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NPTEL

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Courses » Introduction to Automata, Languages and Computation

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## Unit 13 - Week 12

Register for  
Certification exam

### Course outline

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the portal

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- Lecture 56 :  
Relationship  
between  
regular  
language and  
CFL

- Lecture 57 :

## Assignment 12

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-04-24, 23:59 IST.**

1) CFLs are closed under (choose the best answer) 1 point

- (a) union
- (b) concatenation
- (c) both
- (d) none

- a
- b
- c
- d

No, the answer is incorrect.

Score: 0

Accepted Answers:

c

2) Are CFLs closed under complementation? 1 point

- (a) Yes
- (b) No

- a
- b

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

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● Lecture 59 :  
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Solution

ce De If for a Turing Machine  $0q_0111 \vdash 0xq_211$  is given and  $\delta(q_2, 1) = (q_3, y, L)$  is given then what is the next instantaneous description?

- (a)  $0q_2y11$
- (b)  $0xyq_31$
- (c)  $0xq_3y1$
- (d) None of the above

- a
- b
- c
- d

No, the answer is incorrect.

Score: 0

Accepted Answers:

d

4) Which of the following is true? (choose the best option)

1 point

- (a) regular language  $\subsetneq$  CFL
- (b) CFL  $\subsetneq$  regular language
- (c) regular language = CFL
- (d) None of the above

- a
- b
- c
- d

No, the answer is incorrect.

Score: 0

Accepted Answers:

a

5) Are CFLs closed under intersection with regular languages?

1 point

- (a) Yes
- (b) No

- a
- b

No, the answer is incorrect.

Score: 0

Accepted Answers:

a

6) A Turing machine is expressed as a 7-tuple  $(Q, \Sigma, \Gamma, \delta, q_0, B, F)$ , then B is the blank symbol such that  $B \notin \Sigma$  but  $B \in \Gamma$ . True or False?

1 point

- (a) True
- (b) False

- a

b

No, the answer is incorrect.

Score: 0

Accepted Answers:

a

7) Consider the following languages.  $L_1 = \{0^p 1^q 0^r \mid p, q, r \geq 0\}$  1 point

$$L_2 = \{0^p 1^q 0^r \mid p, q, r \geq 0, p \neq r\}$$

Which one of the following statements is FALSE?

- (a)  $L_2$  is context-free.
- (b)  $L_1$  intersection  $L_2$  is context-free.
- (c) Complement of  $L_2$  is recursive
- (d) Complement of  $L_1$  is context-free but not regular

a

b

c

d

No, the answer is incorrect.

Score: 0

Accepted Answers:

d

8) A Turing machine is expressed as a 7-tuple  $(Q, \Sigma, \Gamma, \delta, q_0, B, F)$  where  $\Gamma$  is complete set of tape symbols and  $\Sigma$  is finite set of input symbols then what is always true? 1 point

- (a)  $\Gamma \subseteq \Sigma$
- (b)  $\Sigma \subseteq \Gamma$
- (c)  $\Sigma = \Gamma$
- (d) None of the above

a

b

c

d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

9)  $L = \{0^n 1^n 2^n \mid n \geq 0\}$  is context-free. 1 point

- (a) True
- (b) False

a

b

No, the answer is incorrect.

Score: 0

Accepted Answers:

*b*

10 Is  $L = \{a^m \mid m \text{ is prime}\}$  context free?

1 point

(a) Yes

(b) No

a

b

No, the answer is incorrect.

Score: 0

Accepted Answers:

*b*

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