PODS Final Exam: Theoretical Part

Name: _____
Student ID: _____

The following of questions represent the first part of the exam. For every question, select the correct answers by crossing the letters. Notice that in some questions more than one selection needs to be done in order to answer correctly the question. For each question, an all-or-nothing policy will be applied: it will only be considered in the grade if it is answered exactly as expected.

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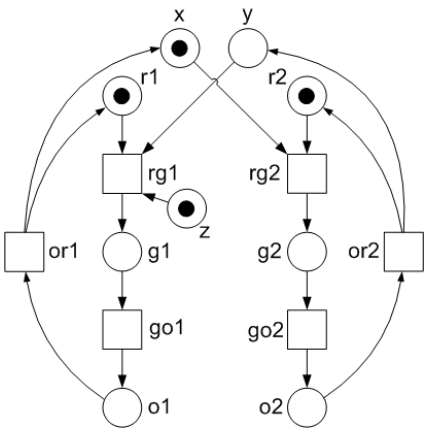
1. What is the main goal of process discovery in process mining? (Single-Choice)

   a) To assess the compliance of observed behavior with a predefined process model.
   b) To analyze the performance metrics of a process.
   c) To identify the social interactions within a process.
   d) To automatically construct a process model from event data.

2. Please indicate all reachable dead markings of the marked Petri net shown below. (Single-Choice)

   a) [x, z, r1 ,r2]
   c) [x, y, r1, r2]
   b) [y, r1, r2]
   d) [x, r1, r2]



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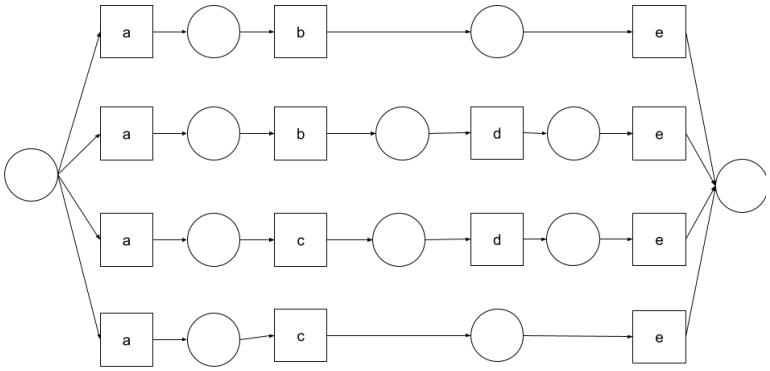
3. Given the following Petri net, which metrics would be affected? (Multi-Choice)

a) Fitness
b) Simplicity
c) Precision
d) Generalization



4. In the context of process mining, what does the term "noise" refer to? (Single-Choice)

a) Decision points without a clear pattern to infer from the data.
b) Irrelevant data or exceptions in the event log that may distort the analysis.
c) Social interactions among participants in the process.
d) The time taken by a process to execute.

5. Which of the following are properties of the Alpha algorithm? (Multi-Choice)

a) It requires user input besides the event log.
b) It is sensitive to noise in the event log.
c) It cannot discover loops of length 3.
d) It may create deadlocked/unsound models.

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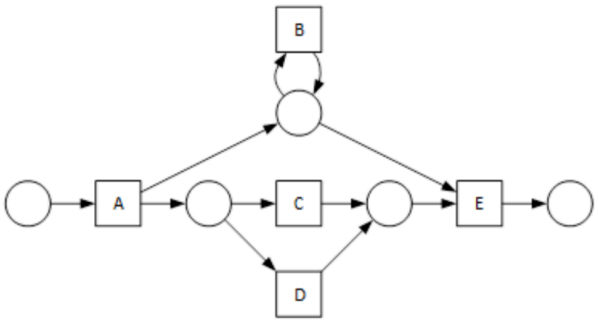
6. Given the following Workflow net, which is the right footprint matrix?



a)

	a	b	c	d	e
a	#	→	→	→	#
b	←	‖	#	‖	→
c	←	#	#	#	→
d	←	#	#	#	→
e	#	←	←	←	#

b)

	a	b	c	d	e
a	#	→	→	→	#
b	←	‖	‖	‖	→
c	←	‖	#	#	→
d	←	‖	#	#	→
e	#	←	←	←	#

c)

	a	b	c	d	e
a	#	→	←	←	#
b	←	‖	‖	‖	→
c	←	‖	#	#	→
d	→	‖	#	#	→
e	#	→	←	←	#

7. In process mining, what is the purpose of conformance checking?

a) To discover the compliance of the event log and the actual process.

b) To assess the compliance of observed behavior with the prescribed process. model.

c) To analyze the performance metrics of a process.

d) To identify social interactions within a process.

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8. What are the “best and worst” terms used to compute the fitness of an alignment? (Single-Choice)

a) The shortest path in the model and the even log length.

b) The number of synchronous and asynchronous movements.

c) The shortest path in the model and the log trace length.

d) The shortest and longest paths in the model.

9. Consider the following resource-activity matrix, and choose the correct grouping (Single-Choice):

	Register	Verify	Decide	Accept	Reject	Archive
Bas	1	0.01	0	0	0	0
Eduardo	0	0	0.25	0.45	0.25	0
Eric	0	0	0.7	0.5	0.5	0
Felix	0	0.24	0	0	0	0.33
Joos	0	0.25	0	0	0	0.66
Wil	0	0	0.05	0.05	0.25	0

a) {Bas,Wil} and {Eduardo,Eric,Felix,Joos}

b) {Bas,Eduardo,Eric} and {Felix,Joos,Wil}

c) {Bas}, {Eduardo,Eric,Wil}, and {Felix,Joos}

d) {Wil} and {Bas,Eduardo,Eric,Felix,Joos}

10. Multi-perspective conformance checking (Multi-Choice):

a) Provides an abstraction to simplify large models.

b) Enables explaining deviations from different angles: control-flow, cost, resources, etc …

c) Allows to predict future model deviations.

d) Depends on the availability of additional information.