Computer Science Engineering Sample Papers

1 The problems 3-SAT and 2-SAT are

- A) both in P
- B) both NP-complete
- C) NP-complete and in P respectively
- D) undecidable and NP-complete respectively

Answer: (C)

2 Consider the following relation schema pertaining to a students database: Student (<u>rollno</u>, name, address)

Enroll (rollno, courseno, coursename)

where the primary keys are shown underlined. The number of tuples in the Student and Enroll tables are 120 and 8 respectively. What are the maximum and minimum number of tuples that can be present in (Student * Enroll), where '*'denotes natural join?

- A) 8, 8
- B) 120, 8
- C) 960, 8
- D) 960, 120

Answer: (C)

- 3 Consider a relation scheme R = (A, B, C, D, E, H) on which the following functional dependencies hold : $(A \rightarrow B, BC \rightarrow D, E \rightarrow C, D \rightarrow A)$. What are the candidate keys of R?
- A) AE, BE
- B) AE, BE, DE
- C) AEH, BEH, BCH
- D) AEH, BEH, DEH

Answer: (D)

4 The goal of structured programming is to

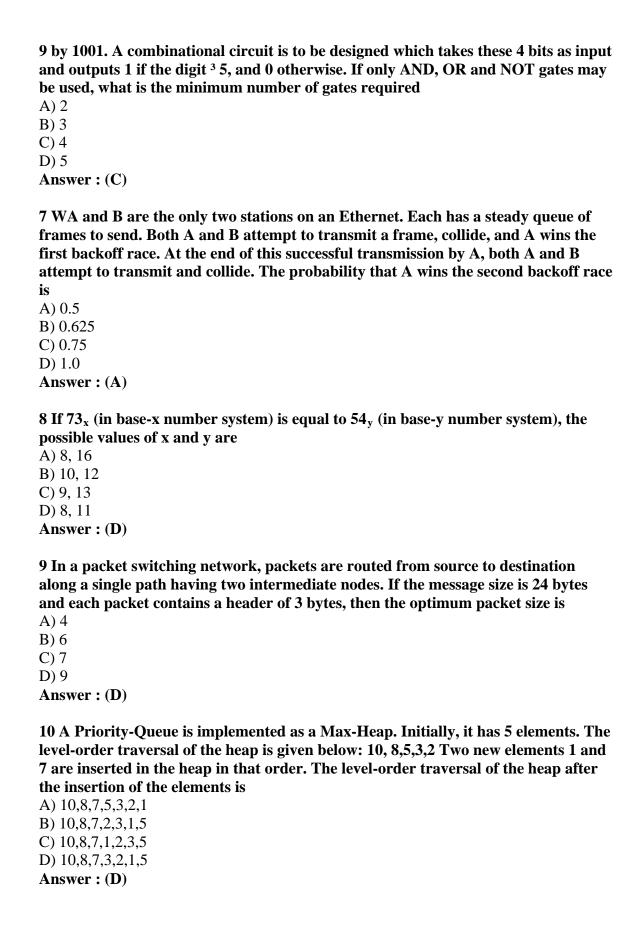
- A) have well indented programs
- B) be able to infer the flow of control from the compiled code
- C) be able to infer the flow of control from the program text
- D) avoid the use of GOTO statements

Answer: (C)

- 5 The tightest lower bound on the number of comparisons, in the worst ease, for comparison-based sorting is of the order of
- A) n
- B) n^2
- C) n log n
- D) $n \log^2 n$

Answer: (B)

6 A circuit outputs a digit in the form of 4 bits. 0 is represented by 0000,1 by 0001,...,



11 Consider an operating system capable of loading and executing a single sequential user process at a time. The disk head scheduling algorithm used is First Come First Served (FCFS). If FCFS is replaced by Shortest Seek Time First (SSTF), claimed by the vendor to give 50% better benchmark results, what is the expected improvement in the I/O performance of user programs?

- A) 50%
- B) 40%
- C) 25% br> D) 0%

Answer: (D)

12 How many distinct binary search trees can be created out of 4 distinct keys?

- A) 5
- B) 14
- C) 24
- D) 42

Answer: (B)