

Retake Exam Module1.3

Business Process Management & Enterprise Architecture

June 2, 2014

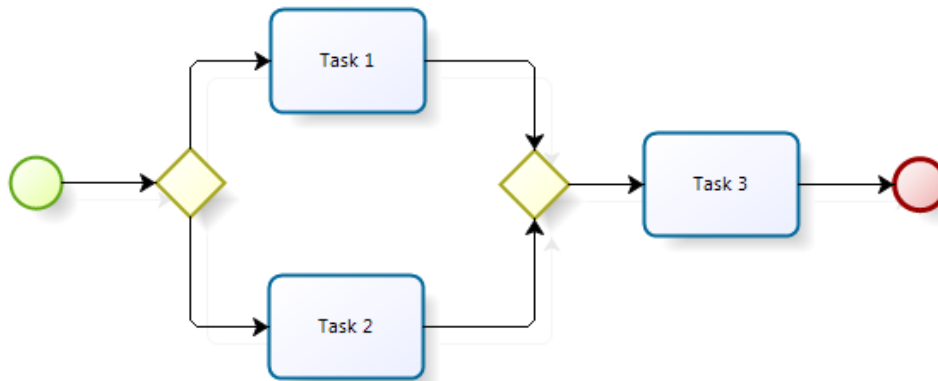
Instructions:

This is an open book exam – it is allowed to consult any reading material provided by the teachers. Be sure to switch your mobile phone off and stow it in a closed bag. Be sure to indicate name, program and student number on each sheet. All questions are multiple-choice questions. You can earn 3 points for each question if you have the correct answer. **A correct answer requires that all (there maybe more than one) and only the true multiple-choice options are indicated.**

Success!

Question 1

Consider the following business process with 3 tasks and 2 gateways:



Suppose the split gateway is of type XOR and the join gateway is of type AND. If this process starts 6 times, how many times will either Task 1 or Task 2 be executed?

- a) 0 times
- b) 3 times
- c) 6 times
- d) 12 times

Question 2

Consider the process of Question 1. Suppose the split gateway is of type XOR and the join gateway is of type AND. If this process starts 4 times, how many times will Task 3 be executed?

- a) 0 times
- b) 2 times
- c) 4 times
- d) 8 times

Question 3

Consider the process of Question 1. Suppose the split gateway is of type INCLUSIVE OR and the join gateway is of type AND. Further suppose that the condition for one path is $x \geq 5$ and the condition for the

other path is $x < 10$. If the process starts 4 times, with respectively $x=1$, $x=3$, $x=5$, and $x=7$, how many times will either Task 1 or Task 2 be executed?

- a) 4 times
- b) 5 times
- c) 6 times
- d) 8 times

Question 4

Consider the process of Question 1. Suppose the split gateway and the join gateway are both of type INCLUSIVE OR. Further suppose that the condition for one path is $x < 4$ and the condition for the other path is $x > 6$. If the process starts 4 times, with respectively $x=1$, $x=3$, $x=5$, and $x=7$, how many times will either Task 3 be executed?

- a) 0 times
- b) 2 times
- c) 3 times
- d) 4 times

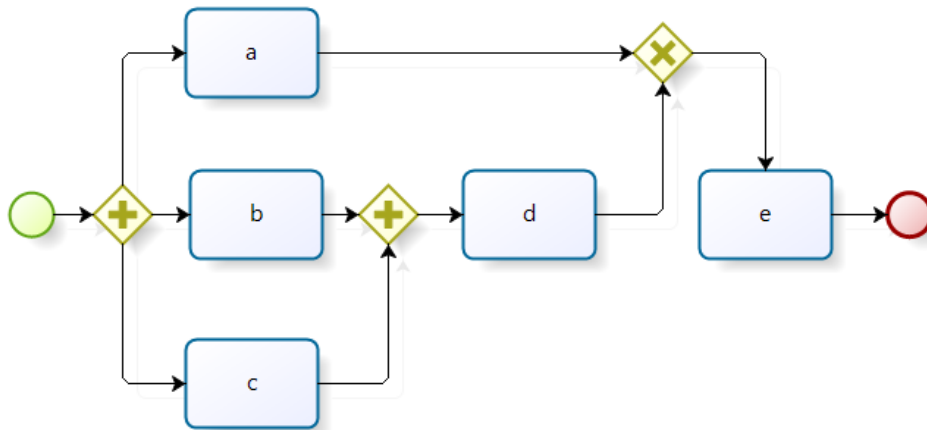
Question 5

Consider the process of Question 1. Suppose the split gateway is of type AND and the join gateway is of type XOR. If the process starts 4 times, how many times will Task 3 be executed?

