ADMAS UNIVERSITY
MEKANISA CAMPUS
FACULTY OF INFORMATICS
DEPARTMENTOF COMPUTER SCIENCE
MODEL EXIT EXAM-V CODE MK -005

This Exam Booklet contains 100 MCQ under Six thematic areas, as the details shown below.

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	*15*	*51*	*100*

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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

1. Which one of the following is true aboutagile scrum methodology?
   A. project management that emphasizes incremental progress
   B. project management that emphasizes decrement progress
   C. project management that emphasizes neutral progress
   D. project management that emphasizes no progress

2. What is a Functional Requirement?

   A. specifies the tasks the program must complete
   B. specifies the tasks the program should not complete
   C. specifies the tasks the program must not work
   D. All of the mentioned

3. _____ is a software development life cycle model that is chosen if the development team has less experience on similar projects.

   A. Iterative Enhancement Model
   B. RAD
   C. Spiral
   D. Waterfall

4.In which step of SDLC actual programming of software code is done?

   A. Development and Documentation
   B. Maintenance and Evaluation
   C. Design
   D. Analysis

5.Software Debugging is known as _____

   A. identifying the task to be computerized
   B. creating program code
   C. creating the algorithm
   D. finding and correcting errors in the program code

6. Which of the following is the understanding of software product limitations, learning system related problems or changes to be done in existing systems beforehand, identifying and addressing the impact of project on organization and personnel etc.?

   A. Software Design
   B. Feasibility Study
   C. Requirement Gathering
   D. System Analysis

WEB PROGRAMMING

1. How can we write comment along with CSS code ?

A. /* a comment*/
B. //a comment //
C. / a comment/
D. <'a comment'>

2. Which CSS property is used to control the text size of an element ?

A. font-style
B. text-size
C. font-size
D. text-style

3. By default Hyperlinks are displayed with an underline. How do you remove the underline from all hyperlinks by using CSS code ?

A. a {text: no-underline;}
B. a {text-decoration:none;}
C. a {text-style: no-underline;}
D. a {text-decoration: no-underline;}

4. A program in HTML can be rendered and read by –

A. web browser
B. server
C. interpreter
D. none of the above

5. Which of the following HTML tag is used to display the text with scrolling effect?

A. <marquee>
B. <scroll>
C.
D. None of the above

6. Are actions that occur as a result of something the user does?

A. Function
B. Procedure
C. Event
D. None

7. Which of the following is true about PHP

A. PHP is server side scripting language

B. PHP is client side scripting language

C. PHP is a database

D. None of the above

8. Which of the following is NOT a programming paradigm used in JavaScript?

A. Object-oriented programming
B. Functional programming
C. Procedural programming
D. Logical programming

9. Which of the following is NOT a type of HTTP request method?

A) GET
B) POST
C) HEAD
D) DELETE

DATABASE SYSTEMS

1. The ability to query data, as well as insert, delete, and alter tuples, is offered by _____

A. TCL (Transaction Control Language)

B. DCL (Data Control Language)

C. DDL (Data Definition Langauge)

D. DML (Data Manipulation Langauge)

2. In which of the following attribute type the attribute value can be calculated from other related attribute?

A. Simple Attribute B. Derived Attribute

C. Multi-valued Attribute D. Composite Attribute

3. In which one of the following cardinality**,** an occurrence in entity A can be associated with at most one occurrence in entity B and however an occurrence in B can be associated with any number (zero or more) of occurrences in A.

A. One-to-many B. Many-to-one C. One-to-one D. Many-to-many

4. If FK is a foreign key in a relation R1, which one of the following is always true?

A. Every tuple of R1 has a distinct value for FK

B. FK is a Candidate key for some other relation

C. FK cannot have a null value for tuples in R1

D. FK is a Primary key for R1

E. FK is a Composite key for R1.

5. Which one of the following dependency exists when a non-prime attribute depends on other non-prime attribute rather than depending upon the primary key?

