SPECIALTY: EDM

EXAM PAPER: Computer Systems

Section A:MCQ(40 marks)

1. The field that covers a variety of computer networks, both public and private, that are used in everyday jobs.
     A. Artificial Intelligence
     B. ML
     C. Network Security
     D. IT
2. Network Security provides authentication and access control for resources.
   A. True
   B. False
3. Which is not an objective of network security?
   A. Identification
   B. Authentication
   C. Access control
   D. Lock
4. Which of these is a part of network identification?
   A. UserID
   B. Password
   C. OTP
   D. Fingerprint
5. The process of verifying the identity of a user.
   A. Authentication
   B. Identification
   C. Validation
   D. Verification
6. A concern of authentication that deals with user rights.
   A. General access
   B. Functional authentication
   C. Functional authorization
   D. Auto verification
7. CHAP stands for?
   A. Challenge Handshake authentication protocol
   B. Challenge Hardware authentication protocol
   C. Circuit Hardware authentication protocol
   D. Circuit Handshake authentication protocol

8. Security features that control that can access resources in the OS.
   A. Authentication
   B. Identification
   C. Validation
   D. Access control

9. An algorithm in encryption is called _____
A. Algorithm
B. Procedure
C. Cipher
D. Module

10. The information that gets transformed in encryption is _____
   A. Plain text
   B. Parallel text
   C. Encrypted text
   D. Decrypted text

11. Agents behavior can be best described by…….
   A. Perception sequence
   B. Agent function
   C. Sensors and Actuators
   D. Environment in which agent is performing

12. A production rule consists of ……………………………
   A. A set of rule
   B. A sequence of steps
   C. Set of rule and sequence of steps
   D. Arbitrary representation to problem

13. Which is the best way to go for game playing problem?
   A. Linear approach
   B. Heuristic approach (Some knowledge is stored)
   C. Random approach
   D. An optimal approach

14. What is machine learning?
   A. The autonomous acquisition of knowledge through the use of computer programs
   B. The autonomous acquisition of knowledge through the use of manual programs
   C. The selective acquisition of knowledge through the use of computer programs
   D. The selective acquisition of knowledge through the use of manual programs

15. Which of the factors affect the performance of learner system does not include?
   A. Representation scheme used
   B. Training scenario
   C. Type of feedback
   D. Good data structures

16. In language understanding, the levels of knowledge that
   A. Phonological
   B. Syntactic
   C. Empirical
   D. Logical

17. A model of language consists of the categories which does not include?
   A. Language units
   B. Role structure of units
   C. System constraints
   D. Structural units

18. Which is not a property of representation of knowledge?
   A. Representational verification

B. Representational Adequacy
C. Inferential Adequacy
D. Inferential Efficiency

19. How is fuzzy logic different from conventional control methods?
    A. If and then approach
    B. For approach
    C. While approach
    D. Do approach

20. If a hypothesis says it should be positive, but in fact it is negative, we call it………………..
    B. A consistent hypothesis
    C. A false negative hypothesis
    D. A false positive hypothesis
    E. A specialized hypothesis

21.

What does HCI stand for?

     A. Human Computer Interface.
     B. Human Computer Interaction
     C. Human Computer Implementation.
     D. Human Computer Industry

22. Which one of these would NOT be found in a good HCI?

     A. Common short cuts, like CTRL+Z for undo.

     B. Icons that can have specific meanings.

     C. A long command line to achieve a function

     D. Sounds that convey meanings.

23. Which one of these is a good reason for taking care to design a good computer human interface?
    A. Not every user is a computer expert
    B. Well designed HCIs allow the software to be sold at a better price.
    C. Well designed HCIs use less computer resources.
    D. Well designed HCIs allow the computer to run faster

24. In virtual reality which of the senses cannot currently be portrayed?
    A. Touch
    B. Hearing
    C. Sight
    D. Smell

25. HCI is based on psychological factors of humans?
    A. True
    B. False

26. Which of these is not a interface style?
    A. Command line/command prompt
    B. Menus
    C. Natural Language
    D. Voice Recognition

