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## Exam Class !

Take the exams and know the secret !

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- A. Electronic devices that perform only one operation can be programmable device.
- B. Logic devices provide timing and control operations function
- C. Internet is example of network which connect millions of people
- D. None

4. Which of the following file type has self-describing structure?

- A. XML
- B. SQL databases
- C. PDF file
- D. NO-SQL database

5. Which of the following characteristics of big data indicates data in uncertainty due to data inconsistency and ambiguity?

- A. Velocity
- B. Volume
- C. Variety
- D. veracity

6. \_\_\_\_\_ is performed by expert annotators that are responsible for improving the accessibility and quality of data.

- A. Data Acquisition
- B. Data Analysis
- C. Data Curation
- D. Data Storage

7. \_\_\_\_\_ is a framework that allows for the distributed processing of large datasets across clusters of computers using simple programming models.

- A. Hadoop
- B. NoSQL
- C. Big data
- D. API
- E. None

8. Which technique in big data life cycle is used to transfer data from various sources to Hadoop?

- A. Processing
- B. Ingesting
- C. Analysing
- D. Visualizing

9. Which one of the following is **not** true about cluster computing?

- A. It is economical
- B. It is scalable
- C. It is flexible
- D. It is rigid

10. **Chatbots and Roboadvisors** are best example for.

- A. Context aware and Retention
- B. Domain – Specific Expertise
- C. Rule based Systems
- D. Reasoning Machines

11. Which one is **NOT** application of AI?

- A. Recommendation
- B. Snap chat
- C. Email spam filters
- D. Voice recorder

12. Which of the following statement is **not** true?



3. What are the types of AI based on their functionality? Explain briefly (3 pt.).

1. ~~Short~~ <sup>limited</sup> memory - its memory save for short past experiences
2. ~~limited~~ <sup>short</sup> memory - doesn't save past experiences
3. Theory of mind - doing tasks as human

4. What are the goals for developing Artificial Intelligence? (2 pt.)

- ~~to build machine~~ Building machine
- Replication of human intelligence
- an intelligent connection of perception action
- creating system which can perform as human.



- A. The most common and currently available AI is Narrow AI
- B. The most common uses of AI today fit Rule-Based Systems level
- ☒ C. General AI is still under research
- D. self-driving car is an example of General AI

13. Which one is different?

- A. Super intelligence
- B. High accuracy with less failure
- C. Useful for risky area
- D. Digital assistance

14. Which of the following is **not** an example of reactive machine?

- A. Deep Blue
- B. AlphaGo
- C. Self-driving cars
- D. None

15. In mapping human thinking to AI components, which layer is related to taking action or making decisions;

- A. Sensing
- B. Interacting
- C. Interpreting
- D. Observing

**Part III: Write precise and clear answers for the following questions.**

1) Write at least four advanced technologies of fourth industrial revolution? (2 pt.)

- Self-driving cars

- ASI

- AGI

2) Briefly explain data types from data analytics perspective; provide examples for each of them. (3pts.)

1. ~~Structured~~ Structured - data that is structured by row & columns eg. Excel & XML

2. Semistructured - it doesn't process fully eg. No-SQL

3. Unstructured - it is raw that wants to input eg. Audio files.



18.8

BAHIR DAR UNIVERSITY  
BAHIR DAR INSTITUTE OF TECHNOLOGY  
FACULTY OF COMPUTING

Introduction to Emerging Technologies Mid Exam

Total mark: 30% | Time allowed: 1hr 20 Minutes | Date: June 27, 2022 | Target group: 1st Year Students

General Instruction

- Switch off your phone.
- Write your answer on the space provided only.
- Write an appropriate answer for each question precisely and concisely.
- Attempting to copy from other students is prohibited.

Name [redacted] ID 1108175 Sec 2.6

Part I: Write TRUE if the answer is correct or FALSE if the answer is incorrect (each 1pt)

- ☒ 1. A cyber-physical system is a mechanism that is controlled or monitored by computer-based algorithms, tightly integrated with the Internet and its users. ✓
- ☒ 2. Nowadays, natural user interfaces such as gestures have gained increasing attention as they allow machines to control humans through natural and intuitive behaviours. ✓
- ☒ 3. The ACID properties that guarantee RDBMS transactions provide flexibility with regard to schema changes and the performance and fault tolerance when data volumes and complexity grow, making them suitable for big data scenarios. ✓
- ☒ 4. The idea of Artificial General Intelligence is the ability of an AI agent to learn, perceive, understand, and function beyond human being. ✓
- ☒ 5. Clustered computing provide varying levels of fault tolerance to prevent hardware and software failures from affecting access to data and processing. ✓

Part II: Choose the best answer for the following questions (each 1pt)

- ☒ 1. Which of the following technology introduced in the second industrial revolution?
- A. Steam power  
B. Internet  
C. Hand phone  
D. Electrical power
- ☒ 2. Which one of the following is **not** the goal of HCI?
- A. Improve the interaction between human and computer  
B. promote uncertainty  
C. save time and money  
D. None
- ☒ 3. Which of the following statement is **not** true?



