

2912_IT_Sem-III_R19_DBMS_Shah & Anchor Kutchhi Engineering College

1) The Question Paper will have MCQs (for 20 marks) and Subjective/Descriptive Questions (for 60 marks).

2) MCQ correct options and subjective question answers to be written on A4 size papers. Scan all pages of answer papers of Q.1 to Q.4 and create single file in pdf format to upload in the link given.

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Q.1) 1 to 3

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Type of data independence in which the schema can be modified without modifying the conceptual schema is called as _____.
Option A:	Conceptual Level Independence
Option B:	Logical Data Independence
Option C:	External Level Independence
Option D:	Physical Data Independence
2.	What is the name of a relationship that connects a strong entity with the weak entity?
Option A:	Strong relationship
Option B:	Identifying relationship
Option C:	Weak relationship
Option D:	Dependent relationship
3.	Cardinality is termed as
Option A:	Number of Tuples.
Option B:	Number of Tables
Option C:	Number of Attributes.
Option D:	Number of Constraints.

Q.1) 4 to 6

4.	The Relational Algebra is
Option A:	Data Definition Language
Option B:	Non Procedural Language
Option C:	Meta Language
Option D:	Procedural Language
5.	Which of the SQL statements is correct ?
Option A:	SELECT count(cust_ID, Country from customers group by Country having count (cust_ID>=20)
Option B:	SELECT count(cust_ID from customers group by Country having count (cust_ID>=20)
Option C:	SELECT count(cust_ID, Country from customers having count (cust_ID>=20)
Option D:	SELECT count(cust_ID, Country from customers group by cust_ID having count (cust_ID>=20)
6.	UPDATE instructor _____ salary=salary*1.05; Fill in with the correct keyword to update the instructor relation.
Option A:	Where
Option B:	Set
Option C:	In
Option D:	Select

Q.1) 7 to 10

7.	Which operator is used to filter data by looking for the presence of any record in subquery?
Option A:	some operator
Option B:	in operator
Option C:	exists operator
Option D:	like operator
8.	B in BCNF stands for-
Option A:	Bouston
Option B:	Bold
Option C:	Back
Option D:	Boyce
9.	A functional dependency of the form $A \rightarrow C$ is transitive if -
Option A:	$A \rightarrow B$
Option B:	$A \rightarrow B$ and $B \rightarrow C$
Option C:	$B \rightarrow C$
Option D:	$C \rightarrow A$
10.	Which graph is used to detect a deadlock?
Option A:	Transaction graph
Option B:	Wait-for graph with cycle
Option C:	Wait-for graph with no cycle
Option D:	Wait-for graph with odd number of transactions

Q.2

Q2	
A	Solve any Two 5 marks each
i.	State any five limitations of the file Management system.
ii.	Justify the need of DBMS in Banking and Airlines.
iii.	Differentiate Strong and weak entities with suitable examples.
B	Solve any One 10 marks each
i.	Explain the following relational algebra operations with examples : i) Union ii) Cartesian Product iii) Left Outer Join iv) Set Intersection Operation v) Natural Join
ii.	Explain with example different Integrity Constraints in SQL.

Q.3

Q3	
A	Solve any Two 5 marks each
i.	Explain different types of attributes in the ER Model.
ii.	Explain different types of mapping cardinalities for binary relationship set in ER diagram.
iii.	What are Triggers? Explain with examples.
B	Solve any One 10 marks each
i.	<p>Consider the following relations for a database that keeps track of student enrollment in courses and the books adopted for each course and answer the queries below:</p> <p>STUDENT (SSN, Name, Major, Bdate) COURSE (Course#, Quarter, Grade) ENROLL (SSN, Course#, Quarter, Grade) BOOK_ADOPTION (Course#, Quarter, Book_ISBN) TEXT (Book_ISBN, Book_Title, Publisher, Author)</p> <ol style="list-style-type: none"> 1) Find names of students who have registered for a DBMS course. 2) Find titles of books for the course DBMS. 3) Calculate count of students enrolled for the course DBMS. 4) Display name of all publishers for the course DBMS. 5) Find how many students have enrolled for more than three courses in the first quarter.

