



Admas University
Mekanisa Campus
Faculty of Informatics
Department of Computer Science



Model Exit Exam III CODE MK-003

SENE, 2015

Time allotted: 3:00 hrs

Name _____ ID.No. _____

Computer Science Model Exit Exam

S.N	Theme	Course Title	Credit Hrs.	Number of Questions
1	Theme 1. System Development	Software Engineering	3	6
		Web Programming	6	9
		Database Systems	6	12
Total		3	15	27
2	Theme 2. Programming and Algorithms	Computer Programming	6	6
		Object Oriented Programming	3	6
		Design and Analysis of Algorithms	3	6
		Data Structure and Algorithms	3	7
Total		4	15	25
3	Theme 3. Computer Networking and Security	Data Communication and Computer Networking	3	6
		Computer Security	3	6
		Network and System Administration	3	6
Total		3	9	18
4	Theme 4. Intelligent Systems	Introduction to Artificial Intelligence	3	6
		1	3	6
5	Theme 5. Computer Architecture and Operating Systems	Operating System	3	6
		Computer organization and architecture	3	6
Total		2	6	12
6	Theme 6. Compiler and Complexity	Formal Language and Complexity Theory	3	6
		Compiler Design	3	6
		2	6	12
Grand total		12	51	100

Instruction: Read the questions and choose the right answer from the given alternatives and write the letter of your choice on the space provided at the separate answer sheet. (1 point each)

Theme 1: System Development

Software Engineering

Amen Hospital wants to use surgery management system. This system will help the Doctor by identifying the surgery activities based on the pre-stored information and give appropriate message immediately when the doctor misses any activity related to surgery.

According to the above case study, Answer question number 1 and 2.

1. The software developer team must be given more emphasis on which types of software quality requirements?
 - A. Flexibility
 - B. Reliability
 - C. Modifiability
 - D. Maintainability
2. What types of software process model is using more fit with the system requirement?
 - A. Agile model
 - B. Spiral model
 - C. Rational Unified Process Model
 - D. Waterfall model

Ethiopian Airline Company is decided to use automated human resource management system. Assume you are working in Alsam Software Development Company (ASDC). ASDC agrees with the Ethiopian Airline Company to develop this system. The Ethiopian Airline Company administrator says that “the implementation language must be Csharp” but the software developer team want to implement the system by java programming language.

Answer question number 3 and 4 based on the above case study

3. What types of requirement asked by Ethiopian Airline Company Administrator?
 - A. Quality requirement
 - B. Functional requirement
 - C. Pseudo requirement
 - D. Analysis requirement
4. Assume you are project manager, what is your decision?
 - A. Accept the software development team idea and the system will be implementing by java.
 - B. Discuss with both Ethiopian airline administrator and software developer team to select common software programming language. If does not agree, the system development stop at early stage.
 - C. Decide to stop system development automatically.
 - D. According to software engineering rule, the software developer team idea has more acceptance than clients. Therefore, the system will be implementing by java.

5. Which one of the following false about UML object model can be mapped to relational database during software design phase?
- A. Each class is mapped to its own table
 - B. Each class attribute is mapped to a column in the table
 - C. Each class method is mapped to a relationship in the table
 - D. An instance of a class represents a row in the table
6. Assume below two sentence are described non-functional requirements of Woldia university Student Information Management System (SIMS). What types of problem have been between those two non-functional requirement statements?
- “The system must work 24 hours per day, 7 days per week and 365 days per year” “The system can maintain within 3 hours ”
- A. Consistency
 - B. Completeness
 - C. Traceability
 - D. Realism

Web Programming

7. What is the correct HTML for creating a hyperlink?
- A. `<a>http://www.google.com`
 - B. `Google.com`
 - C. `Google`
 - D. `Google.com`
8. How can you open a link in a new tab/browser window?
- A. ``
 - B. ``
 - C. ``
 - D. `new tab`
9. In html, which attribute is used to specify that an input field must be filled out?
- A. formvalidate
 - B. required
 - C. validate
 - D. placeholder
10. What is the correct HTML for inserting an image:
- A. `image.gif`
 - B. ``
 - C. `<image src=” image.gif” alt=” MyImage”>`
 - D. `<imgsrc=” image.gif” alt=” MyImage”>`
11. _____ is a metalanguage used to define new markup languages, and help you to create a language crafted specifically for your application or domain.
- A. PHPB. HTML
 - C. XML
 - D. JavaScript

