1) Define a Data Warehouse. Explain the need for developing data warehouse and hence explain its architecture. 10

2) Attempt the following:
   a. Building blocks of Data warehouse. 5
   b. Differentiate between OLTP and OLAP. 5

3) State true or false with proper Justification:
   a. Proper Strategic Information leads to efficient decision making. 10
   b. Facts table consists of huge number of records.
   c. Facts table does not contain the measures/metrics of a business.
   d. Data warehouse architecture is a comprehensive blueprint.
   e. Data in a data warehouse does not need to be subject oriented.

4) a. What are differences between Data Warehouse and Data Mart. 5
   b. For a Supermarket Chain consider the following dimensions namely Product, Store, Time and Promotion. The schema contains a central fact table Sales facts with three measures unit_sales, dollar_sales and dollar_cost. Design star schema for this application. 5