



THE HIGH COURT OF MADHYA PRADESH : JABALPUR

(Exam Cell)

NOTIFICATION

No. 119 /Exam/DPA/2023

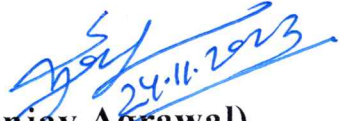
Jabalpur, Date : 24.11.2023

The High Court of M.P. has been pleased to publish the Proposed Model Answer Keys for the Questions Paper (Objective Type) of Online Preliminary/ Screening Examination of Data Processing Assistant (Direct Recruitment) Exam-2023, held on 24-11-2023. High Court of M.P. intends to use the Proposed Model Answer keys in the evaluation of the aforementioned question paper.

If any candidate wishes to make any objection regarding any Model Answer Key, he /she may submit such objection, in writing & signed by him/her, to the Principal Registrar (Exam), High Court of Madhya Pradesh, Jabalpur, by way of **post or by hand only** in Receipt Section of High Court of Madhya Pradesh within 07 days from the date of uploading of the proposed Model Answer Keys on website, during working hours, mentioning his/her Name & Application number, along-with self attested photo copies of source document(s)/proof, on the basis of which he/she has submitted the objection.

Objections received within aforesaid time and in aforesaid manner, shall be taken into consideration. Objections received by E-mail or any other electronic mode will not be accepted. Any objection received without any authentic proof/source or any objection received after aforesaid stipulated period/time shall not be entertained/considered on any ground.

After declaration of result of Online Preliminary Exam, no representation regarding final model answer keys or Questions shall be entertained on any ground, whatsoever.


(Sanjay Agrawal)
Registrar (Exam)

Attached :- Question paper alongwith Proposed Model Answer Keys and format for submitting objection.



HIGH COURT OF MADHYA PRADESH : JABALPUR

Proposed Model Answer keys alongwith question paper for Online Preliminary Examination of Data Processing Assistant Exam-2023

Que. No.	Question Text	Model Ans.	Option 1	Option 2	Option 3	Option 4
1	Which is not an active attack ?	3	Denial of service	Masquerade	Release of message contents	Replay
2	The CIA tried mainly focuses on	2	Confidentiality , Integrity, Authenticity	Confidentiality , Integrity, Availability	Confidentiality , Integrity, Accountability	Confidentiality , Integrity, Accessibility
3	The DES Algorithm Cipher System consists of _____ rounds (iterations) each with a round key of _____ bits and the plain text is of _____ bits.	3	15, 48, 64	15, 56, 32	16, 48, 64	16, 56, 32
4	Which of the following is not the basic concept of Object-Oriented Programming (OOP) ?	2	Polymorphism	Function	Inheritance	Object
5	AES uses a _____ bit block size and a key size of _____ bits ?	4	128; 128 or 256	64; 128 or 192	256; 128, 192, or 256	128; 128, 192, or 256
6	Which of the following is not an operation in AES ?	4	SubBytes	ShiftRows	MixColumns	MixRows
7	Assume a user A sends the message X to user B, then which encryption (E) and decryption (D) schemes are correct for achieving confidentiality and source authentication respectively (Where PR and PU are the private and public keys of users respectively) ?	2	$Y = E(PR_A, X), X = D(PU_A, Y)$ and $Y = E(PU_B, X), X = D(PR_B, Y)$	$Y = E(PU_B, X), X = D(PR_B, Y)$ and $Y = E(PR_A, X), X = D(PU_A, Y)$	$Y = E(PR_B, X), X = D(PU_B, Y)$ and $Y = E(PU_A, X), X = D(PR_A, Y)$	$Y = E(PU_A, X), X = D(PR_A, Y)$ and $Y = E(PR_B, X), X = D(PU_B, Y)$
8	In the RSA cryptosystem, if two prime numbers $p=17$ and $q = 11$ and $e =7$, then private key (PR) will be:	1	$PR = \{23, 187\}$	$PR = \{7, 187\}$	$PR = \{17, 177\}$	$PR = \{13, 177\}$
9	Which is correct about the Diffie-Hellman algorithm ?	2	It is based on symmetric key encryption	It is used to securely exchange a key between two users	It is used for authentication	It is a digital signature algorithm