A. Partial B. Full C. Transitive D. Functional

6. The given Query can be replaced with_____

SELECT name, course_id

FROM instructor, teaches

WHERE instructor_ID= teaches_ID;

A. Select name,course_id from teaches,instructor where instructor_id=course_id;
B. Select name, course_id from instructor natural join teaches;
C. Select name, course_id from instructor;
D. Select course_id from instructor join teaches;

7. In case of any shut down during transaction before commit which of the following statement is done automatically?

A. View
B. Commit
C. Rollback
D. Flashback

8. Which one of the following commands is used for removing (or deleting) a relation forms the SQL database?

A. Delete
B. Drop
C. Remove
D. All of the above

9. A system is in a _____ state if there exists a set of transactions such that every transaction in the set is waiting for another transaction in the set.

A. Idle
B. Waiting
C. Deadlock
D. Ready

10. Which refers to a property of computer to run several operations simultaneously and

possible as computers await response of each other

A. Concurrency

B. Deadlock
C. Backup
D. Recovery

11. If a transaction does not modify the database until it has committed, it is said to use the _____ technique.
A. Deferred-modification
B. Late-modification
C. Immediate-modification
D. Undo

12. A _____ is a special kind of a store procedure that executes in response to certain action on the table like insertion, deletion or updating of data.

A. Procedures
B. Triggers
C. Functions
D. None of the mentioned

Theme 2:Programming and algorithm

COMPUTER PROGRAMMING

1. Which one of the following should include under every C++program?
   A. int
   B. double
   C. main()
   D. length()
2. A symbolic name for memory location in which data can be stored andsubsequently recalledis called____.
   A. Keyword
   B. Literals
   C. Variable
   D. Reservedwords
3. Which one of the following is **INCORRECT** about pointers inC++.
   A. It is a variable that stores the address of anothervariable.
   B. It points to the address of anothervariable.
   C. It should have the same data type as that of the variable it pointsto.
   D. The reference operator (&) is used to access the value at anaddress.
4. How do you declare an integer with size of 10 having a name of num?
   A. intnum[10]; B. int 10; C. floatnum[10]; D. intnum(10);
5. What is the effect of writing a break statement inside a loop?
   A. It cancels remaining iterations.

B. It skips a particular iteration.
C. The program terminates immediately.
D. Loop counter is reset.

6. Overloaded functions is _____
A. are a group of functions with the same name.
B. all have the same number and types of arguments.
C. may fail unexpectedly due to stress.
D. all are correct

OBJECT ORIENTED PROGRAMMING

1. Which of the following is not an OOPS concept?
A. Encapsulation
B. Polymorphism
C. Exception
D. Abstraction

2. Which feature of OOPS described the reusability of code?
A. Abstraction
B. Encapsulation
C. Polymorphism
D. Inheritance

3. Which among the following feature is not in the general definition of OOPS?
A. Modularity
B. Efficient Code
C. Code reusability
D. Duplicate or Redundant Data

4. Define the programming language, which does not support all four types of inheritance?
A. Smalltalk
B. Kotlin
C. Java
D. C++