Part I: Write "True" if the statement is correct or "False" if the statement is incorrect. (10 marks)

1. Gene therapy is the process of transferring individual genes between organisms.
2. A time-stamped series of immutable records of data managed by a cluster of computers is block chain.
3. Automobility computing is a means of networking remote servers that are located on the Internet.
4. In IoT based smart city, the level of waste materials inside container is detected by using RFID technology.
5. Centralization is the main characteristics of blockchain.
6. Data processing layer is a user-centric layer that executes various tasks for the users.
7. Facial Recognition is an advanced type of object detection that not only recognizes a human face in an image and identifies a specific individual.
8. Phishing is a type of malicious software designed to extort money by blocking access to files or the computer system until the money is paid.
9. Quantum computing uses quantum bits to store data.
10. Information security is protecting all information assets, whether in hard copy or in digital form.

Part II: Choose the correct answer for the following questions. (15 marks each)

11. Which one of the following is the application of IoT in agriculture?  
 A. Monitoring microclimate condition.      C. Identifying soil nutrients in the soil  
 B. Sensing soil moisture.      D. All
12. Which one of the following is NOT the network layer communication technology in IoT architecture?  
 A. Zigbee      B. ZWave      C. LoRa      D. GPS
13. A sensor which is used to measure the change in motion as well as the orientation of the device is \_\_\_\_\_.  
 A. Position sensor      B. Environment sensor      C. Motion sensor      D. All
14. A network of devices that senses, accumulates and transfers data over the Internet without human intervention is \_\_\_\_\_.  
 A. IoT      B. Augmented reality      C. Artificial Intelligence      D. All
15. Which one of the following is NOT the use of AR in medicine?  
 A. Surgery      C. CT-Scan  
 B. Ultrasound      D. Higher Engagement
16. Which one of the following is NOT the component of IoT architecture?  
 A. Application layer      C. Sensing layer  
 B. Infrastructure Track unit      D. Network layer
17. Which one of the following is an example genetic engineering?  
 A. Nanotechnology      C. Biotechnology  
 B. Block chain technology      D. Cloud computing

18. The process of hash identifying block in each blockchain is generated using cryptographic algorithm is \_\_\_\_\_

A. SHA256

B. SHA64

C. SHA128

D. None

19. In which layer of IOT architecture does the process of identifying phenomena in the devices' peripheral and obtains data from the real world is \_\_\_\_\_?

A. Network layer

B. Sensing layer

C. Data processing layer

D. Application layer

20. Among the architecture of augmented reality systems, which of the following is responsible for collecting of real world data?

A. Infrastructure Tracker Unit

B. Processing Unit

C. Visual Unit

D. None of the above

21. Which one is **NOT** the reason to use augmented reality in education?

A. Due to unaffordable learning material

B. It brings an interactive lesson in the classroom

C. It decreases students' intellectual curiosity

D. It attracts student attention in the classroom

22. The process of recognizing repeated shapes, colors and other visual indicators in image is \_\_\_\_\_

A. Pattern detection

B. Image classification

C. Image Segmentation

D. Facial Recognition

**Part III: Fill the blank space in the given below with appropriate words (1.5 pts each)**

23. The phenomenon that a qubit exists in two states at the same time is \_\_\_\_\_

24. A common connection point for multiple sensors that accumulate and forward sensor data to the processing unit is \_\_\_\_\_

25. The most common type of cyber-attack to steal sensitive data such credit card numbers and login information is \_\_\_\_\_

26. The growing list of records that are linked using cryptography is \_\_\_\_\_

27. The form of emerging technology that allows users to overlay computer generated content in the real world is \_\_\_\_\_



# Jimma University

## Jimma Institute of Technology

### Faculty of Computing and Informatics

Mid Exam for Introduction to Emerging Technology (30%): February 2, 2022

Course Code: EMTE1011/12

Time Allowed: 1:30 hr.

Name \_\_\_\_\_ ID \_\_\_\_\_ Department \_\_\_\_\_ Section \_\_\_\_\_

#### Part I. True/False Items (5 Points)

Instruction: Write TRUE if the statement is true and FALSE if the statement is false on the space provided.

1. Self-driving cars are examples of limited memory AI type. \_\_\_\_\_
2. Even if AI machines do not have feelings, they can make any kind of emotional attachment with humans. \_\_\_\_\_
3. Hadoop enables applications to work with thousands of nodes and petabytes of data in a highly parallel, cost-effective manner. \_\_\_\_\_
4. If you select one photo from your phone and see details like the size, type, location and image capture date, these sets of description of the photo are considered as metadata.  
\_\_\_\_\_
5. Rural-to- Urban migration is not the result of industrial revolution. \_\_\_\_\_

#### Part II. Multiple Choice Items (10 Points)

Instruction: Choose the correct answer among the given alternatives and write the letter of your choice on the space provided.