12. _____are the software programs people use to consume the web?
- A. Languages B. Browsers C. HTTP D. Web Servers
13. How do you create a cookie in PHP?
- A. setcookie() B.createcookie C.makecookie() D.addcookie
14. How do you create an array in PHP?
- A. \$cars = "Volvo", "BMW","Toyota";
- B. \$ cars [3] = "Volvo", "BMW","Toyota";
- C. \$cars = array("Volvo", "BMW","Toyota");
- D. \$cars = array["Volvo", "BMW","Toyota"];
15. What is MySQL?
- A. A relational database managementsystem
- B. Cross-platform, open-source andfree
- C. Developed, distributed, and supported by OracleCorporation
- D. All
16. Which statement is false?
- A. When using the POST method, variables are displayed in theURL.
- B. PHP can generate dynamic pagecontent.
- C. The if statement is used to execute some code only if a specified condition istrue.
- D. PHP scripts are executed on the server.

Database Systems

17. Schema normalization is not for?
- A. Reducing the number of tables in the schema.
- B. Eliminating uncontrolled redundancy of data.
- C. Eliminating anomalies that could otherwise occur with inserts.
- D. Eliminating anomalies that could otherwise occur with deletes.
18. Which one of the following statements is used to create a table?
- A. CREATE TABLE table_name (column_namecolumn_type);
- B. CREATE table_name (column_typecolumn_name);
- C. CREATE table_name (column_namecolumn_type);
- D. CREATE TABLE table_name (column_typecolumn_name);

19. What is the difference between Generalization and Specialization?
- A. Generalization and Specialization is like the Top-Down Approach
 - B. Generalization and Specialization is like the Bottom-Up Approach
 - C. Generalization is like a Bottom-Up approach and Specialization is like a Top-Down Approach
 - D. Generalization is like the Top-Down approach and Specialization is like the Bottom- Up Approach
20. A database language which provides users with high privilege command granting privileges and allowing granted privileges by the owner at any time is called _____?
- A. TransactionControl Language
 - B. DataControlLanguage
 - C. Data Manipulation Language
 - D. Data DefinitionLanguage
21. A rule assigned to a column in a table that prevents certain types of inconsistency data value from being inserted or placed in the column?
- A. Keys
 - B.Constraint
 - C.Tuple
 - D. Attribute
22. Which one of the following is not Functions of Structured Query Language?
- A. It can execute and retrieve queries against adatabase
 - B. It can insert and update records in adatabase
 - C. It can create stored procedures and views in adatabase
 - D. All of theabove
23. _____is a set of one or more attributes taken collectively to uniquely identify a record?
- A. Candidate key
 - B. Super key
 - C. Primary key
 - D. Foreign key
24. Which of the following is an example of object based logical model?
- A. Entity RelationshipModel
 - B. HierarchicalModel
 - C. RelationalModel
 - D. NetworkModel
25. Which of the following refers to the number of attributes in a relation?
- A. Cardinality
 - B. Degree
 - C. Row
 - D. Domain
26. Which of the following is odd?
- A. Locking
 - B. Time Stamping
 - C. Optimistic
 - D. All of the Above
27. Which level of security measures concerned with authorization of database users for access the content at different levels and privileges?
- A. Applicationlevel
 - B. Humanlevel
 - C. Physicallevel
 - D. Data basesystem

28. What is a mechanism for enforcing limits on access to a resource in an environment where there are many threads of execution?

- | | | | |
|----|--------------------|----|-------------|
| A. | Timestamping | C. | Transaction |
| B. | Concurrencycontrol | D. | Locking |

Theme 2. Programming and Algorithms

Computer Programming

29. Quality programming that comes from good program design is necessary for the economic and correct solution of problems. Assume you are the program designer and the program that you design cannot adapt one type of computer to another with minimum modification. So, what need of a good program design is failed?

