



## FACULTY OF SCIENCE

### *Academy of Computer Science and Software Engineering*

MODULE: IT Aspects of Knowledge Management  
CODE: IT00227 / IT28x27  
CAMPUS: APK  
EXAM: June 2020  
**EXAMINATION MEMORANDUM**

DATE: July 2020

SESSION:

ASSESSOR

Mr JP Klut

INTERNAL MODERATOR

EXTERNAL MODERATOR

DURATION: 2 HOURS

MARKS: 100

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NUMBER OF PAGES: 3

**INSTRUCTIONS:** ANSWER ALL QUESTIONS AND HAND THIS QUESTION PAPER IN AS WELL

**Foreword to external moderator**

This exam paper forms the third and last part of this semester course.

Part 1 consisted of the semester test which focused mostly on the theory and principles covered in the course.

Part 2 focused on a practical research component where students had to research and define the impact artificial intelligence and machine learning has on knowledge management. The aim of this exercise was for the student to get a grasp of the relationships between these disciplines.

The final exam is designed to bring a practical context and the theory together.

Memorandum

**Question 1:**

**Case study information:** You are a knowledge management consultant and get a request from a client to help address the problem of the effect that high staff turnover has on the loss of knowledge in the organization. It is however, from the very start, evident that people are not sure what KM is. To clear this up you prepare a definition of KM.

Define knowledge management. (2)

**Answer**

Knowledge management (KM) may simply be defined as doing what is needed to get the most out of knowledge resources.

We earlier defined knowledge management as performing the activities involved in discovering, capturing, sharing, and applying knowledge so as to enhance, in a cost-effective fashion, the impact of knowledge on the unit's goal achievement.

(Mark allocation: 2 marks – if the definition fits any of the above 2 definitions)

Memorandum

**Question 2:**

**Case study information:** As you get familiar with the organization, you realize that there is a lack of engagement between formal and informal learning activities, which is one of the main reasons why the organization is losing its knowledge as people leave. You decide to design and develop an adaptation eLearning model using AI and machine learning for restricted social networks.

L.I.M.E. is a model recently published (*L.I.M.E. A recommendation model for informal and formal learning, engaged, Daniel Burgos, UNIR*) that can help solve the above problem. Describe the L.I.M.E. model and its 4 vectors (4)

**Answer**

The L.I.M.E. model is based on 4 vectors:

1. What every learner does based on his/her own contribution (**L=Learning**)
2. What the learner does to support interaction based and the relation with others, in addition to group interaction (**I=Interaction**)
3. and what the teachers/experts value (**M=Mentoring**)
4. In addition, there is a forth, transversal vector, being applied to the three previous vectors, focused on evaluation (**E=Evaluation**) being the final acronym L.I.M.E., as of Learning, Interaction, Mentoring, and Evaluation