- a) 0 times
- b) 2 times
- c) 4 times
- d) 8 times

Question 6

Consider the following business process:



Which execution logs would be possible for a single run of this process?

- a) a-b-c-d-e
- b) b-c-d-a-e
- c) a-e
- d) a-e-b-c-d-e
- e) c-b-d-e-a-e

Question 7

Consider the process of Question 6. Suppose the leftmost gateway is not of type AND, but of type Event-based XOR. Further suppose that a, b, and c are activities that receive a message at time t+1, t+3, and t+2 respectively. Which execution logs would be possible for a single run of the process with starting time t?

- a) a-e
- b) b-d-e
- c) c-d-e
- d) a-c-b-d-e
- e) a-c-b-d-e-e

Question 8

In BPMN, activities can be grouped in pools or lanes. How are the activities in different groupings related?

- a) Related activities in different lanes, but belonging to the same pool, are connected by message flows.
- b) Related activities in different pools are connected by message flows.
- c) Related activities in different pools are connected by message flows or sequence flows, depending on the nature of the relationship.
- d) Related activities in different lanes, but belonging to the same pool, are connected by message flows or sequence flows, depending on the nature of the relationship.

Question 9

Which split belongs at the question mark in this truth-table?

A	B	A ? B
0	0	0
0	1	1
1	0	1
1	1	0

- a) AND-split
- b) OR-split
- c) XOR-split
- d) Thread split
- e) Deferred choice

Question 10

Which statements are true?

- a) A workflow which comprises system tasks next to human tasks is called a human interaction workflow
- b) Process-awareness is one of the features of message queue middleware
- c) Process-awareness is one of the features of workflow middleware
- d) Separation of process logic and application logic is one of the features of workflow management systems

Question 11

Which of the following statements on business process models is true?

- a) A business process model represents activities in a company that are designated for automation with software systems.
- b) A business process model acts as a blueprint for a set of business process instances.

- c) A business process model represents all possible or intended cases in the operational business of a company.
- d) A business process model represents activities in a company that cannot be automated with software systems.

Question 12

Which statements about work items in human interaction workflows are true?

- a) A work item is associated with one workflow instance.
- b) A work item flows between the activities in the workflow.
- c) A work item needs to be finished before any next activity in the workflow can be started.
- d) A work item belongs to one work item list.
- e) A work item is always assigned to one application instance.

Question 13

Which statements about workflow management systems (WFMS) are true?

- a) A WFMS can execute one workflow instance at a time, but any number of instances in sequence
- b) A WFMS can execute multiple workflow instances concurrently
- c) A WFMS can interact with multiple work item lists, each with potentially many work items
- d) A WFMS can interact with multiple work item lists, provided these lists are associated with the same workflow instance

Question 14

Which statements about the buildtime component and runtime component of workflow management systems are true?

- a) The buildtime component is for building business processes which cannot be automated, whereas the runtime component is for business processes which can be automated (run on a computer).
- b) The buildtime component is for building high level business processes, whereas the runtime components is for lower-level business processes
- c) The buildtime component is for specifying business processes, whereas the runtime component is for executing these business processes
- d) The buildtime component is for executing previously built business processes, whereas the runtime component runs an analysis of the execution logs of these processes