- A. Reliability
- B. Efficiency
- C. Maintainability
- D. Portability

30. Which one of the following is INCORRECT about an algorithm?

- A. Set of instructions showing the steps of solving the problem.
- B. All the steps can be dependent on any programming language or machine.
- C. The steps must be efficient in time, memory and other resources
- D. It must produce expected output and can be simple and correct

31. Which one of the following should include under every C++ program?

- A. int
- B. double
- C. main()
- D. length()

32. A symbolic name for memory location in which data can be stored and subsequently recalled is called_____.

- | | |
|-------------|-------------------|
| A. Keyword | D. Reserved words |
| B. Literals | |
| C. Variable | |

33. Which one of the following statements provides a way of choosing between a set of alternatives based on the value of an expression?

- | | |
|------------------------|---------------------|
| A. if statement | C. switch statement |
| B. if...else statement | D. while statement |

34. Among the following which one is used to execute block of code known times?
- A. Forloop
 - B. Whileloop
 - C. Do...while loop
 - D. Switch

Object Oriented Programming

35. Which one of the following is false about abstract classes?
- A. Abstract classes are declared using the keyword `abstract`.
 - B. An abstract class can be a superclass.
 - C. An abstract class can also be a final class.
 - D. An object of an abstract class cannot be created.
36. Which one of the following is true about interfaces?
- A. An interface's methods are by default public and final.
 - B. An interface variable is by default private, static and final.
 - C. An interface's methods are by default public and abstract.
 - D. An interface cannot be part of the inheritance hierarchy.
37. When a subclass object is created _____
- A. The very first constructor called is the subclass' constructor.
 - B. Any one of the constructors across the hierarchy can be called in a random order.
 - C. The last constructor called is the constructor of the superclass' constructor.
 - D. The very first constructor called is the top most superclass' constructor in the hierarchy.
38. When a method is overridden _____.
- A. Both methods have exactly same signature.
 - B. Java uses it to implement compile time polymorphism.
 - C. The `super` keyword is used to call the overriding (subclass') method.
 - D. The overridden method must be final always so that the subclass can override it
39. A reference variable can refer to _____.
- A. An object of the superclass
 - B. An object of its class type only
 - C. An object of any class
 - D. An object of subclass's or its class type

40. When a class must not be inherited, it must be declared using the _____ keyword.
- | | | | |
|----|-------|----|----------|
| A. | this | C. | final |
| B. | super | D. | abstract |

Design and Analysis of Algorithms

41. Which one of the following is an incorrect statement about algorithms?
- A. algorithm is composed of a finite set of steps
 - B. each steps of algorithm may require one or more operations
 - C. Each operation has to be effective but not necessarily definite
 - D. All of the above
42. Which one of the following is correct about running time analysis?
- A. Determine how running time increases as the computer resources increase
 - B. Determine how running time increases as the size of the problem increases
 - C. Determine how running time decreases as the computer resources increase
 - D. None of the above
43. Which one of the following is correct about comparing algorithms?
- A. Comparing based on execution times is good for all cases
 - B. Comparing based on number of statements helps to compare universally
 - C. Express running time as a function of the input size n is ideal
 - D. All of the above
44. Which one of the following is incorrect about principle of optimality?
- A. an optimal sequence of decisions, some subsequence may not be optimal
 - B. an optimal sequence of decisions, each subsequence must also be optimal
 - C. we need to show principle of optimality applies to the problem before using dynamic programming
 - D. All of the above
45. Which one of the following is a correct asymptotic notation?
- A. Big O is asymptotic upperbound
 - B. Big O is asymptotic lowerbound
 - C. Big Θ is asymptotic tight bound
 - D. All of the above

46. Which one of the following is correct about heap data structure?
- A. A heap is a nearly complete binary tree
 - B. all levels are always full
 - C. the last level may not be full, as heap is filled in order right to left
 - D. None