1. \_\_\_\_\_ Which one of the following is true about the term emerging technology?  
A. Emerging technology is a term generally used to describe a new technology.  
B. Emerging technology is a term refers to the continuing development of an existing technology.  
C. Technologies that are currently developing or technologies that are expected to be available within the next five to ten years.  
D. All
2. \_\_\_\_\_ is the processed and interpreted data on which decisions and actions are based.  
A. Data                      B. Data Science                      C. Information                      D. Technology



3. \_\_\_\_\_ Which stage of the industrial revolution is characterized by increasing automation and the employment of smart machines and smart factories using advanced technologies like AI and Data Science?  
A. IR 1.0  
B. IR 2.0  
C. IR 3.0  
D. IR 4.0
4. \_\_\_\_\_ is the term for a collection of data sets so large and complex.  
A. Artificial Intelligence  
B. Big Data  
C. Block Chain  
D. Data Science
5. \_\_\_\_\_ Which one of the following is not the advantage of artificial intelligence?  
A. High Reliability  
B. Useful for Risky Areas  
C. High Speed  
D. Can Think Out of the Box  
E. None
6. \_\_\_\_\_ Which one of the following is the ultimate goal of data science?  
A. To extract knowledge and insights from structured, semi-structured and unstructured data.  
B. To study computer algorithms for creating expert systems.  
C. To replicate human intelligence in machines  
D. All
7. \_\_\_\_\_ From Data Analytics point of view, which of the following is not true about structured data type?  
A. Data that is already stored in database in some organized manner like Excel, SQL database  
B. Data that is not organized in a pre-defined manner like Audio, Video or No SQL database  
C. Data that's the easiest to process it.  
D. All
8. \_\_\_\_\_ Communication between Human and machine requires an interface. And, the interface may include:  
A. Gesture recognition  
B. Terminal  
C. Voice recognition  
D. All
9. \_\_\_\_\_ Which one of the following is used to transfer data from RDBMS to HDFS in a Hadoop ecosystem?  
A. Scoop  
B. Flume  
C. Map Reduce  
D. Pig
10. \_\_\_\_\_ Which stage of Artificial Intelligence has a sense of beliefs, intentions, knowledge and builds its own logic for reasoning and negotiating with humans and other machines?  
A. Rule-Based Systems  
B. Context Awareness and Retention  
C. Domain-Specific Expertise  
D. None



**Part III: Give short answer (15 Points)**

**Instruction:** Give precise answer for the following questions and write your answer on the space provided.

1. Briefly explain the mapping of human thinking to artificial intelligence components(3pts)?

2. What do we mean by data science is a multi-disciplinary and why is it multi-disciplinary(3pts)?

**Jimma University**

3. What is a data value chain and briefly explain the different chain activities in it (3.5pts)?



**Part I - Fill the blank space with the correct answer {1 pt. each}**

- \_\_\_\_\_ making the raw data acquired amenable to use in decision-making as well as domain-specific usage.
- \_\_\_\_\_ is an advanced form of AI where the machine can learn as it goes rather than having every action programmed by humans.
- \_\_\_\_\_ is a model for enabling convenient on-demand network access to a shared pool of computing resources.

**PART II - Choose the best answer from the given alternatives {1 pt. each}**

- \_\_\_\_\_ covers the data-driven business activities that need access to data, its analysis, and the tools needed to integrate the data analysis within the business activity.  
 A. Data Storage      B. Data Curation      C. Data Analysis      D. Data Usage
- \_\_\_\_\_ & \_\_\_\_\_ are used to ingest data from external sources into HDFS.  
 A. Spark & MapReduce      B. Hive & Impala      C. Flume and Sqoop      D. None
- Among the following, one is NOT a branch of Artificial Intelligence.  
 A. Machine Learning      B. Network Design      C. Deep learning      D. None
- All of the following is goal of Artificial Intelligence **Except**.  
 A. Decrease dependence on machines      C. Intelligent connection of perception and action  
 B. Solve knowledge intensive task      D. Replicate human intelligence
- \_\_\_\_\_ a collection of data that is huge in volume, thus growing exponentially with time.  
 A. Big DBMS      B. Big data files      C. Big data      D. Big database
- \_\_\_\_\_ is a type of AI that could perform any intellectual task with efficiency like a human.  
 A. General AI      B. Super AI      C. Weak AI      D. None
- \_\_\_\_\_ is anything that can perceive its environment through sensors and acts upon that environment through effectors.  
 A. Chatbots      B. Agent      C. LISP      D. AI

**PART III - Matching {1 pt. each}**

- AI platform
- Spam filtering
- Map Reduce
- Cloudera search
- Veracity

- Used to visualizing the results
- IBM Watson
- Data in doubt
- Used for data processing
- Search and optimization
- Data in many form
- AI email application

40min



Name: \_\_\_\_\_

Idno: \_\_\_\_\_

Campus: \_\_\_\_\_

Section: \_\_\_\_\_

Max. Time  
1:15 hr**DIRECTION: WRITE YOUR ANSWERS ON THE SPACE PROVIDED ONLY****PART I: CHOOSE THE BEST ANSWER (1 pt. each)**

- \_\_\_\_\_ 1. Which of the following is re-structuring or re-ordering of data by people or machines to increase their usefulness and add values for a particular purpose?
  - A. Big Data
  - B. Data Processing
  - C. Artificial Intelligence
  - D. Block-chain
- \_\_\_\_\_ 2. Which of the following describes the delivery of on-demand services, usually through the internet, on a pay-per-use basis?
  - A. Cloud Computing
  - B. Data Science
  - C. Block chain
  - D. None of the above
- \_\_\_\_\_ 3. Which of the following is an example of Semi-structured data?
  - A. Excel files or SQL databases
  - B. JSON and XML
  - C. audio, video files or No-SQL
  - D. All the above
- \_\_\_\_\_ 4. In Hadoop ecosystem, which component performs data management?
  - A. Spark and MapReduce
  - B. Oozie, Zookeeper
  - C. Sqoop and Flume
  - D. Hive, Pig
- \_\_\_\_\_ 5. What is the category of current Artificial Intelligence systems?
  - A. Artificial Super Intelligence
  - B. Artificial General Intelligence
  - C. Artificial Narrow Intelligence
  - D. Self-aware AI