Q.3 Continues...

ii.	<p>Consider the following six relations for an order-processing database application in a company and answer the queries below:</p> <p>CUSTOMER (Cust#, Cname, City) ORDER (Order#, Odate, Cust#, Ord_Amt) ORDER_ITEM (Order#, Item#, Qty) ITEM (Item#, Unit_price) SHIPMENT (Order#, Warehouse#, Ship_date) WAREHOUSE (Warehouse#, City)</p> <ol style="list-style-type: none"> 1) Specify foreign keys for all the schemas. 2) Find count of customers who have ordered for more than <u>Rs.</u> 50,000 in the month of december. 3) Find and list the items which are ordered above 20 units. 4) List name of cities where orders in december are kept. 5) Find the number of warehouses in Mumbai.
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Q.4

Q4.	
A	Solve any Two 5 marks each
i.	Explain transitive functional dependency with an example.
ii.	Justify the need of normalization.
iii.	Define Boyce-Codd normal form. How does it differ from 3NF?
B	Solve any One 10 marks each
i.	Explain conflict and view serializability with suitable examples.
ii.	What is a recoverable schedule? Why is recoverability of schedules desirable?

4. Upload your answer papers *

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Q.1) 1 to 3

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	An array is?
Option A:	Random access structure
Option B:	Sequential access structure
Option C:	Random and sequential both type of structure
Option D:	Other type of data structure but neither random nor sequential type structure
2.	Which type of linked list does not store NULL in the address field?
Option A:	Singly linked list
Option B:	Doubly Linked Lists
Option C:	Circular linked list
Option D:	Priority linked list
3.	A type of queue where input is allowed from both ends and output is allowed from only one end is called as?
Option A:	Input Restricted <u>Deque</u>
Option B:	Output Restricted <u>Deque</u>
Option C:	Priority Queue
Option D:	Circular queue

Q.1) 4 to 7

4.	The depth of the root node in the tree is?
Option A:	0
Option B:	1
Option C:	2
Option D:	3
5.	If on a tree preorder traversal is performed it will result in?
Option A:	Breadth First search result
Option B:	Depth First search result
Option C:	Prefix expression
Option D:	Data sorted in ascending order
6.	A graph where edges can be treated in both directions between vertices is called as?
Option A:	Un-weighted graph
Option B:	Undirected graph
Option C:	Directed graph
Option D:	Weighted graph
7.	A graph where an edge exists from all vertices to all other vertices is called as?
Option A:	Complete graph
Option B:	Connected graph
Option C:	Directed graph
Option D:	Digraph

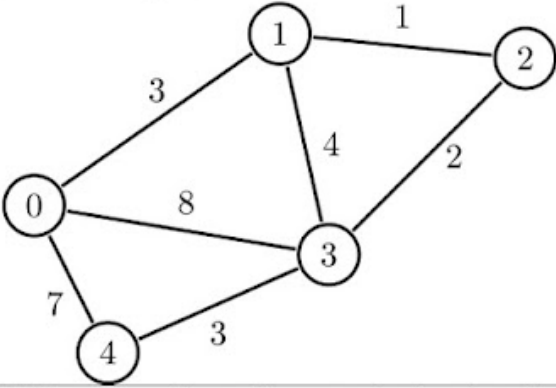
Q.1) 8 to 10

8.	In the worst case of linear search, how many comparisons will be made, in case of N data set?
Option A:	0
Option B:	1
Option C:	N-1
Option D:	N
9.	If the data set is {123, 12, 23, 22, 54, 56, 45}, storage size is 10 where indexing starts from 0 then in hashing by "mid square method", how many collisions will occur? In case of even count of digits consider left as middle.
Option A:	0
Option B:	1
Option C:	2
Option D:	3
10.	Which of the following methods will not suffer from the fragmentation?
Option A:	Allocating the first free block that is large enough to fulfill the request
Option B:	Traversing the whole free memory list and allocating the block which is closest in size of memory requested
Option C:	Allocating the free block equal in size as required by the process
Option D:	Allocating the block in the multiple of fixed size