Data Structure and Algorithms

47. What does each iteration of the insertion sort algorithm do?
- A. Each iteration takes the next smallest element and inserts it at the beginning of the array
 - B. Each iteration takes the next element in the unsorted portion of the array and inserts it into the sorted portion
 - C. Sorted subarrays are inserted into the larger array
 - D. Each iteration determines the location of a pivot and inserts it into place
48. Using a binary search, what is the maximum number of comparisons required to find a search key in a 31-element sorted array
- A. 4
 - B. 5
 - C. 32
 - D. 1
49. In order to get the information stored in a binary search tree in the descending order, one should traverse it in which of the following order?
- A. Left, parent, right
 - B. Right, parent, left
 - C. Parent, left, right
 - D. Right, left, parent
50. Which of the following statement is true?
- A. The binary search algorithm is less efficient than the linear search , but it requires that the array be sorted
 - B. The binary search algorithm is more efficient than the linear search , but it requires that the array be sorted
 - C. The binary search algorithm is more efficient than the linear search , but it requires that the array be unsorted
 - D. The binary search algorithm is less efficient than the linear search , but it requires that the array be unsorted

51. What happens when you push a new node onto a stack?
- A. The new node is placed at the front of the linked list
 - B. The new node is placed at the back of the linked list
 - C. The new node is placed at the middle of the linked list
 - D. No Changes happens
52. _____ is very useful in situation when data have to stored and then retrieved in reverse order.
- A. Stack
 - B. Queue
 - C. List
 - D. Link List

Theme 3. Computer Networking and Security

Data Communication and Computer Networking

53. Which OSI layer defines the functions of logical network addressing and routing?
- A. Physical
 - B. Network
 - C. datalink
 - D. transport
54. Dialogue and conversation between the sender and the receiver device is established by_____
- A. Physical
 - B. Session
 - C. datalink
 - D. presentation
55. Which of the following devices translates hostnames into IP addresses?
- A. DNS Server
 - B. Hub
 - C. DHCP Server
 - D. Firewall
56. Delivery and storage of E-Mail message to a server is achieved using_____
- A. post office protocol(POP)
 - B. Internet mail access protocol(IMAP)
 - C. Simple mail transfer protocol(SMTP)
 - D. Hypertext transfer protocol(HTTP)
57. Changing a stream of data bits in to a predefined code is known as _____
- A. Decoding
 - B. Encoding
 - C. Signaling
 - D. Data transferring
58. If we want to remove the message from mail box , which protocol is available to remove it
- A. SMTP
 - B. IAMP
 - C. POP3
 - D. SNMP

59. An information system that processes sensitive information is configured to require a valid userid and strong password from any user. This process of accepting and validating this information is known as_____
- A. Authentication B. Strong authentication C. Two-factor authentication D. Single sign-on
60. An organization wants to prevent SQL and script injection attacks on its Internet web application. The organization should implement a/an_____
- A. Intrusion detection system C. Application firewall
B. Firewall D. SSL certificate
61. CIA is known as_____
- A. Confidentiality, Integrity, and Availability
B. Computers, Information, and Assets
C. Confidence In Applications
D. Controls, Integrity, and Availability
62. A database administrator (DBA) is responsible for carrying out security policy, which includes controlling which users have access to which data. The DBA has been asked to make just certain fields in some database tables visible to some new users. What is the best course of action for the DBA to take?
- A. Implement column-based access controls
B. Export the table to a data warehouse, including only the fields that the users are permitted to see
C. Clone the table, including only the fields that the users are permitted to see
D. Create a view that contains only the fields that the users are permitted to see
63. Public key cryptography is so-named because_____
- A. It is the world standard for HTTPS
B. It works on all popular computer operating systems
C. It uses an encryption key that can be released to the public
D. The encryption algorithms reside in the public domain
64. A particular encryption algorithm transforms plaintext to cipher text by XORing the plaintext with the encryption key. This is known as_____
- A. Electronic codebook C. Block cipher
B. Cipher block chaining D. Stream cipher