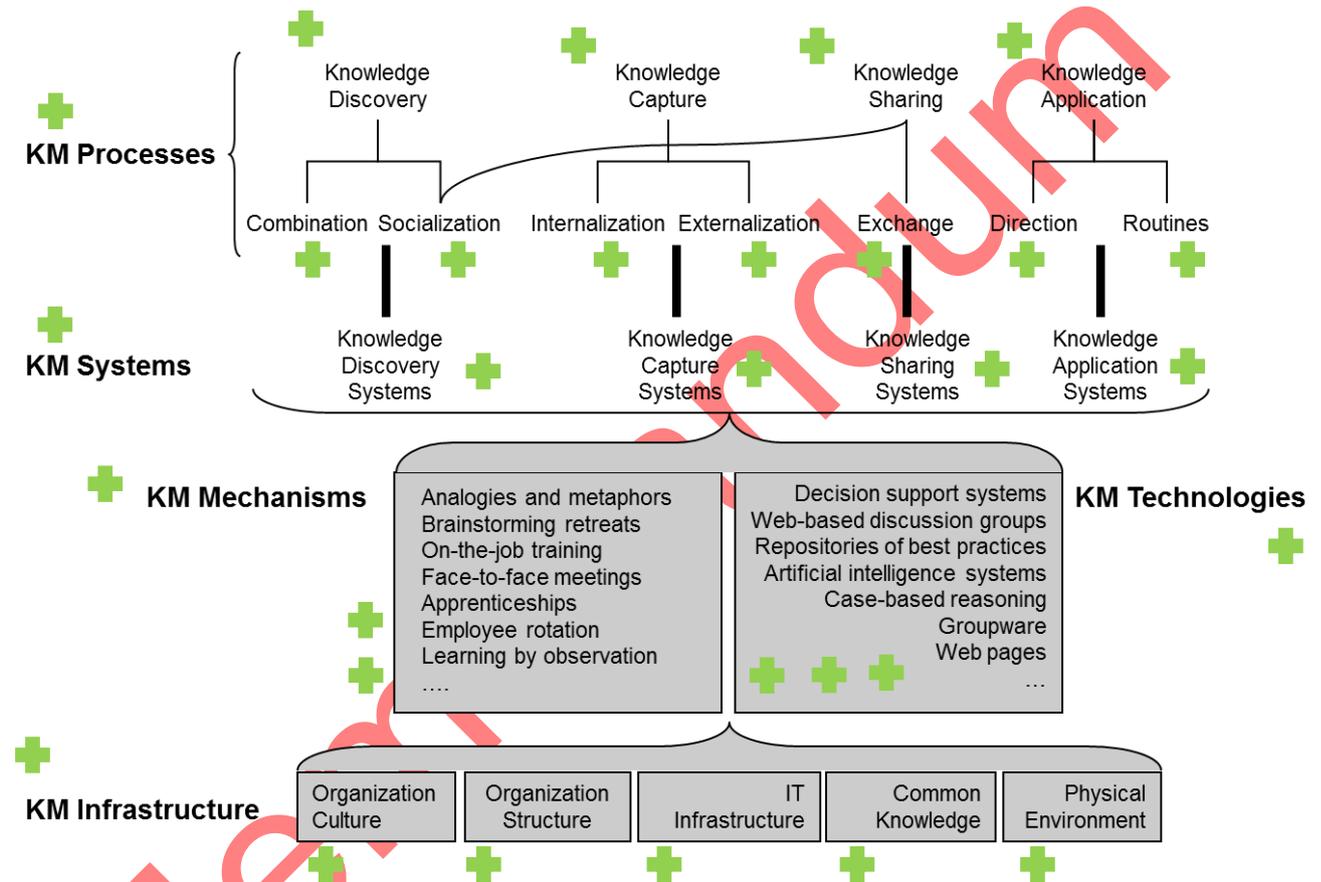
(Mark allocation, 1 mark for each mentioned vector)

**Question 3:**

**Case study information:** After a 2 week assessment, you realize that this organization seem to be doing some things correctly, but it is not evident why they are not able to capture knowledge in their organization. You decide to create a survey to determine the organization’s KM maturity. To create this survey, you use a KM framework that encompasses all elements of KM in an Enterprise organization.

Using a diagram, show what this framework looks like. (30)

**Answer**



(Each  designates one mark)

**Question 4:**

**Case study information:** *Having seen the results from the survey, you conclude that there is a big gap in how the organization capture knowledge but also to identify appropriate KM solutions.*

List and describe 7 steps that the organization needs to follow to identify appropriate KM solutions. (14)

**Answer**

1. Assess the contingency factors - assess the organization's environment and business strategy.
2. Identify the KM processes based on each contingency factor – Identify the 7 contingency factors and the effects that they have.
3. Prioritize the needed KM processes – Consider them together and get a priority scoring method to assist in the prioritization.
4. Identify the existing KM processes – using a survey, identify the current processes
5. Identify the additional needed KM processes – take note of needed and not needed processes.
6. Assess the KM infrastructure – culture structure and physical environment are the key considerations.
7. Develop additional needed KM systems, mechanisms, and technologies – based on the previous steps, proceed to implement the short comings.

(Mark allocation, 1 mark for naming each step, 1 mark for explanation each step)

**Question 5:**

**Case study information:** Another shortcoming that you identify is that there are senior managers in the organization that believe technology *ONLY* can solve the knowledge management problem. You know that this is not true and need to demonstrate this.

List the 7 KM sub processes and give at least 2 examples of mechanisms used for each of the 7 KM sub processes. (14)

1. *Combination: meetings, telephone conversations, and documents, collaborative creation of documents*
2. *Socialization: Employee rotation across departments, conferences, brainstorming retreats, cooperative projects, initiation*
3. *Externalization: Models, prototypes, best practices, lessons learned*
4. *Internalization: Learning by doing, on-the-job training, learning by observation, and face-to-face meetings*
5. *Exchange: Memos, manuals, letters and presentations*
6. *Direction: Traditional hierarchical relationships in organizations, help desks, and support centers*
7. *Routines: Organizational policies, work practices, and standards*