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10	The prime objective of the Cryptographic Hash functions is to -	2	Check the confidentiality of the message.	Check the integrity of the message	Check the suceptibility of the message	Check the availability of the message.
11	The SMTP protocol uses _____ for sending the mail.	1	TCP	UDP	IP	ICMP
12	Communication between two devices cannot be -	2	Simplex	Complex	Half duplex	Full duplex
13	Which of the following is incorrect overloading of the function add() ?	3	int add(int a, int b), int add(int a, int b, int c)	float add(float a, int b), float add(int a, int b)	float add(int a, int b), int add(int a, int b)	int add(float a, float b), int add(int a, int b)
14	How many physical links will be needed to create a network of n nodes using mesh topology (Assume that a physical link provide communication in both the direction) ?	4	$n(n+1)$	$n(n+1)/2$	$n(n-1)$	$n(n-1)/2$
15	The layers in the OSI model are -	3	Link, internet transport, session, application	Link, internet, transport, application	Physical, data link, network, transport, session, presentation, application	Physical, data link, network, transport, application
16	In Physical layer of OSI model, the data is represented in the form of -	3	Packets	Frames	Bits	Segments
17	The Address Resolution Protocol (ARP) is used for:	4	Finding the IP address from the DNS	Finding the IP address of the default gateway	Finding the IP address that corresponds to a Physical address	Finding the physical address that corresponds to an IP address
18	Which is not the network layer protocol in TCP/IP protocol suite ?	4	IP	ICMP	IGMP	TCP
19	The period of a signal is 100 ms. What is its frequency in hertz ?	2	100 Hz	10 Hz	1 Hz	0.1 Hz
20	A network with bandwidth of 10 Mbps can pass only an average of 12,000 frames per minute with each frame carrying an average of 10,000 bits. What is the throughput of this network ? Assume 1000 = 1K.	3	12Mbps	6Mbps	2Mbps	1Mbps

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21	Which is false about the latency, propagation time and transmission time ?	3	Propagation time measures the time required for a bit to travel from the source to the destination	Transmission time is the time required for feeding a message into the channel.	Propagation time depends on channel bandwidth and length of the message, whereas the transmission time depends on the distance and channel bandwidth.	The latency or delay defines how long it takes for an entire message to completely arrive at the destination.
22	Which of the network device used to connect two dis-similar types of networks?	4	Switch	Hub	Bridge	Gateway
23	Which of the following IP address belongs to class A ?	1	121.12.12.248	128.12.12.248	129.12.12.248	130.12.12.248
24	Overloading is the example of -	1	Polymorphism	Inheritance	Constructor	Class
25	Breadth First Search is equivalent to which of the traversal in the Binary Trees ?	3	Pre-order Traversal	Post-order Traversal	Level-order Traversal	In-order Traversal
26	The task of constructor in Object oriented programming is to -	2	Create the objects of the class	Initialize the objects of the class	Create the functions of the class	Initialize the functions of its class
27	Which is false about the constructor function ?	4	They should be declared publicly or in public section	They cannot be inherited. It can be called through the derived class constructor	They do not have return type, not even void	They must be invoked.
28	The significance of using the inheritance in object-oriented programming is:	3	Fast execution of the code	Reducing the complexity of the program	Fast development by reusing the already written code	Low memory requirement for executing the code
29	Which is not the type of inheritance ?	4	Multilevel	Multiple	Hierarchical	Distributed.

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30	Which of the following is true for cryptography and steganography ?	4	Cryptography and steganography hide the message to make it confidential.	Cryptography and Steganography hide the message to make it unintelligible.	Cryptography hides the message whereas steganography transforms the message to make it confidential.	Cryptography transforms the message whereas steganography hides the message.
31	A problem of ambiguity arises in _____ inheritance when a function with same name appears in more than one base class.	2	Multi-level	Multiple	Hierarchical	Distributed
32	A class whose object is not created and designed only to act as base class and inherited by other class is called:	3	Meta class	Template class	Abstract Class	Base class
33	Which of the following is false for key in database ?	4	A key is set of attribute used to uniquely identify an entity in the entity set.	There could be more than one key in the data base.	Primary key is a one of the candidate key.	The primary key does not belong to the set of candidate key.
34	Which is not the correct asymptotic notation for algorithm complexity analysis ?	4	Big O	Big Omega	Big Theta	Big Gama
35	A technique of decomposing a sequential process into suboperations/subprocess and executing the each subprocess in a special dedicated segment concurrently with all other segments is called:	3	Parallel Processing	Vector Processing	Pipeline Processing	Array Processing