Network and System Administration

65. Company.com, facebook.com, kpmim.edu.my are examples of _____
- A. Hostname
 - B. Domain Name
 - C. Fully Qualified Domain Name
 - D. Servers
66. An Active Directory container used to organize a network's users and resources into logical administrative units?
- A. Organizational Units
 - B. Users Units
 - C. Container object
 - D. Leaf object
67. To which of the following can a GPO be linked?
- A. Domains
 - B. Sites
 - C. Leaf object
 - D. Container object
68. Which of the following is a container object?
- A. Domain & OU
 - B. Users
 - C. Computers
 - D. Groups
69. Which of the following is arranged in the correct Active Directory organizational order (largest to smallest)?
- A. Forest, Domain, Tree, Branch, Computer
 - B. Computer, Forest, Domain, Tree
 - C. Forest, Tree, Domain, Computer
 - D. Forest, Tree, Computer, Domain
70. A network of Windows machine utilizing the same name to share resources
- A. Active Directory
 - B. Domain
 - C. Forest
 - D. Workgroup

Theme 4. Intelligent Systems

Introduction to Artificial Intelligence

71. In Artificial Intelligence(AI), the simple reflex agent selects action on the basis of
- A. Current percept, completely ignoring rest of the percept history.
 - B. Rest of the percept history, completely ignoring current percept.
 - C. Both current percept and complete percept history
 - D. Both current percept and just previous history
72. _____environment is random in nature& can't be determined completely by an agent.
- A. Deterministic
 - B. Stochastic
 - C. Static
 - D. Dynamic
73. _____is an agent that works based on the percept and the stored internal state.
- A. Goal-based agents
 - B. Learningagents
 - C. Model-basedreflexagents
 - D. Utility-basedagents
74. _____ Among the given options, which is not the required property of Knowledge representation?
- A. Inferential Efficiency
 - B. Inferential Adequacy
 - C. Representational Verification
 - D. Representational Adequacy
75. Which of the following logical equivalent is proved by law of contraposition?
- A. $(\alpha \Rightarrow \beta) \equiv (\neg \beta \Rightarrow \neg \alpha)$
 - B. $(\alpha \Rightarrow \beta) \equiv (\beta \Leftrightarrow \neg \alpha)$
 - C. $(\neg \alpha \Rightarrow \beta) \equiv (\neg \beta \Rightarrow \neg \alpha)$
 - D. $(\alpha \Rightarrow \beta) \equiv (\neg \beta \Rightarrow \neg \alpha)$
76. Data, information, and past experience combined together are termed as _____.
- A. Inference
 - B. Acquisition
 - C. Vision
 - D. knowledge

Theme 5. Computer Architecture and Operating Systems

Operating System

77. If a process fails, most operating system write the error information to a _____
- A. log file
 - B. another running process
 - C. new file
 - D. none of the mentioned
78. Which of the following is not the state of a process?
- A. New
 - B. Old
 - C. Waiting
 - D. Running
79. What is the degree of multiprogramming?
- A. the number of processes executed per unit time
 - B. the number of processes in the ready queue
 - C. the number of processes in the I/O queue
 - D. the number of processes in memory
80. Which one of the following is not advantage of single level directory?
- A. Implementation is very simple.
 - B. If the sizes of the files are very small, then the searching becomes faster.
 - C. File creation, searching, deletion is very simple since we have only one directory.
 - D. The directory may be very big therefore searching for a file may take so much time.
81. Memory block assigned to process is bigger. Some portion of memory is left unused, as it cannot be used by another process.
- A. External fragmentation
 - B. Internal fragmentation
 - C. paging
 - D. segmentation
82. _____ is a memory management technique in which process address space is broken into blocks of the same size called pages.
- A. External fragmentation
 - B. Internal fragmentation
 - C. paging
 - D. segmentation

83. Which of the architecture is power efficient?

- A. RISC
- B. ISA
- C. IANA
- D. CISC

84. The memory devices which are similar to EEPROM but differ in the cost effectiveness is?

- A. CMOS
- B. Memory sticks
- C. Blue-ray devices
- D. Flash memory

85. The number successful accesses to memory stated as a fraction is called as _____

- A. Access rate
- B. Success rate
- C. Hit rate
- D. Miss rate

86. Which of the following memory of the computer is used to speed up the computer processing?

- A. Cache memory
- B. RAM
- C. ROM
- D. SRAM

87. Which of the following is not considered as a peripheral device?

- A. CPU
- B. Keyboard
- C. Monitor
- D. Printer

88. Which of the following circuit is used to store one bit of data?

- A. Flip Flop
- B. Decoder
- C. Encoder
- D. Register

Theme 6. Compiler and Complexity

Formal Language and Complexity Theory

89. Which one of the following is not part of Turing machine

- A. Finite control
- B. Input
- C. Tape
- D. Head

90. $f(x) = x+2$ over \mathbb{N} is _____ function

- A. Total
- B. Partial
- C. recursive
- D. both total and partial.