27. Which one of these is a good reason to include sounds in an HCI?
A. Users react more quickly to sounds than to visual signals
B. Users react more slowly to sounds than to visual signals
C. There is no preference. People just like sounds
D. The computer reacts to sounds in the same way as a human
28. All countries read from left to right?
   A. True
   B. False
29. A computer expert produces an solution with HCI which is very efficient in computer resources, based on command-lines. Which one of the following is most likely to be the result when the system is implemented?
   A. It will be welcomed by all staff.
   B. All staff will enjoy using it after mastering the skills of command lines.
   C. Most staff will want to become computer experts to use it.
   D. Most staff will feel demoralised and will not want to use the system.
30. Which of these films uses futuristic HCI
   A. Speed
   B. Minority Report
   C. Terminator
   D. Bambi
31. Which of the following contains the output segments of Artificial Intelligence programming?
   A. Printed language and synthesized speech
   B. Manipulation of physical object
   C. Locomotion
   D. All of the above
32. Strong Artificial intelligence is …………………………………………………………
   A. The emdodiment of human intellectual capabilities within a computer
   B. A set of computer programs that produce output that would be considered to reflect intelligence if it were generated by humans
   C. The study of mental faculties through the use of mental models implemented on a computer
   D. All of the above
33. What is artificial intelligence?
   A. Putting your intelligence into computer
   B. Programming with your own intelligence
   C. Making a machine intelligent
   D. Playing a game
34. Which is not a property of representation of knowledge?
   A. Representational verification
   B. Representational adequacy
   C. Inferential adequacy
   D. Inferential efficiency
35. What is the primary interactive method of communication used by humans?
   A. Reading
   B. Writing

C. Speaking

D. All of the above

36. Elementary linguistic units that are smaller than words are?

    A. Allophones

    B. Phonemes

    C. Syllables

    D. All of the above

37. An expert system differs from a database program in that….

    A. An expert system contains declarative knowledge

    B. An expert system contains the retrieval of stored information

    C. An expert system uses expert users to draw their own conclusions

    D. An expert system contains procedural knowledge

38. Which of the following is an example of software development tools?

    A. Debuggers

    B. Editor

    C. Assemblers, compilers and interpreters

    D. All of the above

39. Which is the first AL programming language?

    A. Basic

    B. LISP

    C. IPL (Inductive Logic programming)

    D. Fortran

40. AI has its expansion in the following application.

    A. Planning and scheduling

    B. Game playing

    C. Diagnosis

    D. All of the above

SECTION B: QUESTIONS AND ANSWERS(60 marks)

Question 1(**20 Marks**)

a) Briefly describe the processes of encryption and decryption in relation to cryptography. **4mks**

b) What is the difference between Symmetric and Asymmetric key encryption? **4mks**

c) Suppose you decide to use a 10-bit key. How many combinations are there? **3mks**

d) James and Alexander are having a debate about Public Key Infrastructure (PKI). James says that it is simply a way of authenticating users. However, Alexander argues that it is a type of encryption algorithm. They have asked you to decide who is correct. Briefly outline the purpose of PKI. You should also explain what is meant by a certificate authority and digital certificate. **9mks**

Question 2 (20 marks)

i.
    a. What is artificial intelligence? **2 marks**
    b. List the major advantages of artificial intelligence over natural intelligence. **2 marks**
    c. List the major disadvantages of artificial intelligence as compared to natural intelligence. **2 marks**
    d. Describe the difference between a knowledge base for an application and an organizational **3 marks**
    e. List the major AI technologies. **3 marks**

ii.
    In real world, very few problems have straightforward solutions. This leads to an approach that looks for solution to the problems
    a. This approach is technically referred to as_____? **2 marks**
    b. Spell out the process that one needs to consider in AI to obtain a solution from a given problem at hand. **3 marks**
    c. Describe how graphs can be handy in representing a problem **3 marks**

QUESTION 3 (20 marks)

a) What is Human computer interaction? Site any four other fields of study that are involved in HCI **(4 MARKS)**
b) Define an interface **(2 mark)**
c) Define a user interface and explain any four characteristics of a good user interface **(4 marks)**
d) State and explain any four user interface styles. State any four principles you would want to consider when designing a user interface **(4 marks)**
e) Your institution is about to build an application to manage student, teachers and staff operations. This application will be used by all the groups mention. You are consulted upon to write a proposal on how the interface should look like for all the groups of users. With your knowledge of user interface design, present at least half a page recommendation for this project. **(6 marks)**