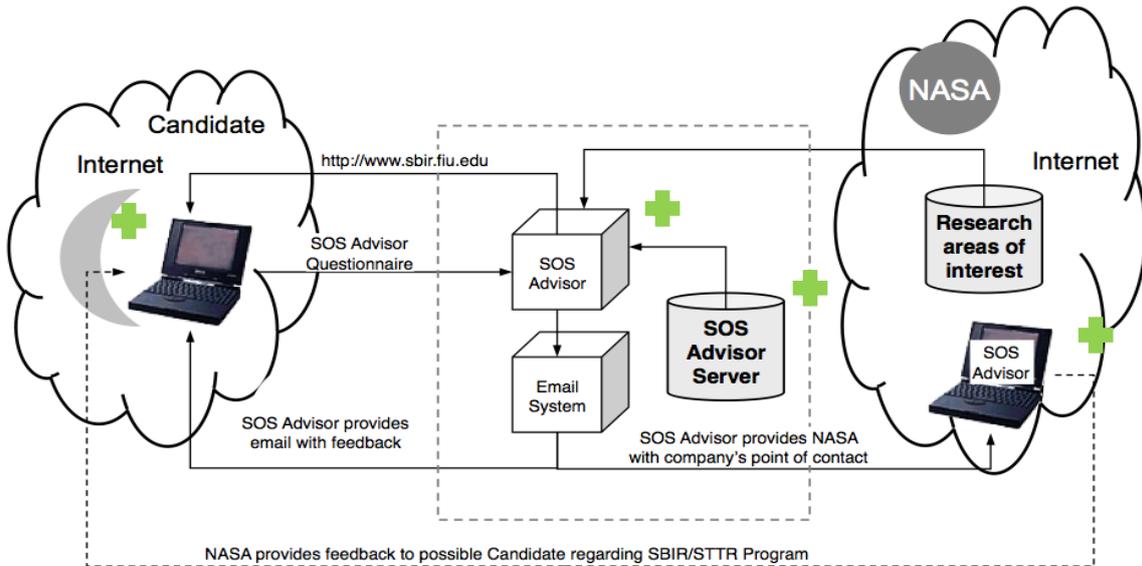
(Mark allocation, 2 marks for 2 examples per sub process.)

Memorandum

**Question 6:**

**Case study information:** The Architecture function in the organization approaches you to advise them on how to position the implementation of Knowledge Management solutions. In the past they have not looked at these solutions in the context of KM. They ask you to prepare an Architecture diagram of a KM solution detailing all the technology components required for a KM solution in the capture, discover, application and sharing processes. You realize that the SOS Advisor solution you have seen before is a close fit.

Using a logical diagram, draw these components, briefly explain and show their relationship to one another. (8)



*(Mark allocation, - diagram as an example)*

1. 1 mark for client component for knowledge capture and application
2. 1 mark for middle tier application server
3. 1 mark for database or knowledge base tier
4. 1 mark for client facing components for query capabilities
5. 4 marks for the explanation of each.

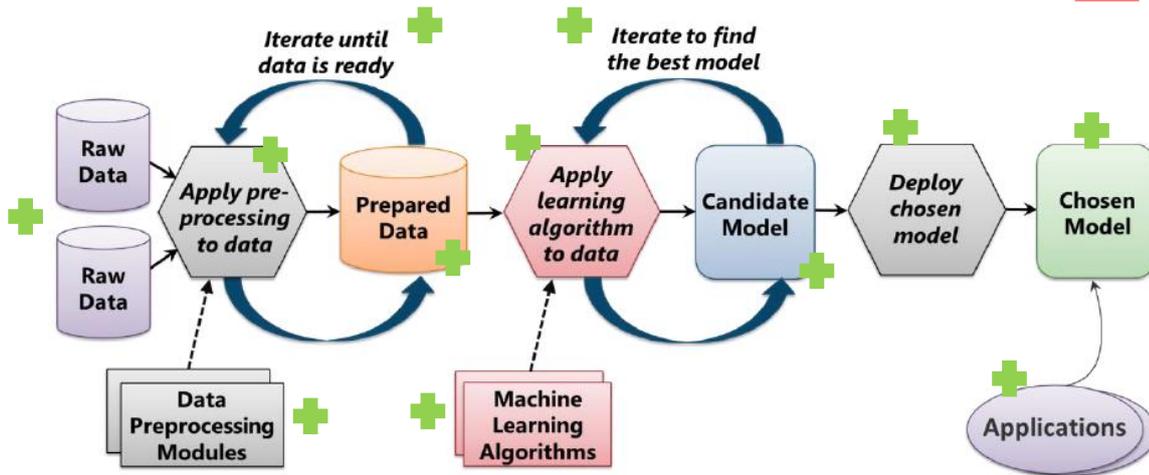
Mentor

**Question 7:**

**Case study information:** The business continuity function (BUSCON) requests a session with you. In the session they share with you that they have over the last 3 years collected a huge amount of data on employee working patterns. With the onset of the COVID19 situation, they realize that there is invaluable knowledge locked up in the data that will allow them to plan their business continuity and business performance more effective. Recent advances in Machine Learning has shown promising results in the knowledge discovery. You decide to share an approach to the use of this technology to the BUSCON data science team.

