2MSC1 - Paper-I : Theory of Computation and System Programming

P. Pages : 2

GUG/S/18/5730

Time : Three Hours

1750

Max. Marks : 80

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Notes :
1. All questions are compulsory and carry equal marks.
2. Draw neat and labelled diagram wherever necessary.
3. Avoid vague answers.

Either.

1. a) Define finite Automata. Explain with example about two way finite automata. **8**

b) Prove that the class of regular sets is closed under complementation. **8**

OR

c) Explain Greibach Normal form with example. **8**

d) Simply following OFG. **8**
$$S \rightarrow AB \mid CA$$
$$B \rightarrow BC \mid AB$$
$$A \rightarrow a$$
$$c \rightarrow aB \mid b$$

Either.

2. a) Design a PDA for accepting. **8**
$$L = \left\{ a^n b^m c^m d^n \mid n, n \geq 1 \right\}.$$

b) Explain – **8**
i) Push Down Automata.   ii) Context free language.

OR

c) Design Turing machine to recognize. **8**
$$L = \left\{ a^m, b^n \mid m, n \in \text{Natural no.} \right\}.$$

d) Explain Church's Hypothesis in detail. **8**

Either.

3. a) What do you mean by Device Drivers? Explain the role of Device Drivers in detail. **8**

b) Write a note on splitting the kernel. **8**

OR

c) Explain – **8**
i) Module parameter.   ii) Compiling and loading.

	d)	What are security issues in Device Drivers.	**8**

Either.

4.	a)	Explain – i) Stacks.		ii) Interrupts.	**8**
	b)	Explain – i) General purpose registers.		ii) Recursive macros.	**8**

OR

	c)	Explain the memory segmentation and address computation in detail.	**8**
	d)	What are different instruction formats? Explain.	**8**
5.		Solve all the questions.	
	a)	Write a note on context free language.	**4**
	b)	Write a short note on context sensitive language.	**4**
	c)	Write short note on splitting the kernel.	**4**
	d)	Explain in brief Relocation and program Relocation.	**4**

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