UGANDA MARTYRS UNIVERSITY

FACULTY OF SCIENCES

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION SYSTEMS

END OF SEMESTER FINAL EXAM

SEMESTER I, 2022/23

Bsc. IT & CS -Yr. III

EMERGING TRERNDS IN IT

DATE: 12TH DEC, 2022

TIME: 9:30 – 12:30 AM

TIME: 3 HRS

INSTRUCTIONS:

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1. **ATTEMPT ALL QUESTIONS IN SECTION A (40 MARKS)**
2. **ATTEMPT THREE (03) QUESTIONS IN SECTION B (60 MARKS)**
3. **DO NOT OPEN THIS EXAM UNTIL YOU ARE TOLD TO DO SO**
4. **ALL ROUGH WORK SHOULD BE IN YOUR ANSWER BOOKLET**

SECTION A [40 MARKS]

Every organization is set to embrace all opportunities in relation to advances in technology. As an expert in the field of emerging technologies, provide solutions to the following queries:

a) Differentiate between supervised learning and unsupervised learning as applied to artificial intelligence [4 Mks]

b) With examples, explain the concept of embedded machine learning as an emerging trend in the machine learning field [3 Mks]

c) In your opinion, explain the concept of training a model as applied to the field of machine learning [3 Mks]

d) Describe any three characteristics associated to emerging technologies [3 Mks]

e) With examples, differentiate between convergence technologies and disruptive technologies [4 Mks]

f) Identify any three factors should the government of Uganda put in place in order to enhance on the number of emerging software applications produced by the university [3 Mks]

g) Write a well stated description of how Zuckerberg' Jarvis program works [3 Mks]

h) Discuss atleast two pros and two cons of an emerging technology like artificial intelligence to your community [4 Mks]

i) With examples differentiate between strong AI and weak AI [3 Mks]

j) With an example of a technology of your choice, differentiate between invention and innovation [4 Mks]

k) Describe any one instance of application of emerging technologies in: (a) networks, (b) databases, (3) security [6 Mks]

SECTION B [60 MARKS]

QUESTION ONE

a) Discuss any four applications for machine learning that can be ventured by the Uganda government [8 Mks]

b) Describe any three limitations affecting machine learning implementations that need consideration by the Uganda government [6 Mks]

c) Using an Illustration discuss the machine learning process [6 Mks]

QUESTION TWO

a) With examples, explain three machine learning types that a machine can be subjected to in any machine learning activity [6 Mks]

b) Using an example and a graph explain how the KNN algorithm works in machine learning [6 Mks]

c) Explain any four machine learning algorithms that can be considered by Uganda' machine learning experts [8 Mks]

QUESTION THREE

a) Describe any three benefits that can be accrued as a result of UMU implementing IoT at its University farm in Nkozi [6 Mks]

b) Describe three IoT features that the University IoT team need to consider during IoT implementation at its farm [6 Mks]

c) Using a well labelled diagram, Illustrate the IoT architecture that UMU IoT experts can use as a standard [6 Mks]

QUESTION FOUR

a) Describe any three benefits of block chain technologies that prospective block chain users need to consider [6 Mks]

b) With illustrations discuss how block chain works [8 Mks]

c) Explain any three problem areas where block chain can be used as a solution. Give examples your discussion [6 Mks]

QUESTION FIVE

a) Discuss any three applications of 3D printing. For each describe a local example of the application [6 Mks]

b) There are many different branded additive manufacturing processes, that can be grouped into seven categories. Give a description of any four of these 3D printing processes [8 Mks]

c) Discuss any three types of 3D printers that you would buy for your company [6 Mks]

END

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