**PART II: FILL THE BLANK SPACE (4 pts.)**

1. The active management of data over its life cycle to ensure it meets the necessary data quality requirements for its effective usage is called \_\_\_\_\_.
2. \_\_\_\_\_ used to store a combination of characters and numbers.
3. **Artificial Intelligence system** is composed of \_\_\_\_\_ and \_\_\_\_\_.
4. \_\_\_\_\_ enable software components to communicate with each other easily.

**PART III: MATCHING (5 pts.)**

A	B
_____ 1. Data Processing	a. ELIZA
_____ 2. Data Storage	b. HDFS
_____ 3. Data Access	c. Cloudera search
_____ 4. First AI chat bot	d. Meta data
_____ 5. Cloud Computing	e. WABOT
	f. Influencer of AI
	g. Map reduce

**PART IV: ANSWER THE FOLLOWING QUESTIONS ACCORDINGLY (11 pts.)**

1. What is meta-data? (1 pt.)
2. Write down at least 2 importance of Cluster computing? (1 pts.)



3. Why Artificial Intelligence is needed? (2 pts.)

4. Explain the differences between the Artificial Intelligence and Machine Learning? (2 pts.)

5. List out at least 4 real life AI applications! (2 pts.)

6. List and discuss at least 3 characteristics of big data (3 pts.)





MIZAN TEPI UNIVERSITY

SCHOOL OF COMPUTING AND INFORMATICS

Introduction to Emerging Technologies Mid Exam

Total mark 30% | Time Allowed: 1:20 | Date November 25, 2021 | Target Group: 1st Year Students

Name: \_\_\_\_\_ ID: \_\_\_\_\_ Section: G

General Instruction

- \* Write an appropriate answer for each question precisely and concisely on the separate answer sheet
- \* Any kind of cheating will nullify your result
- \* Switch off your cell phone before starting the exam

Part I: Choose the correct answer from the given alternatives (1.5 pts. each)

1. Which one of the following is not correctly matched?
  - A. Primary industries → Getting raw materials
  - B. Secondary industries → Manufacturing
  - C. Ternary industries → Research and development
  - D. All
  - E. None
2. From data analytics point of view, which one of the following data type is known as a self-describing structure?
  - A. Semi-structured Data
  - B. Metadata Data
  - C. Structured Data
  - D. Unstructured Data
  - E. None
3. Which one of the following is not advantage of Big Data?

A. Processing massive amounts of data	C. Handling a variety of data
B. Low latency data access	D. All
	E. None





4. Which one of the following is odd?

- A. Data science enables you to take better and faster decisions.
- B. Data science has ability to prevent significant monetary loses only.
- C. Data science allows to build intelligence ability in machines.
- D. Data Science can help you to detect fraud using advanced machine learning algorithms.
- E. None

5. Which of the following is not a goal of AI?

- A. Plan some surgical operation
- B. Adapting to the environment and situations
- C. Real Life Problem Solving
- D. To rule over humans

6. Which one of the following statement is not correct about the concept of Emerging Technology?

- A. New technologies that are currently developing which will ensure that there is minimal impact on our environment and to make society a better place to live.
- B. New technologies that are currently developing which will ensure that expected to create significant impact on our environment and to make society a better place to live.
- C. New technologies that are currently developing or will be developed over the next five to ten years, and which will substantially alter the business and social environment.
- D. New technologies that are continues development of an already existing technology
- E. B & D
- F. None

7. All of the following are the importance of forming clustered computing for big data analysis. Except,

- A. Combining available resource storages and CPU and memory pooling are significant.
- B. Clusters make it easy to scale horizontally by adding additional machines to the group.
- C. Clusters provides low level of fault tolerance and availability.
- D. None





8. For taking decisions data must be?  
 A. Very accurate B. Massive  
 C. Processed correctly D. Collected from diverse sources E. All
9. Which of the following data value chain requires an expert which is responsible for improving the accessibility and quality of data?  
 A. Data Acquisition B. Data Analysis C. Data Usage  
 D. Data Storage E. Data Curation F. None
10. Which type of AI refers to machines that perform any intellectual task with efficiency like a human?  
 A. Weak Artificial Intelligence C. Super Artificial intelligence  
 B. Singularity and Transcendence D. General Artificial Intelligence

**Part II: Fill blank space (2 pts. each)**

1. Hadoop is a distributed file system that may run on a cluster of commodity machines, where the storage of data is distributed among the cluster and the processing is distributed too.
2. Data Usage describes the information flow within the big data system to generate hidden pattern and useful knowledge from data.

**Part III. Write a short answer for the following questions**

1. List at least 3 application area of artificial intelligence and explain briefly? (3 Points)
2. Briefly explain the mapping of human thinking to artificial intelligence components (3 Points)?
3. What is human to computer interaction and how human beings interact with computers? (3 Points)
4. List and explain basic components of Hadoop system (2 Points).