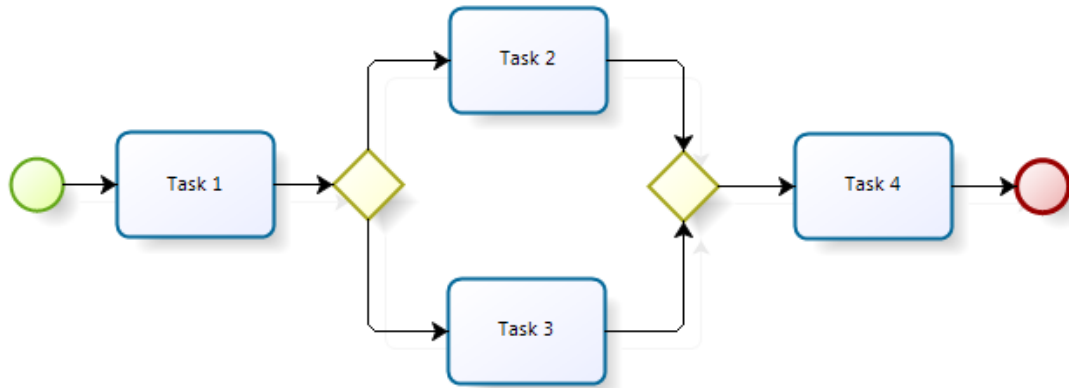
Question 15

Using Taylorism (the functional breakdown of work in fine-granular pieces and assign them to highly specialized personnel) to organize work in modern organizations proves inefficient because:

- a) The steps during a business process are often related to each other.
- b) Context information on the compete case is required during the process.
- c) The handovers of work cause a major problem, since each worker involved requires knowledge on the overall case.
- d) All the above statements are true.

Question 16

Consider the following workflow model:



Suppose that the two gateways are of type AND. If 3 instances of this model are started at the same time, what can we say about their execution logs (keeping a record of the successfully executed tasks) before completion of any of the instances?

- They are exactly the same at any time
- If Task 3 is included in all execution logs, then also Task 1
- If Task 3 is included in all execution logs, then also Task 2
- If Task 2 and Task 3 are included in the execution log of one instance, then the other instances should at least have Task 1 in their execution log

Question 17

Consider the same workflow model as in Question 16. Suppose the two gateways are of type XOR. If 3 instances of this model are started at the same time, what can we say about their execution logs after all instances have completed?

- They are exactly the same
- They all contain 3 tasks
- They all contain 4 tasks
- They may be the same
- They may be different

Question 18

Which statements are true?

- An application of the 'information hiding' principle is the encryption of information that is stored in a system
- An application of the 'separation of concerns' principle is the replication of data by the various enterprise applications, each using its own database or filesystem
- 'Layering' is a good example of the application of the 'separation of concerns' principle
- 'Application silos' are the result of applying the 'separation of concerns' principle

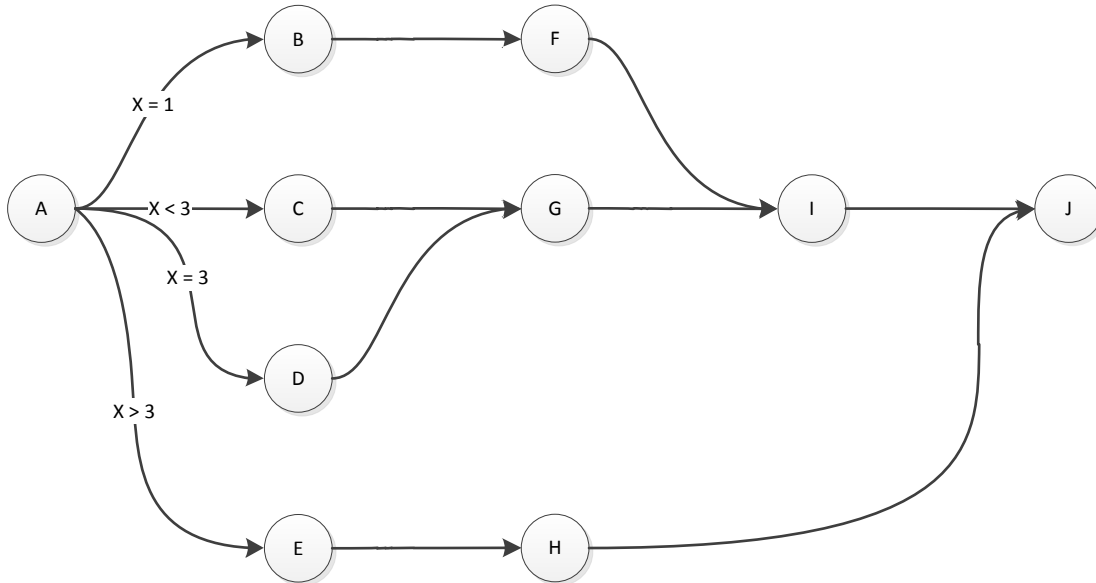
Question 19

What are the tertiary processes?

- Processes that are at the core of the business, going from supplier to customer (process-oriented).
- Processes that are at the core of the business, each coming after the other (functional-oriented).
- Processes that manage the other processes.
- Processes that support the processes at the core of the business.