91. $S(S(S(Z(4))))$ is equal to _____

- A. $U_1^3(2, 1, 3)$
- B. $U_1^3(2, 1, 3)$
- C. $U_3^3(2, 1, 3)$
- D. none of these.

92. Which one of the following grammars is in Chomsky Normal Form?

- A. $S \rightarrow AS/a, A \rightarrow SA/aa$
- B. $S \rightarrow AS/a, A \rightarrow SA/b$
- C. $S \rightarrow AS/ASS/a, A \rightarrow SA/b$
- D. B and C

93. One of the following grammars is correctly matched?

- A. $S \rightarrow S_1ab, S_1 \rightarrow S_1ab | S_2, S_2 \rightarrow a$ is context-free grammar
- B. $S \rightarrow S_1ab, S_1 \rightarrow S_1ab | S_2, S_2 \rightarrow a$ is Regular grammar
- C. $S \rightarrow S_1ab, S_1 \rightarrow S_1ab | S_2, S_2 \rightarrow a$ left linear grammar
- D. A and B

94. How many languages are over the alphabet \mathbb{R} ?

- A. countably infinite
- B. countably finite
- C. uncountable finite
- D. uncountable infinite

95. Which of the following represents a dynamic semantic error?
- A. type mismatch
 - B. Missing semi-colon
 - C. illegal character
 - D. division by zero
96. When is the type checking usually done?
- A. During lexical analysis
 - B. During syntax analysis
 - C. During code optimization
 - D. During syntax directed translation
97. Which of the following can NOT represent a target Code?
- A. Three address code
 - B. Assembly language
 - C. Absolute machine code
 - D. Byte Code
98. All of the following can represent intermediate code except_____
- A. Syntax tree
 - B. Three address code
 - C. lexemes
 - D. Quadruples
99. The recognizer to syntax analysis is____
- A. Deterministic finite automata
 - B. Non-deterministic finite automata
 - C. non-deterministic pushdown automat
 - D. deterministic push down automata
100. All of the following grammar types are implemented with predictive parser except_____
- A. Right recursive
 - B. Left recursive
 - C. deterministic
 - D. left-factored



Admas University
Faculty of Informatics
Department of Computer Science
Model Exit Exam
Answer Sheet



Name _____

ID.No. _____

Section _____

Sene, 2015
Time allotted: 3:00 hrs

Answer Sheet

Fundamentals of Software Engineering					
1. B	2. B	3. C	4. B	5. C	6. A
Web Programming					
7. C	8. A	9. B	10. D	11. C	12. B
13. A	14. C	15. D	16. A		
Database Systems					
17. A	18. A	19. C	20. B	21. B	22. A
23. B	24. A	25. B	26. C	27. B	28. D
Computer Programming					
29. D	30. B	31. C	32. C	33. C	34. A
Object Oriented Programming					
35. C	36. C	37. D	38. A	39. D	40. C
Design and Analysis of Algorithms					
41. C	42. B	43. C	44. A	45. C	46. A
Data Structure and Algorithms					
47. B	48. B	49. B	50. B	51. A	52. B
Data Communication and Computer Networking					
53. B	54. B	55. A	56. C	57. B	58. C
Computer Security					
59. A	60. C	61. A	62. D	63. C	64. D
Network and System Administration					
65. C	66. A	67. A	68. A	69. C	70. D
Introduction to Artificial Intelligence					
71. A	72. B	73. C	74. C	75. D	76. D
Operating System					
77. A	78. B	79. D	80. D	81. B	82. C
Computer organization and architecture					
83. A	84. D	85. C	86. A	87. A	88. A
Formal Language and Complexity Theory					
89. B	90. A	91. C	92. B	93. C	94. D
Compiler Design					
95. D	96. D	97. A	98. C	99. D	100. B