**PART I: Write TRUE if the statement is correct and FALSE if the statement is incorrect.**

1. Integer data type is used to store real numbers.
2. Data is independent of information whereas information is dependent on data.
3. The goal of HCI is to improve the interaction between users and computers by making computers more user-friendly and receptive to the user's needs.
4. Internet is a collection of computers, servers, network devices or other devices connected to one another to allow the sharing of data.
5. Clustered computing is a framework that allows for the distributed processing of large datasets across clusters of computers using simple programming models.

**PART II: Choose the best answer among the alternatives (1 point each)!**

1. "Information Technology" is an example of
  - A. Primary Industry
  - B. Secondary Industry
  - C. Tertiary Industry
  - D. Quaternary Industry
2. All of the following are Service Enabling Devices except
  - A. Modems
  - B. Routers
  - C. Switches
  - D. Hadoop
3. One of the following is the major invention of industrial revolution (IR 3.0).
  - A. Internet
  - B. Steam Engine
  - C. Electrical Power
  - D. Automated Robots
4. Which benefits of a big-data clustering software makes easy to add additional machines to the group of cluster without expanding the physical resources on a machine.
  - A. Available
  - B. Scalable
  - C. Flexible
  - D. Reliable
5. Which component of Hadoop is used for programming based Data Processing?
  - A. HIVE
  - B. Spark MLlib
  - C. MapReduce
  - D. Oozie
6. Information that either does not have a predefined data model or is not organized in a pre-defined manner is called \_\_\_\_\_.
  - A. Semi-structured Data
  - B. Unstructured Data
  - C. Structured Data
  - D. All
7. It is the process of gathering, filtering, and cleaning data before it put in a data warehouse.
  - A. Data Analysis
  - B. Data Acquisition
  - C. Data Curation
  - D. Data Storage
8. Which one of the following is characteristics of big data that refers to uncertainty data inconsistencies and incompleteness?
  - A. Velocity
  - B. Variety
  - C. Volume
  - D. Veracity

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9. Which one of the following is the correct order of Data Processing Cycle?
  - A. INPUT → OUTPUT → PROCESSING
  - B. PROCESSING → INPUT → OUTPUT
  - C. INPUT → PROCESSING → OUTPUT
  - D. OUTPUT → PROCESSING → INPUT
10. In data value chain, the activities of ensuring that data are trustworthy, discoverable, accessible, reusable and fit their purpose is called \_\_\_\_\_.
  - A. Data Acquisition
  - B. Data Analysis
  - C. Data Storage
  - D. Data Curation
11. A representation of facts, or instructions in a formalized manner, which should be suitable for interpretation, or processing, by human or electronic machines is called \_\_\_\_\_.
  - A. Data
  - B. Information
  - C. Database
  - D. Data warehouse
12. All of the following are the specific functions of Logic Devices except \_\_\_\_\_.
  - A. Control operations
  - B. Data communication
  - C. Signal processing
  - D. None of the Above
13. The persistence and management of data in a scalable way that satisfies the needs of applications that require fast access to the data is known as \_\_\_\_\_.
  - A. Data Storage
  - B. Data Analysis
  - C. Data Acquisition
  - D. Data Curation
14. Electrical power and telephones are introduced during industrial revolution(IR) \_\_\_\_\_.
  - A. IR 1.0
  - B. IR 2.0
  - C. IR 3.0
  - D. IR 4.0
15. Which of the following is not true about the second industrial revolution?
  - A. Industries such as textile manufacturing, mining and glass making all had undergone changes.
  - B. The development of methods for manufacturing interchangeable parts
  - C. Widespread adoption of pre-existing technological systems such as telegraph and railroad networks
  - D. The mass production and widespread use of digital logic circuits and its derived technologies such as the computer

**PART III: Fill the appropriate answer on the blank space (1 point each)!**

1. \_\_\_\_\_ is the input, or what you tell the computer to do or save.
2. \_\_\_\_\_ is an open-source framework intended to make interaction with big data easier.
3. \_\_\_\_\_ describe the information flow within a big data system as a series of steps needed to generate value and useful insights from data.
4. \_\_\_\_\_ defines the operations that can be done on the data, the meaning of the data, and the way values of that type can be stored.



Part I: Write true if the statement is correct else false on the space provided. (1 point each)

1. Emerging technology is not continuing development of existing technology.
2. Networking is connecting computers or other electronic devices together so that they share files or resources.
3. Structured data have a predefined data model.
4. Industrial revolution three is also known as Technological evolution

Part II: Choose the right answer from the alternatives on provided Space (1 point for each)