Question 20

Observe the following Activity net. Assume all activities have an AT_LEAST_ONE join semantic. Activities can be in one of five states: *Not activated*, *Activated*, *Running*, *Completed*, or *Skipped*.



Which activities are always executed?

- a) Only A
- b) A and J
- c) A, I and J
- d) Only J

Question 21

The execution of the Activity net depicted above is started, and execution events are recorded in a log. At some point in time the execution is stopped. This is the execution log until that point:

start(A)	end(A) [X=3]	start(D)
----------	--------------	----------

Related to this Activity net and execution log, which activity/activities is/are *Completed*?

- a) A
- b) A and D
- c) A and C
- d) None of the above

Question 22

Related to the same Activity net and execution log, which activity/activities is/are *Running*?

- a) A
- b) A and D
- c) D
- d) A and J

Question 23

Related to the same Activity net and execution log, which activity/activities do not have the *Skipped* state?

- a) B and C
- b) B, C and E
- c) A, D, G, I, J
- d) B, C, E, F and H

Question 24

Taking the same Activity net, but another execution with a different execution log as a result:

...	start(E)	end(E)	start(H)
-----	----------	--------	----------

Which activity/activities is/are *Activated*?

- a) None
- b) A
- c) A and E
- d) E and H

Question 25

Related to the same Activity net and (last mentioned) execution log, which activity/activities is/are *Completed*?

- a) A
- b) A and E
- c) A, E and H
- d) E

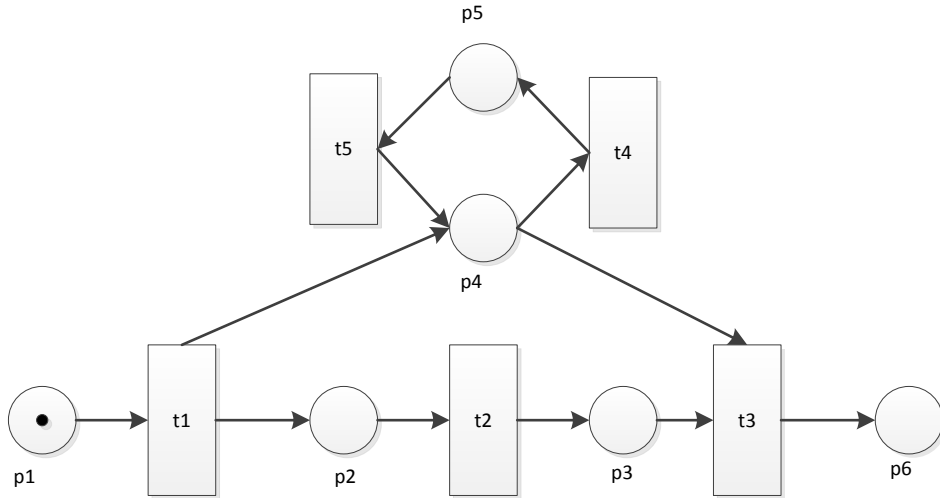
Question 26

Related to the same Activity net and (last mentioned) execution log, which activity/activities is/are *Running*?

- a) We do not have enough information to determine this.
- b) A
- c) E
- d) H

Question 27

Consider the following E/C Petrinet for a reachability analysis:

