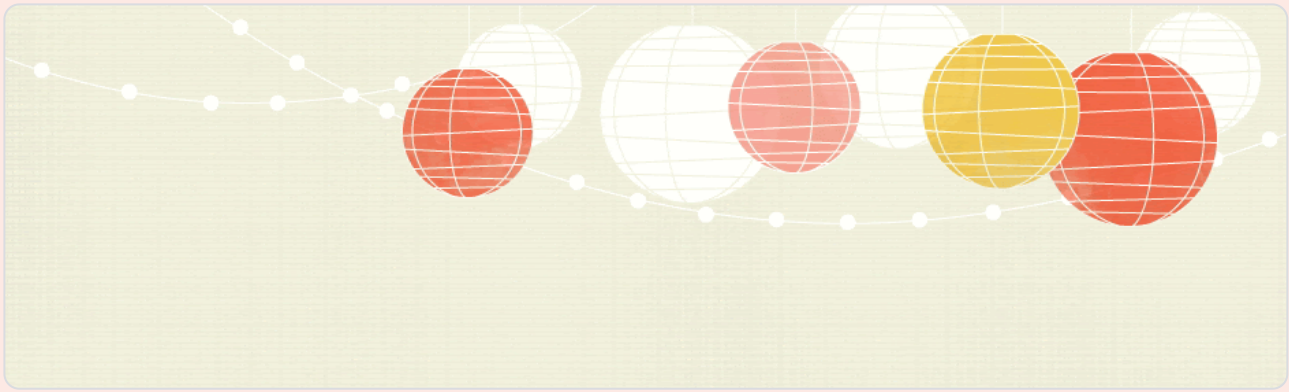

TCS_quiz_sh-20[co6]

Total points 10/10

Name of student *

AMEY THAKUR

Class *

TE-B

Roll no *

50

✓ 1]Which of the following statements is false ? * 1/1

- Halting problem of Turing machines is undecidable
- Determining whether a context-free grammar is ambiguous is undecidable
- Given two arbitrary context-free grammars G1 G2 and it is undecidable whether L (G1) = L (G2).
- Given two regular grammars G1 G2 and it is undecidable whether L (G1) = L (G2) ✓

✓ 2]Which of the following statement(s) is/are correct? * 1/1

- L = {an bn an | n = 1, 2, 3...} is recursively enumerable
- Recursive languages are closed under union
- Every recursive is closed under union
- ◉ All of these ✓

✓ 3]The statement, “A TM can’t solve halting problem” is * 1/1

- ◉ true ✓
- false
- still an open question
- all of these

✓ 4]If every string of a language can be determined, whether it is legal or illegal in finite time, the language is called * 1/1

- ◉ decidable ✓
- undecidable
- interpretive
- non-deterministic

✓ 5]Which of the following problems is solvable ? * 1/1

- (●) Writing a universal Turing machine ✓
- ( ) Determining of an arbitrary turing machine is an universal turing machine
- ( ) Determining of a universal turing machine can be written for fewer than k instructions for some k
- ( ) Determining of a universal turing machine and some input will halt

✓ 6]Fill in the blank with reference to Rice's theorem.For any non-trivial property of _____ no general or effective method can decide whether an algorithm computes it with that property. * 1/1

- (●) partial functions ✓
- ( ) piecewise functions
- ( ) both (a) and (b)
- ( ) none of the mentioned

✓ 7] Consider three decision problem A, B, C. A is decidable and B is not. Which of the following is a correct option? * 1/1

- ( ) C is undecidable if C is reducible to B
- (●) C is undecidable if B is reducible to C ✓
- ( ) C is decidable if A is reducible to C

C is decidable if C is reducible to B's complement

✓ 8]Consider the following statements I. Recursive languages are closed under complementationII. Recursively enumerable languages are closed under unionIII. Recursively enumerable languages are closed under complementationWhich of the above statement are TRUE? * 1/1

- I only
- I and II ✓
- I and III
- II and III

✓ 9]Which of the following problem is undecidable? * 1/1

- membership problem for CFL
- membership problem for regular sets
- membership problem for CSL
- membership problem for type 0 languages ✓

✓ 10]Recursively enumerable languages are not closed under * 1/1

- union
- homomorphism

- [x] complementation
- [ ] concatenation