5. What are the main components of Data value Chain in data Science?  
A. Data processing  
B. Data management  
C. Data access  
D. Data Analysis
6. Which of the following is correct about evolution and revolution?  
A. Evolutionary - incremental and takes place gradually, over time.  
B. Evolutionary - incremental in that it happens step by step, little by little.  
C. revolutionary change is deep and Change is fundamental, dramatic, and often irreversible  
D. All are correct
7. The final or main cause of the Industrial Revolution was the effects created by \_\_\_\_  
A. Agricultural Revolution  
B. rise of digital technology  
C. machine learning  
D. Smart & autonomous systems fueled by data
8. In which Industrial Revolution (IR) increasing use of steam power and rise of the factory system  
A. IR 1.0  
B. IR 2.0  
C. IR 3.0  
D. IR 4.0
9. \_\_\_\_\_ is the re-structuring or re-ordering of data by people or machines to increase their usefulness and add values for a particular purpose  
A. Data value chain  
B. Data curation  
C. Data Processing Cycle  
D. Data Acquisition
10. Which data type in computer programming perspective is used to store real numbers  
A. Integer(int)  
B. Boolean(bool)  
C. Floating-point number(float)  
D. Alphanumeric string(string)
11. Which of the following is not character of big data?  
A. Volume  
B. Velocity  
C. Veracity  
D. None
12. \_\_\_\_\_ refers to the communication and interaction between a human and a machine via a user interface.  
A. Human machine interaction  
B. Programmable devices  
C. Human computer interface  
D. A&C
13. \_\_\_\_\_ is the process of gathering, filtering, and cleaning data before it put in a data warehouse.  
A. Data acquisition  
B. Data curation  
C. Data access  
D. Data usage

Selale University

Selale University



Part III: Fill in the blanks with appropriate word or phrase on the provided space only. (1 point for each)

14. Data Sciences uses scientific methods, processes, algorithms, and systems to extract knowledge and insights from structured, semi-structured and unstructured data.
15. Meta data is data about data that provides additional information about a specific set of data.
16. Hadoop is Open-source framework intended to make interaction with big data easier?
17. Computer is a device in the digital world that used to execute software instructions to perform a wide variety of tasks.

Part IV: Write brief and clear answer on the provided space only

18. List down the benefits of cluster computing(1.5pts)

- 1) Resources pooling
- 2) High Availability
- 3) Easy scalability

19. Write data types from data analytic perspective with its example(1.5pts)

\* There are Three (3) types of Data analytic perspective and metadata

- i) Structured data.  
e.g. → SQL data base  
→ Excel Service
- ii) Unstructured data  
e.g. JSON → audio  
→ video  
XML → Files  
→ NoSQL data base
- iii) Semi-structured data  
e.g. → JSON



Hawassa University, Institute of Technology  
Introduction of Emerging Technology Test  
Test

Total Marks: 20  
Time allowed 1hr.

Name \_\_\_\_\_ ID NO \_\_\_\_\_  
Section \_\_\_\_\_

**Instructions:**

- ⇒ Make sure you have 2 pages and a total of 10 questions.
- ⇒ Cheating is strictly forbidden and will result zero mark
- ⇒ Don't use red pen

**Part I: Matching**

**A**

1. Packaging of a data \*
2. Data variety
3. Datatype \*
4. Organizing Data \*
5. Sensors \*

**B**

- A. Integer
- B. Camera, Microphone etc.
- C. Agent and environment
- D. Model Building
- E. Cyber Physical System
- F. Data about Data
- G. Web log
- H. Insights of information
- I. Data visualization
- J. Data preparation and Discovery

**Part II: Short Answer and discussion!!!**

1. Discuss why data scientists needs to be an expert in Mathematics, /statistics/and computer science even if they are from a different specific domain.
2. Discuss Data Science application in the realm of health care and medical issues?
3. What is data processing? List and Explain stages of data processing.
4. Explain data value chain and associated activities.
5. What is 3V in Big Data?

**Answer Sheet**

**Part 1**

1.	2.	3.	4.	5.
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(1pt each)

1. The first step in Big Data Life Cycle with Hadoop is data acquisition.
2. Transatlantic Cable is the most important inventions of IR used for communication.
3. Hadoop needs only powerful computer for data processing.

**Part II: Choose the correct answer among the given alternatives. (1.5Pt each)**

1. The active management of data over its life cycle to ensure it meets the necessary data quality requirements for its effective usage.  
A. Data Curation  
B. Data Acquisition  
C. Data Usage  
D. Data Analysis
2. A term that describes the information flow within a big data system as a series of steps needed to generate value and useful insights from data.  
A. Data  
B. Data value chain  
C. Hadoop  
D. Clustered computing
3. An attribute of data that tells the compiler how the programmer intends to use the data.  
A. Unstructured data  
B. Meta data  
C. Big Data  
D. None
4. Which is better to address the high storage and computational needs of big data?  
A. Cloud computing  
B. Clustered computing  
C. Block chain  
D. HCI
5. If you select a photo in your photo and see details like size, type and date described as  
A. Structured data  
B. Meta data  
C. Semi-structured  
D. Unstructured
6. Which one of the following statement is true?  
A. The primary industry involves getting raw materials e.g farming, and fishing.  
B. The quaternary industry involves manufacturing e.g. making cars and steel.  
C. The secondary industry provides a service e.g. teaching and nursing.  
D. Tertiary industries involves research and development industries e.g. IT.
7. A devices that provide specific functions, including device-to-device interfacing, data communication, signal processing and data display.  
A. Network devices  
B. Logic Devices  
C. Microprocessor  
D. Memory Devices
8. Which one of the following data file is an Example of Structured data?  
A. Xml  
B. JSON  
C. NO-SQL  
D. Excel





Part III: Fill in the Blank space (1pt each)

1. \_\_\_\_\_ is the term for a collection of data sets so large and complex that it becomes difficult to process using traditional data processing applications.
2. \_\_\_\_\_ is an open-source framework intended to make interaction with big data easier.
3. \_\_\_\_\_ is regarded as the new oil and strategic asset since we are living in the age of big data.
4. \_\_\_\_\_ is a mechanism that is controlled or monitored by computer-based algorithms, tightly integrated with the Internet and its users.
5. \_\_\_\_\_ is the study of how people interact with computers and to what extent computers are developed for successful interaction with human beings.