5. Which function best describe the concept of polymorphism in programming languages?

A. Class member function

B. Virtual function

C. Inline function

D. Undefined function

6. Which operator overloads using the friend function?

A. *

B. ( )

C. ->

D. =

DESIGN AND ANALYSIS OF ALGORITHM

1. Which one of the following is an incorrect statement about algorithms?

A. Algorithm is composed of a finite set ofsteps

B. Each steps of algorithm may require one or moreoperations

C. Each operation has to be effective but not necessarilydefinite

D. All

2. Which one of the following is correct about running timeanalysis?

A. Determine how running time increases as the computer resourcesincreases

B. Determine how running time increases as the size of the problemincreases

C. Determine how running time decreases as the computer resourcesincreases

D. None

3. Which one of the following is correct about greedyalgorithms?

A. In each phase the currently best decision ismade

B. optimal solution is a feasible solution where the objective function reaches its maximum or minimum

C. Agloballyoptimalsolutionisonewheretherearenootherfeasiblesolutionswithbetterobjective functionvalues.

D. All

4. Which one of the following is correct about asymptoticanalysis?

A. shorthand way to represent the timecomplexity

B. we can give time complexity as “fastest possible”, “slowestpossible”

C. Rough measure that characterizes how fast each functiongrows.

D. All

5. Which one of the following is a correct time function T(n) for binary search?

A. T(n)=T(n-1) + O(n)

B. T(n)=T(n/2) + T(n/2) + O(n)

C. T(n)=T(n/2) + O(1)

D. None

6. Algorithms must terminate after a finite number of steps; What is this characteristics called__

A. Unambiguous

B. Feasibility

C. Finiteness

D. Independent

DATA STRUCTURE AND ALGORITHM

1. What data structure is used for breadth first traversal of a graph?

A - Queue C - List

B - Stack D - None of the above

2. If the array is already sorted, which of these algorithms will exhibit the best performance

A - Merge Sort C - Quick Sort

B - Insertion Sort D - Heap Sort

3. How many swaps are required to sort the given array using bubble sort - { 2, 5, 1, 3, 4}

A - 4 C - 6

B - 5 D - 7

4. All possible spanning trees of graph G

A - have same number of edges and vertices.

B - have same number of edges and but not vertices.

C - have same number of vertices but not edges.

D - depends upon algorithm being used.

5. From a complete graph, by removing maximum _____ edges, we can construct a spanning tree.

A - e-n+1

C - n+e-1

B - n-e+1

D - e-n-1

6. After each iteration in bubble sort

A - at least one element is at its sorted position.

B - one less comparison is made in the next iteration.

C - Both A & B are true.

D - Neither A or B are true.

7. In doubly linked lists

A - A pointer is maintained to store both next and previous nodes.

B - Two pointers are maintained to store next and previous nodes.

C - A pointer to self is maintained for each node.

D - None of the above.

Theme 3:Computer Network and Security

DATA COMMUNICATION AND COMPUTER NETWORKING

1. _____ is a probabilistic algorithm where a data packet is sent by the router to any one of its neighbors randomly.
   A. Adaptive routing algorithm
   B. Flooding routing algorithm
   C. Random walks routing algorithm
   D. Distributed routing algorithm
2. Which network address translation protocol solves the task of address resolution using port number?
   A. Network Address Translation
   B. Port Address Translation
   C. Dynamic Address Translation
   D. All
3. Which network topology allows for multiple connection paths to be used in the event that one fails?
   A. Ring
   B. Mesh
   C. Bus
   D. Star
4. One of the following is false regarding Bus topology?

A. It requires a great deal of cable to add a new station.
B. A failure in the back bone will lead to a complete shutdown in the system.
C. It is easy to add a new node.
D. A failure in one station will not cause any harm in the network.

5. A Cisco command that is used to check the ip address as well as MAC addresses of a device is_____.
   A. Ipconfig/all
   B. Ping
   C. IPconfig
   D. Tracert
6. If you need to subnet a network into 5 subnets, each with at least 16 hosts. Which subnet mask would you use?
   A. 255.255.255.192
   B. 255.255.255.224
   C. 255.255.255.240
   D. 255.255.255.248

COMPUTER AND NETWORK SECURITY

1. What is not the objective of network security.
   A. Identification C. Access control
   B. Authentication D. Lock
2. Which one of the following refers to the technique used for verifying the integrity of the message?
   A. Digital signature C. Protocol
   B. Decryption algorithm D. Message Digest
3. IPsec is designed to provide security at the
   A. Transport layer C. Application layer
   B. Network layer D. Session layer
4. An attempt to make computer/server resources unavailable to its intended users is called _____
   A. Botnet attack C. Virus attack
   B. Denial of service attack D. Worms attack
5. In transposition, the plain text letters are
   A. Substituted C. Removed
   B. Rearranged D. None of the mentioned
6. Controlling element in the hardware and operating system that regulates the access of subjects to objects on the basis of security parameters
   A. Kerberos C. SET
   B. Reference monitor D. Security kernel