Using a diagram, show the Machine Learning process as defined by David Chappell (12)

**Answer**



(Mark allocation, as indicated above 12).

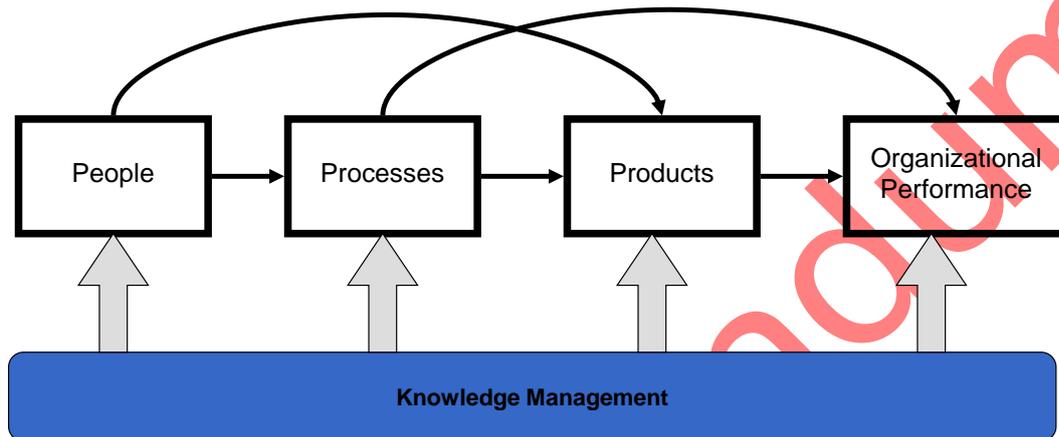
Memorize

**Question 8:**

**Case study information:** The CEO is impressed with the work you have done so far and wants to implement the solutions for KM as fast as possible, but the Chief Financial Officer is skeptical of the actual benefits that KM will bring. You need to convince her of the benefits to ensure that the project goes ahead.

Name the areas that KM will have an impact on in the organization. Also explain HOW these impacts will benefit the organization. You can use a diagram as basis to show an assessment of impacts that KM will have. (8)

**Answer**



**People**

- KM can facilitate employee learning
- KM also causes employees to become more flexible, and enhances their job satisfaction

**Processes**

- KM enables improvements in organizational processes such as marketing, manufacturing, accounting, engineering, and public relations
- These impacts can be seen along three major dimensions
  - Effectiveness
  - Efficiency
  - Degree of innovation of the processes

**Products**

- Impact on products can be
  - Value-added products
    - KM processes can help organizations offer new products or improved products that provide a significant additional value as compared with earlier products
    - Value-added products also benefit from KM due to the effect the latter has on organizational process innovation
  - Knowledge-based products
    - KM can have a significant impact on products that are knowledge-based like those in consulting or software development, etc.
    - Knowledge-based products can sometimes play a significant role in traditional manufacturing firms

**Performance**

- Direct
  - Knowledge is used to create innovative products that generate revenue and profit, or when the KM strategy is aligned with business strategy
  - Direct impact of KM on organizational performance can be measured in terms of improvement in “return on investment”
- Indirect
  - Use of KM to demonstrate intellectual leadership within the industry, which, in turn, might enhance customer loyalty

- *Use of knowledge to gain an advantageous negotiating position with respect to competitors or partner organizations*
- *Example of indirect impact would be to achieve economies of scale and scope, and providing sustainable competitive advantage*

*(Mark allocation, 1 mark for each impact area mentioned and 1 mark if the explanation is in line with the above content. Diagram not required.)*

Memorandum

**Question 9:**

**Case study information:** The knowledge Capture team has asked for a best practice on capturing specialized knowledge in the organization. You identify that “a Concept map” is one of the most appropriate techniques that can be used capture and represent knowledge. To illustrate this approach, you use the example of writing a research report in a training session.

Create a concept map that shows the knowledge representation of concepts involved in the activity of “writing a research report”. (8)



1. The diagram above is a sample reference to what the map should look like.
2. Concepts, underlined or enclosed in circles or boxes, are perceived regularities in events or objects designated by a label
3. Two concepts connected by a linking word to form a proposition, semantic unit or unit of meaning
4. Vertical axis expresses a hierarchical framework for organizing the concepts
5. inclusive concepts are found at the top, progressively more specific, less inclusive concepts arranged below
6. relationships between propositions in different domains are cross-links

(Mark allocation, 4 marks for naming the key concepts, 2 marks for showing the attributes of each concept, 2 marks for showing the relationships.)

Total (100)

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