Part IV: Give precise answer for the following questions

1. List and explain the types of industrial revolution with invented technologies? [3pt]
2. List and explain data types which is grouped under programming perspective? [3pt]
3. Write at least three differences between data and information? [2pt]
4. Write and explain the characteristics of Big data? [2pt]

**Answer sheet**

NAME _____	ID NO _____	SECTION _____
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Part I: True/ False


Part II: Multiple choices



Part III: Blank Space


Bonga university



## Emerging Technology mid Exam for First Year Student

Name: \_\_\_\_\_

ID: \_\_\_\_\_

Section: \_\_\_\_\_

### Part I: write True or False for the following questions.

1. The goal of HCI is to improve the interaction between machine and computers.
2. From a data analytics point of view, a data type is simply an attribute of data that tells the compiler or interpreter how the programmer intends to use the data.
3. Super AI is a type of intelligence that could perform any intellectual task with efficiency like a human.

### Part II: Choose the best answer for the following questions.

1. Which one of the following is not sample application of **Commuting**?  
A. Smart Email Categorization  
B. Ridesharing Apps Like Uber and Lyft  
C. Google's AI-Powered Predictions  
D. Commercial Flights Use an AI Autopilot
2. All of the following are influencers of artificial intelligence **except**  
A. No Original Creativity  
B. Advancements in computer processing speed and new chip architectures  
C. Structured data versus unstructured data  
D. None
3. Which one of the following is characteristics of theory of mind AI type?  
A. It should understand human emotions, people, beliefs, and be able to interact socially like humans.  
B. It is the future of Artificial Intelligence.  
C. Such machines will be more intelligent than the human intellect.  
D. It can store past experiences or some data for a short period of time.
4. One of the following **isn't** somehow the advantage of artificial intelligence.  
A. High Accuracy with fewer errors.  
B. Useful for risky areas.  
C. AI machines are highly reliable and can perform the same activity with great precision several times.  
D. Increase dependence on machines.
5. Which one of the following **is not** the aim of artificial intelligence?  
A. To carry out a cyber-attack via an artificial intelligence algorithm  
B. Replicate human intelligence  
C. Building a machine which can perform tasks that requires human intelligence  
D. A and C
6. Intelligence is made of  
A. Reasoning  
B. Problem Solving  
C. Linguistic Ability  
D. All  
E. All except C
7. After you use social media and give comments what sort of data are you making?  
A. Structured Data  
B. Unstructured Data  
C. Semi Structured  
D. Data Type

Bahirdar 2012



8. The additional information that we get about a data is
- Meta data
  - Structured data
  - Valuable data
  - Semi structured data
9. Which one of the following is true about the characteristics of big data?
- Veracity is containing different types of data.
  - Big data is characterized by velocity because it is always streaming in motion.
  - Volume refers to massive amount of structured data.
  - All
10. For which of the following will you use integer data type?
- Height
  - Age in years
  - For all mathematics operation on integers
  - B and C
11. What data type would you use to determine if one number is greater or less than another?
- String
  - Integer
  - Boolean
  - Float
12. Which one can be used by decision makers for taking actions?
- Data
  - Information
  - Unanalyzed facts
  - All
13. The re-structuring or re-ordering of data by people or machines to increase their usefulness and add values for a particular purpose
- Data value chain
  - Big data
  - Data processing
  - Input
14. Which one of the following is considered as the icon of industrial revolution 4.0?
- Steam engine
  - Electricity
  - Internet
  - None
15. Which one of the following is not among future trends of emerging technologies?
- WAN
  - Block chain
  - Chat bot
  - AI
16. Why computer is programmable device?
- Because we can play audio file using it
  - because it follows set of instructions
  - because we can browse internet using it
  - None
17. Why HCI?
- Because it encourages people
  - Because it reduces risks
  - Because it leads for uncertainty
  - A and B

**Part III: Write precise and clear answers for the following questions.**

- Write at least four disciplines contributing for HCI (2pts.).
- How do we map human thinking to artificial intelligence components? Explain briefly. (3 Points)
- List and describe data value chain (3 points)
- Identify and explain the various types of AI based on their capabilities. (2 points)



Addis Ababa University  
College of Natural and Computational Sciences  
Introduction to Emerging Technologies (EmTe1011) for Social Science  
Mid-term exam (total point 30%)

Date: December 23, 2019  
Time allotted: 1hr.

Name: \_\_\_\_\_ Id no.: \_\_\_\_\_ Section: \_\_\_\_\_

Select campus/school: CSS | CHLSJC | CEBS | CBE-FBE | CBE-Commerce | CLGS | Art | Yared

General instruction: The exam contains total of 30 questions provided in three parts: true/false, multiple choice, and short answer. All answers should be written on the answer sheet included at the bottom of page 3. Switch-off mobile phone.