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36	<p>What will be the time complexity of the following printf() statement mentioned in following programming function?</p> <pre> fun() { int i, j; for (i = 1 to n) { for (j = 1 to n) printf ("Hello\n"); } } </pre>	3	O(n)	O(2n)	O(n*n)	O(logn)
37	Which is not true about an algorithm ?	3	Algorithm must have finite number steps	Algorithm must receive input and provide output	The algorithm must terminate in linear time.	The steps in the algorithm must be deterministic or clear.
38	Which is false about the array data structure ?	2	Array is collection of elements stored in contiguous memory locations	Arrays can grow and shrink automatically.	Elements in array can be stored in row-major or column major order	Array supports searching, sorting merging, traversal operation.
39	What will be the location of the element a[1][2][2][1] from a 4-D integer array a[4][3][4][3] if the base address of the array is 1002 and elements are stored in row-major order ?	2	1068	1069	1070	1071
40	What is the advantage of using linked list over array ?	3	Linked list requires less memory in comparison to array	It is constrained in linked list to stored elements in contiguous memory.	It is not constrained in linked list to stored elements in contiguous memory	The linked always requires less time to insert and delete and an element
41	What is correct about the doubly linked lists ?	4	Every node of doubly linked list stores two data elements	Every node stores the address of the first and next nodes	Every node stores the address of first and previous nodes	Every node stores address of previous and next nodes

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42	The data structure where elements are added at one end and removed from the other end called ;	1	Queue	Stack	Linked List	Array
43	Which limitation of the linear queue, or the queue implemented using array is addressed by circular Queue ?	3	The linear queue requires more time for insertion and deletion of elements.	The linear queue requires high memory for storing the elements.	There may be the possibility that the queue is reported full even though in actually there might be empty slots at the beginning of the queue.	There is a possibility that the queue is reported full even though in actually there might be an elements in the queue.
44	Which is false about the digital signature-	4	It must verify the author and the date and time of the signature	It must authenticate the contents at the time of the signature	It must be verifiable by third parties, to resolve disputes	It must provide the availability
45	What is the worst-case time complexity of a searching an element in the binary search tree implemented through linked list ?	1	$O(n)$	$O(\log n)$	$O(n \log n)$	$O(n^2)$
46	Which is not the commonly used way of representing the graph in memory ?	4	Adjacency matrix	Adjacency Lists	Adjacency multi Lists	Adjacency multi matrix
47	Which of the following pair denotes the incorrect algorithm and its objective ?	1	(Depth First Search Algorithm, Tree Traversal)	(Prim's Algorithm, Spanning Tree)	(Dijkstra Algorithm, Shortest Path Algorithm)	(Kruskal's Algorithm, Spanning Tree)
48	FAT is -	2	File attribute table	File allocation table	Font attribute table	Format allocation table
49	Which of the following is wrong about the worst-case time complexity of the different sorting algorithms ?	2	Heap sort – $O(n^2 \log n)$	Quick Sort – $O(n^2 \log n)$	Merge Sort – $O(n^2 \log n)$	Selection Sort – $O(n^2)$
50	Which of the following is not the primary advantage of DBMS ?	1	Data dependence	Efficient data access	Data integrity and security	Data administration
51	Data based Administrator is a -	4	Software program that manage the data base.	Software program that design the schemas	Software Tool that is responsible for security authorization	Person who design and maintained the data base.

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52	Which of the following is incorrect about the Entity-Relationship (ER) Model ?	3	ER Model represents the relationship between the objects	It is widely used in initial steps of the database design.	ER Model is used in Physical database design	ER Model is used in Conceptual database design
53	Which of the following is correct for the relational database design ?	4	A relation database represents the relationship between the entities pictorially.	The degree of the relation is denoted by the number of tuples in the relation.	The cardinality of the relation is the number of fields in the relational.	A relational data base schema is the collection of schemas for the relations in the database.
54	Which of the following is the correct application of IoT in healthcare ?	3	Online Shopping for medical supplies	Telemedicine Consultation	Remote patient health monitoring	Electronic Medical record management
55	Consider a relation of sailors S (sid, sname, rating, age), which of following relational algebra query is correct to retrieve the names and ratings of highly rated sailors or having rating greater than 8 ?	2	$\sigma_{\text{sname, rating}} (\pi_{\text{rating}>8}(S))$	$\pi_{\text{sname, rating}} (\sigma_{\text{rating}>8}(S))$	$\sigma_{\text{rating}>8} (\pi_{\text{sname, rating}}(S))$	$\pi_{\text{rating}>8} (\sigma_{\text{sname, rating}}(S))$
56	Which of the following is correct about the join operations in relation algebra ?	1	The Cartesian product followed by the selection operation is called join.	The Cartesian/cross product followed by the projection operation is called join.	The Join operation cannot be achieved using the Cartesian/cross product and selection/projection operators	The join operation can be achieved using set operators.
57	DML stands for -	3	Data Management Language	Data Manage Language	Data Manipulation Language	Data Manipulative Language
58	Consider the tables of sailors S(sid, sname, rating, age) and boat reserve R(bid, sid, day). Which of the following is the correct SQL query for find the names of sailors who have reserved boat number 103 ?	2	SELECT * FROM S, R WHERE S.sid = R.sid AND R.bid=103	SELECT S.sname FROM S, R WHERE S.sid = R.sid AND R.bid=103	SELECT S.sname FROM S, R WHERE R.bid=103	SELECT * FROM S, R WHERE R.bid=103