NETWORK AND SYSTEM ADMINISTRATION

1. _____ is responsible for converting the higher level protocol addresses to physical Network Addresses.
    A. Address Resolution Protocol (ARP)
    B. Reverse Address Resolution Protocol (RARP)
    C. Bootstrap Protocol (BOOTP)
    D. Internet Control Message Protocol (ICMP)
2. Given the network address of 172.16.0.0/19, which of the following is correct?
    A. It provides 8 subnets, 32 IP addresses each
    B. It provides 8 subnets, 8,190 hosts each
    C. It provides 8 subnets, 30 hosts each
    D. It provides 8 subnets, 2,046 IP addresses each
3. A network device that provides the physical interface between computer and cabling is known as_____.
    A. Switch
    B. Router
    C. NIC
    D. Repeater
4. Which of the following is the function of DHCP server?
    A. It grants an IP address when receives a request from a client.
    B. It maintains the information about client configuration parameters.
    C. It maintains a database of available IP addresses.
    D. All
5. 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
6. 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

Theme 4:Intelligent Systems

ARTIFICAL INTELLIGENCE

1. Among the given options, which is also known as inference rule?

A. Reference B. Reform C. Resolution D. None of the above

2. When agent solves problem the issue of whether the answer is granted or not is evaluated by?

A. Completeness
B. Time complexity
C. Space Complexity
D. Optimality

3. Which of the following search algorithm runs two simultaneous searches, oneform initial state called as forward-search and other from goal node called asbackward-search, to find the goal node?

A. Depth Limited Search
B. Uniform Cost Search
C. Bidirectional search algorithm
D. Iterative Deepening Search

4. Which of the following properties represents the environment that is not changed over time but the agent's performance score does?

A. A dynamic environment
B. static environment
C. Semi dynamic
D. All

5. What are AI Agents?

A. An agent is anything that can perceive its environment through sensors
B. An agent is anything that can change its environment through sensors
C. An agent is anything that can control its environment through sensors
D. All

6. Which of these is agent's perceptual input at a given instance?

A. Behavior of Agent
B. Percept
C. Percept Sequence
D. Agent Function

Theme 5:Computer Architecture and operating system

Operating system

1. Who provides the interface to access the services of the operating system?

A. API B. System call

A. Library D. Assembly instruction

2. Which of the following operating system runs on the server?

A. Batch OS B. Distributed OS

B. Real-time OS D. Network OS

3. Which one of the following is not true?

A. kernel is the program that constitutes the central core of the operating system

B. kernel is the first part of operating system to load into memory during booting

C. kernel is made of various modules which cannot be loaded in running operating system

D. kernel remains in the memory during the entire computer session

4. If a process fails, most operating system write the error information to a _____

A. log file C. another running process

B. none of the mentioned D. new file

5. 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 C. paging

B. Internal fragmentation D. segmentation

6. _____ is a memory management technique in which process address space is broken into blocks of the same size called pages.

A. External fragmentation C. paging

B. Internal fragmentation D. segmentation

COMPUTER ORGANIZATION AND ARCHITECURE

1. Which one of the following circuits requires memory to store the state of the output?

A. Combinational circuit

B. Sequential circuits

C. Logical circuit

D. Physical circuit

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

A. Decoder C. Flip Flop

B. Encoder D. Register

3. What can be used to store one or more bits of data, which can accept and/or transfer information serially?

A. Parallel registers C. Shift registers

B. Counters D. None of these

4. In computers, subtraction is generally carried out by

A. 9's complement C. 1'scomplement

B. 10's complement D. 2's complement

5. What characteristic of RAM memory makes it not suitable for permanent storage?

A. too slow C. it is volatile

B. unreliable D. too bulky

6. Which of the following is lowest in memory hierarchy?

A. Cache memory D. RAM

B. Secondary memory E. None of these

C. Registers

Theme 6:Compiler and complexity

FORMAL LANGUAGE AND COMPLEXITY THEORY

1. There are _____ tuples in finite state machine.

A. 4 B. 5 C. 6 D. unlimited

2. Assume the R is a relation on a set A, aRb is partially ordered such that a and b are _____

A. Reflexive

B. Transitive

C. Symmetric

D. reflexive and transitive

3. The minimum number of states required to recognize an octal number divisible by 3 are/is

A. 1 C. 5

B. 3 D. 7

4. Which of the following options is correct?

Statement 1: Initial State of NFA is Initial State of DFA.

