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By K B Hemanth Raj

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AUTOMATA THEORY AND COMPUTABILITY

[As per Choice Based Credit System (CBCS) scheme]

(Effective from the academic year 2017 -2018)

SEMESTER – V

Subject Code **17CS54** IA Marks **40**

Number of Lecture Hours/Week **04** Exam Marks **60**

These Questions are being framed for helping the students in the "FINAL Exams" Only (Remember for Internals the Question Paper is set by your respective teachers). Questions may be repeated, just to show students how VTU can frame Questions.

- **ADMIN**

Module 5

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1. Write short notes on:

a. Multi-tape Turing machine.

b. Non-deterministic Turing machine.

c. Linear Bounded automata. (16-Marks) (9) (Dec.2017/Jan.2018)

2. Write short notes on:

a. Undecidable Languages.

b. Halting problem of Turing machine.

c. The post correspondence problem. (16-Marks) (10) (Dec.2017/Jan.2018)

3. Obtain a Turing machine to recognize the language L = { 0n 1n 2n | n>=1 }. (8-Marks) (9a) (June/July 2018)

4. Prove that $HALT_{TM}$ ={ (M, W)| the Turing machine M halts on input W} is undecidable. (4-Marks) (9b) (June/July 2018)

5. With example, explain the quantum computation. (4-Marks) (9c) (June/July 2018)

6. Write a short note on:

i. Multiple Turing machine

ii. Non deterministic Turing machine

iii. The model of linear bounded automaton

iv. The post correspondence problem. (16-Marks) (10) (June/July 2018)

7. Explain the following:

i) Non deterministic Turing machine

ii) Multi – tape Turing machine (6-Marks) (9a) (Dec.2018/Jan.2019)

8. Define the following:

i) Recursively enumerable language

ii) Decidable language. (6-Marks) (9b) (Dec.2018/Jan.2019)

9. What is Post correspondence problem? (4-Marks) (Dec.2018/Jan.2019)

10. What is Halting problem of Turing machine? (6-Marks) (10a) (Dec.2018/Jan.2019)

11. Define the following:

i) Quantum computer

ii) Class NP. (6-Marks) (10b) (Dec.2018/Jan.2019)

12. Explain Church Turing Thesis. (4-Marks) (10c) (Dec.2018/Jan.2019)

13. Write a Note on Simulating a Turing Machine by computer. (4-Marks) (Dec.2018/Jan.2019|10 Scheme)

14. Write a Short Note on Languages of PDA (6-Marks) (June/July.2017|10 Scheme)

15. Write a Short Note on Application of Regular Expression (5-Marks) (June/July.2017|10 Scheme)

16. Write a short Note on Chomsky Hierarchy (6-Marks) (Dec.2016/Jan.2017|10 Scheme)

17. Write a short Note on Application of Context-free Languages. (6-Marks) (Dec.2016/Jan.2017|10 Scheme)