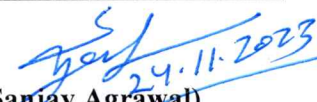
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59	Which of the following SQL query is correct to count the number of different sailor names in table S (sid, sname, age, rating) ?	2	SELECT Count(*) FROM S	SELECT Count(distinct S.sname) FROM S	SELECT Count(distinct) FROM S	SELECT Count(S.sname) FROM S
60	The insertion, update, deletion anomalies in the database are removed using:	1	Decomposition of Database	Composition of Database	Distribution of Database	Substitution of Database
61	A transaction in database management system exhibits following properties:	1	Atomicity, Consistency, Isolation, Durability	Atomicity, Consistency, Integrity, Durability	Atomicity, Confidentiality , Integrity, Durability.	Atomicity, Confidentiality , Isolation, Durability.
62	What are correct types of data independence in DBMS ?	1	Physical and logical	Physical, logical and external	Logical and external	Physical and external
63	Which of the following is not the primary function of the Operating System in Computer ?	4	Controls the hardware and coordinates its use among the various applications.	Provides the proper use of resources in the computer operation.	Provides an environment within which other programs can do useful work.	Protecting the Computer from Virus
64	The purpose of multiprogramming in operating system is not:	2	To increase keep CPU and input/output devices busy all time	To reduce the execution time of a program	To increase the CPU utilization	To increase the throughput.
65	What operating system often do to ensure the integrity of data being shared between two processes:	1	Provide system calls allowing a process to lock shared data.	Provides a service to ensure integrity the shared data	Operating System does not do anything to protect the shared data.	It is not required to ensure the integrity of shared data.
66	The data structure which is based on the concept First-in-Last-out called:	2	Queue	Stack	Linked List	Array
67	Which of the following is not correct about the process ?	2	A program in execution is called process.	Every Program is a process.	Process is an active entity, whereas program is a passive entity.	A program becomes a process when an executable file is loaded into memory.
68	What are the commonly used names of different states of a process in the operating system ?	1	New, Ready, Waiting, Running, Terminated	Start, Ready, Waiting, Running, Stop	Initial, Start, Running, Stop	New, Start, Running, Terminated

Que. No.	Question Text	Model Ans.	Option 1	Option 2	Option 3	Option 4
69	Which is not correct for the semaphore and its operations ?	3	Semaphore can be counting and binary.	It exhibits two atomic operations: wait () and signal ().	When a process wishes to use a resource, signal () operation is performed.	The Wait () operation decrements the count.
70	Which of the following is not the criteria of comparing different CPU scheduling algorithms:	2	CPU Utilization	Execution Time	Waiting Time	Turnaround Time
71	Consider the following set of processes (P1, P2, P3) that arrive at time 0, with the length of the CPU burst (24, 3, 3) given in milliseconds respectively. What will be the average waiting time if the processes arrive in the order P2, P3, P1, using first come first served (FCFS) scheduling algorithm ?	2	17	3	10	9
72	The address loaded into the memory-address register to access a main memory frame is called:	2	Logical address	Physical Address	Virtual Address	MAC Address
73	Consider a decoder of nxm, where n is the number of inputs and m is the number of outputs. Then what will the maximum value of m for n inputs in the decoder ?	3	$m = n$	$m = 2*n$	$m = 2^n$	$m = \log(n)$
74	Consider a main memory of size 64KB, each word size is of 8-bit or one Byte (B), then how many address lines will be there ?	3	6	8	16	32
75	Which of the conditions is not required to be satisfied by a solution to the critical section problem of process synchronization ?	4	Mutual Exclusion	Progress	Bounded Waiting	Circular Waiting
76	Which of the following register used to hold the address of the next instruction ?	2	Memory Address Register	Program Counter	Instruction Register	Accumulator