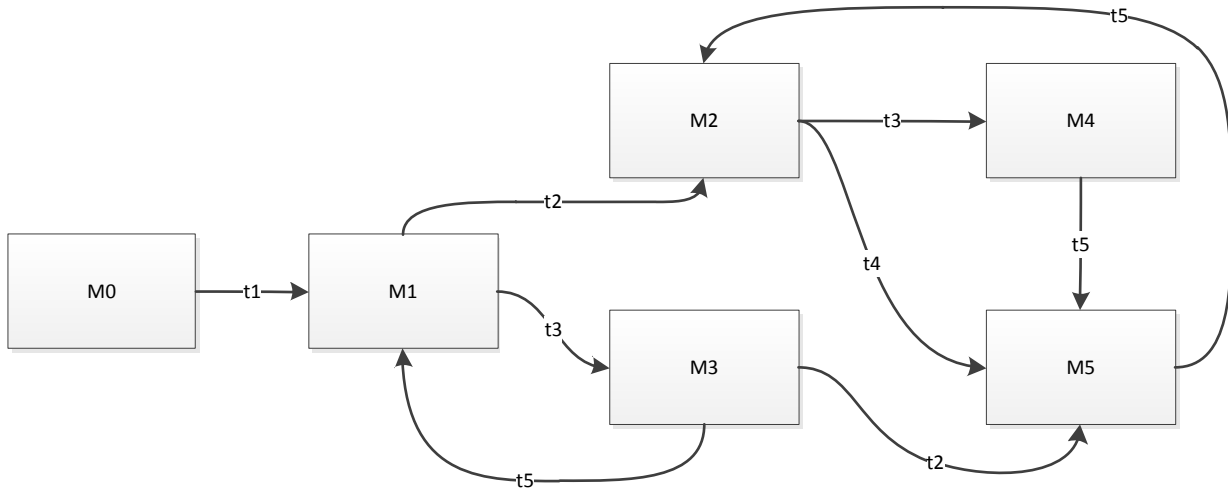


What is the maximum amount of tokens in the network at a given time?

- a) 1
- b) 2
- c) 3
- d) Infinite

Question 28

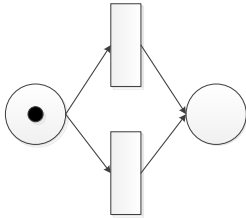
The following reachability graph is derived from the Petri net above. An extra transition has been added to it, which cannot be taken in the Petri net. Which one?



- a) M2 -> t4 -> M4
- b) M2 -> t3 -> M5
- c) M4 -> t5 -> M5
- d) M5 -> t5 -> M2

Question 29

Consider the following Petri Net:



Which of the following statements is true?

- a) Both transitions are concurrently enabled.
- b) Both transitions can concurrently be executed.
- c) Neither one of the transitions can fire.
- d) None of the above.

Question 30

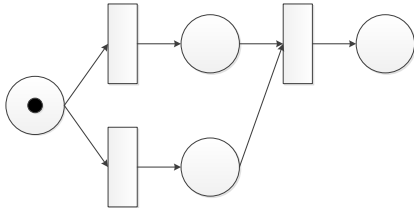
What is the result of a dead path elimination in Activity nets?

- a) Elimination of all running activities of a dead path.
- b) Compensation of all activities of a dead path.
- c) Skipping of all activities of a non-selected path.
- d) Abortion of all workflow activities.

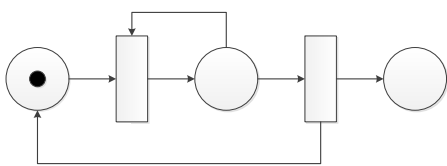
Question 31

Consider the following E/C Nets. Which is/are sound?

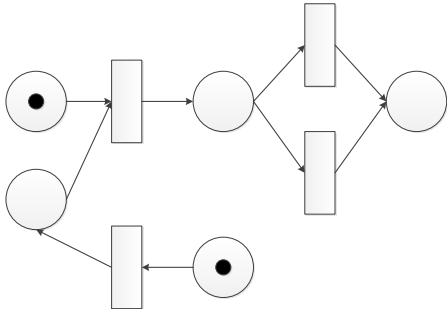
a)



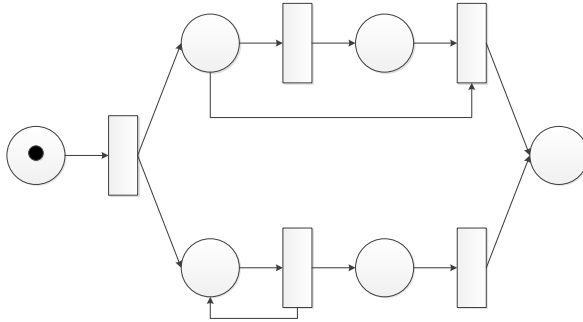
b)



c)



d)



Question 32

Which of these statements is true?

- a) Typed states in high-level petri nets are just syntactical sugar: they have no real meaning.
- b) Typed states in high-level petri nets are needed to be able to distinguish records.
- c) The typing of states changes during the execution of a high-level petri net.
- d) In high-level petri nets, coloring says something about the actual color of the states.

Question 33

Consider the model below. Which of these statements is true?

- a) The model shows a layered view on architecture
- b) The model contains concepts from all layers and aspects of the ArchiMate framework
- c) All interactions between the modeled actors go through an interface
- d) All dependency relationships between two consecutive architecture layers are modelled as (and go through) a service layer.