Statement 2: The final state of DFA will be every combination of final state of NFA.

A. Statement 1 is true and Statement 2 is true

B. Statement 1 is true and Statement 2 is false

C. Statement 1 can be true and Statement 2 is true

D. Statement 1 is false and Statement 2 is also false

5. An automaton that presents output based on previous state or current input:

A. Acceptor B. Classifier

C. Transducer

D. None of the mentioned.

6. Keywords are recognized in a compiler during -
   A. the code generation
   B. the data flow analysis
   C. the lexical analysis of the program
   D. the program parsing

COMPILER DESIGN

1. What is a compiler?
   A. system program that converts instructions to machine language
   B. system program that converts machine language to high-level language
   C. system program that writes instructions to perform
   D. None of the mentioned

2. Who is responsible for the creation of the symbol table?
   A. Assembler
   B. Compiler
   C. Interpreter
   D. All of the mentioned

3.Let L1 = {w ∈ {0,1}∗ | w has at least as many occurrences of (110)'s as (011)'s}.

Let L2 = { ∈ {0,1}∗ | w has at least as many occurrences of (000)'s as (111)'s}.

Which of the following is correct?

   A. L2 is regular
   B. L1 and L2 are regular
   C. L1 is regular but not L2
   D. None of them are regular

4. Which of the following is a correct statement?

   I. For some programming languages, there are parsing algorithms with an O(3) complexity.

   II. A recursive programming language can be constructed with static storage allocation.

   III. In the context of bottom-up parsing, no L-attributed definition can be evaluated.

   IV. Code-improvement modifications can be carried out at both the intermediate and source code levels.

   A. I and III
   B. I and IV
   C. I, II and IV
   D. I, II, III and IV

5. Which tool is used for grouping of characters in tokens in the compiler?

A. Parser
B. Code optimizer
C. Code generator
D. Scanner

6. From the following grammars, which describes the lexical syntax?

A. Lexical Grammar
B. Context-free Grammar
C. Syntactic Grammar
D. Regular Grammar

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MODEL EXIT EXAM-I

ANSWER KEY

Name _____

ID.No._____

Section _____

Answer Sheet

Fundamentals of Software Engineering					
1. A	2. A	3. C	4. A	5. D	6. D
Web Programming					
1. A	2. C	3. B	4. A	5. A	6. C
7. A	8. D	9. D			
Database Systems					
1. D	2. C	3. A	4. C	5. C	6. B
7. C	8. B	9. C	10. A	11. A	12. B
Computer Programming					
1. C	2. C	3. D	4. A	5. A	6. A
Object oriented Programming					
1. C	2. D	3. D	4. C	5. B	6. A
Design and Analysis of algorithm					
1. C	2. B	3. D	4. D	5. B	6. C
Data structure and algorithms					
1. A	2. B	3. A	4. A	5.A	6. A
7. B					
Data Communication and computer networking					
1. C	2. B	3. B	4. A	5. A	6. D
Compute Security					
1. D	2. A	3. B	4. B	5. B	6. B
Network and system administration					
1. A	2. B	3. C	4. D	5. C	6. A
Introduction to Artificial Intelligence					
1. C	2. A	3. C	4. C	5. A	6. B
Operating System					
1. B	2. D	3. C	4. A	5. B	6. C
Computer organization and Architecture					
1. B	2. C	3. C	4. D	5. C	6. C
Automata and complexity theory					
1. B	2. D	3. B	4. A	5. C	6. C
Compiler design					
1. A	2. B	3. C	4. B	5. D	6. A