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77	Identify the correct order and phases of Instruction cycle -	3	Read Effective Address, Fetch, Decode, Execute	Fetch, Read Effective Address, Decode, Execute	Fetch, Decode, Read Effective Address, Execute	Read Effective Address, Decode, Fetch, Execute
78	Consider the Boolean function $F = ABC + ABC' + A'C$, the simplified function of F is -	1	$AB + A'C$	$AB + AC'$	ABC'	ABC
79	Which of the following is true about the symmetric and public key encryption systems -	4	Both encryption systems use a single key for encryption and decryption	Both encryption systems use multiple keys for encryption and decryption	Public key encryption uses a public key for both encryption and decryption.	Symmetric encryption uses a single key for encryption and decryption.
80	What is the type of addressing mode if the effective address is equal to the address part of the instruction or the address of the operand resides in memory is denoted by the address field of the instruction ?	2	Immediate Mode	Direct Address Mode	Indirect Address Mode	Relative Address Mode
81	What will be the correct plain text after deciphering the following cipher text using Caesar's Cipher - HQFUBSWHG WHAW	2	ABANDONED LOCK	ENCRYPTED TEXT	ABANDONED TEXT	ENCRYPTED LOCK
82	Consider pipeline system of four-stages/segment, where each stage takes $t_p = 20\text{ns}$ to execute a suboperation. What will be the speed-up in pipeline system over the non-pipeline system for executing $n=100$ tasks ?	4	10	10.3	3	3.88
83	Data Transfer between Input/output devices and memory is managed by -	4	CPU	Programmed I/O	Interrupt-initiated I/O	Direct Memory Access
84	A small and fast memory that keeps most frequently accessed instructions and data and reduces the average memory access time is called:	2	Register	Cache Memory	Random Access Memory (RAM)	Virtual Memory

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85	The program is executed from main memory until it attempts to reference a page that is still in auxiliary memory. This condition is called -	1	Page fault	Demand Paging	Page Replacement	Anticipation
86	Which of the following is incorrect about IoT devices ?	4	IoT devices use the internet for collecting and sharing data	IoT devices need microcontrollers	IoT devices use wireless technology	IoT devices are completely safe
87	What is the role of cloud computing in the IoT devices ?	1	Store and process data collected by IoT devices.	Provide connectivity between IoT devices	Analyse data generated by IoT devices.	Manage and control IoT devices.
88	Which of the following capture the data from the real/physical world in IoT devices ?	1	Sensors	Cloud	Microprocessors	Microcontrollers
89	A CPU scheduler which invokes very fast or frequently is called:	2	Fast Scheduler	Short Term Scheduler	Long Term Scheduler	Medium Term Scheduler
90	Which of the following is correct for defining a sensor in IoT ?	1	A device that converts physical or environmental parameters into digital signals.	A device that connects to the internet and sends data	A device that provides a graphical user interface	A device that runs software programs
91	Which of the following is commonly used protocol for communication (sending and receiving data) from cloud to IoT device ?	2	FTP	MQTT	SMTP	IP
92	Which of the following is correct application of IoT in Agriculture ?	1	Monitoring crop and crop field condition.	Monitoring the farmers health while working in field.	Monitoring the conditions of the equipment/Machines used in farming.	Checking the price of crops in online market.
93	Which is true for polymorphism?	3	Wrapping up of data and function into single unit	Object of one class acquire the properties of object of another class	Ability to take more than one forms.	None of these.

Que. No.	Question Text	Model Ans.	Option 1	Option 2	Option 3	Option 4
94	Which is true about the visibility of the class members while inheriting them into the derived class in C++ ?	4	Private members of base class can be inherited into derived class using hybrid inheritance.	Protected members of the base class become private when they are inherited through protected derivation.	Public members become protected when they are inherited through public derivation.	None of these.
95	Which of the following is true about growth rate of following two functions ? $f(n) = 2^n$ and $g(n) = n^2$.	1	$f(n)$ has faster growth rate than $g(n)$	$g(n)$ has faster growth rate than $f(n)$	Both $f(n)$ and $g(n)$ have equal growth rate	None of these
96	How many levels of abstraction are there in data base management system ?	2	2	3	4	None of these
97	Data Definition Language (DDL) Commands of SQL is used to -	1	Create, update and delete the table.	Insert, update and delete a record from the table	Manage the transaction related query	None of these
98	Which of the following scheduling algorithms provides the minimum average waiting whatever the order of arrival and CPU burst of the processes -	2	First Come First Served (FCFS)	Shortest Job First (SJF)	Round Robin	None of these
99	Banker's Algorithm is used for:	2	Deadlock Prevention	Deadlock Avoidance	Deadlock Recovery	None of these
100	Which of the following is responsible for executing a command/program in an IoT system -	3	Micro converter	Microsensor	Microcontroller	None of these


 24.11.2023
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