Part I: True or False (1 pt each)

1. When apps move from the cloud back to on-premises it is known as cloud repatriation.
2. Data curation involves key activities concerned with annotating data so that it becomes easily accessible, discoverable and fit for purpose.
3. Real-time processing is most useful when dealing with very large datasets that require quite a bit of computation.
4. Sophia has been designed by Ethiopian Engineers and is an example of limited memory AI type. ☒
5. Self-driving cars are example of reactive machines artificial intelligence. ☒

Part II: Multiple Choice (1 pt each)

1. Which of the following is regarded as smart revolution?  
a. Information revolution  
b. Agriculture revolution  
c. Industrial revolution (Second revolution)  
d. Knowledge revolution
2. Which of the following factor is not considered as a driver of information revolution?  
a. The growth of information-based occupation  
b. The invention artificial intelligence  
c. The widespread of cheap personal computers  
d. The advent of the Internet
3. A device that provides interfacing, data communication, signal processing and other key similar functionalities is \_\_\_\_\_.  
a. Microprocessor  
b. Memory device  
c. Logic device  
d. Network device
4. Which of the following is not a future trend of networks?  
a. 5G technology  
b. Rise of centralization  
c. Embedded computation  
d. Network developments in edge computing
5. Stage of industrial revolution characterized by the use of IoT, AI, and Big Data Technologies to the industry that will allow the intelligent production.  
a. Industry 1.0  
b. Industry 2.0  
c. Industry 3.0  
d. Industry 4.0



6. The bi-direction information flow between a human brain and a machine is referred to as
  - a. Neuro-modulation
  - b. Social Computing
  - c. Human Machine Interface
  - d. Brain Computer Interface
7. Agricultural mass crop production technologies were invented during \_\_\_\_\_ period
  - a. Industrial revolution
  - b. First Agricultural revolution
  - c. Second Agricultural revolution
  - d. Third Agricultural revolution
8. Poorly designed human-machine interfaces can lead to many unexpected problems. All can be classic example, except \_\_\_\_\_
  - a. Three Mile Island accident in USA
  - b. A nuclear meltdown accident
  - c. Accidents in aviation industries
  - d. Explanation of Chabots
9. All are characteristics that determine the quality of information, except \_\_\_\_\_.
  - a. Timely
  - b. Accuracy
  - c. Completeness
  - d. Inconsistency
  - e. All of the above
10. The goal of most big data systems is \_\_\_\_\_.
  - a. To save cost
  - b. To reduce complexity
  - c. To surface insight
  - d. To secure data
11. If you select one photo in your phone and see details like the size, type, location, and image captured date, this is \_\_\_\_\_.
  - a. an integer data
  - b. a metadata
  - c. a semi-structured data
  - d. a unstructured data
12. Which of the following is wrong about data type?
  - a. A data type is an attribute of data in integers, Booleans, and floating-point number.
  - b. A data type is about the structure of data such as structured, unstructured, and semi-structured.
  - c. A data type is the structure of the data for a computer programming.
  - d. A data type is data about data in metadata
13. What are the different activities of Big-data life cycle?
  - a. Ingesting data, persisting data, computing and analyzing data, and visualizing results.
  - b. Acquisition, analysis, curation, storage, and usage.
  - c. Veracity, variability, and value.
  - d. Input, processing, and output.
14. With respect to "commuting and analyzing Big data", one of the following tool is different
  - a. Apache Storm
  - b. Apache Hadoop's MapReduce
  - c. Apache Flink
  - d. Apache Spark
15. Which of the following are the applications of Chatbots?
  - a. Google Assistance
  - b. Google Home
  - c. Siri in iphone
  - d. None of the above



16. \_\_\_\_\_ require intelligence to handle tasks such as object manipulation and navigation, along with sub-problems of localization, motion planning and mapping.
- Machine learning
  - Robotics
  - Virtual reality
  - Augmented reality
17. The most common and currently available AI system is \_\_\_\_\_
- General Intelligence
  - Narrow Intelligence
  - Super Intelligence
  - Theory of Mind
18. Which of the following does not belong to components of AI system?
- Models
  - Data
  - Hardware
  - Programming languages
19. Which of the following AI system has beaten the world's chess champion?
- AlphaGo
  - Deep Blue
  - Siri
  - Watson
20. All are AI applications in the agriculture sector, except \_\_\_\_\_
- See & Spray Robot
  - Harvest CROO Robotics
  - Crop and Soil Monitoring
  - IBM Watson analysis

### Part III: Short Answer (1 pt each)

- \_\_\_\_\_ is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.
- A technology that enable machines to analyze, understand and manipulate images and video is known as \_\_\_\_\_.
- \_\_\_\_\_ is the science and engineering of making machines to think and act humanly.
- The two method of computing for Big Data Processing are \_\_\_\_\_ and \_\_\_\_\_.
- The "three Vs. of big data" are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

### Answer Sheet for Part I and Part II

#### Part I: True or False

1.	2.	3.	4.	5.
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#### Part II: Multiple Choice

1.	2.	3.	4.	5.
6.	7.	8.	9.	10.
11.	12.	13.	14.	15.
16.	17.	18.	19.	20.

#### Part III: Short Answer

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_ and \_\_\_\_\_, and Down
- \_\_\_\_\_