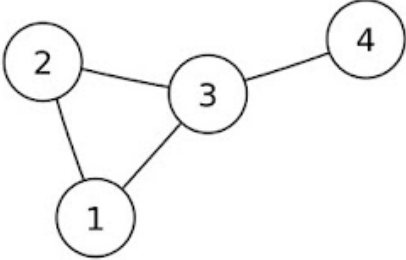
Q.2) A & B

Q2.(20 Marks)	Solve any Four out of Six	5 marks each
A	With an example explain the queue data structure and operations on queue.	
B	<p>What are the different tree traversal methods? Write an algorithm for preorder traversal and find the preorder traversal path for the following tree.</p> <pre> graph TD 2((2)) --> 7((7)) 2 --> 5((5)) 7 --> 2((2)) 7 --> 6((6)) 5 --> 9((9)) 6 --> 5((5)) 6 --> 11((11)) 9 --> 4((4)) </pre>	

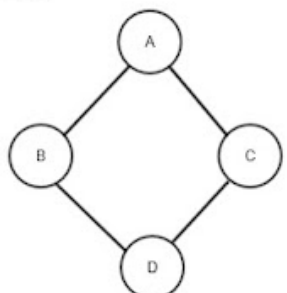
Q.2) C, D, E & F

C	<p>Find the minimum spanning tree, with cost at each step, for the following graph using Kruskal's algorithm.</p> 
D	With an example explain recursive function, flow control in recursive function, winding and unwinding phase in the recursive call.
E	Write an algorithm for Binary search and perform the binary search for 99 in the data set 21, 6, 43, 45, 38, 31, 53, 72, 80
F	Construct the Huffman tree for DATASTRUCTURES and state the bits saved in case each character requires 8 bits.

Q.3

Q3.(20 Marks)	Solve any Four out of Six	5 marks each
A	With an example explain the double ended queue data structure. Also write computer world applications of double ended queue.	
B	What is an AVL tree, step by step construct AVL tree for following data 23, 12, 25, 01, 45, 63, 27, 29	
C	<p>What are the two different graph representation techniques? Also represent the following graph in both ways.</p> 	
D	With examples explain each of the first fit, best fit and worst fit sequential methods in storage management.	
E	What is a collision? What are collision resolution techniques? Explain with an example double hashing collision resolution technique.	
F	Write an algorithm to convert infix expression to postfix expression. Using the same algorithm convert the following infix expression to postfix expression. $((A * (B + C)) / D)$	

Q.4

Q4.(20 Marks)	Solve any Four out of Six	5 marks each
A	With an example explain the working of doubly linked list and operations on doubly linked list.	
B	With examples explain the following tree terminologies: child node, descendant nodes, <u>indegree</u> of node, siblings and decision tree.	
C	Write an algorithm for DFS traversal on a graph. Apply and find the DFS on the following graph. 	
D	With respect to storage management, explain with example the following terminologies: Boundary tag method, binary buddy system, <u>fibonacci</u> buddy system.	
E	Write an algorithm for insertion sort and perform the insertion sort on following data. 69, 88, 19, 58, 46, 12, 16, 4, 67	
F	Write an algorithm for reversal of string as a stack application and give an example to explain the same.	

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Q.1) 1 to 2

<p>Q 1.</p>	<p>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</p> <p style="text-align: right;">2 marks each</p>
<p>1.</p>	<p>Laplace transform of $e^{-5t}(t^2 + \sin 2t)$ is</p>
<p>Option A:</p>	$\frac{2}{(s+5)^3} + \frac{2}{(s+5)^2 + 2^2}$
<p>Option B:</p>	$\frac{2}{(s-5)^3} + \frac{2}{(s-5)^2 + 4}$
<p>Option C:</p>	$\frac{3}{(s+5)^3} + \frac{s}{(s+5)^2 + 2^2}$
<p>Option D:</p>	$\frac{2}{(s+5)^2} + \frac{2}{(s+5)^2 - 2^2}$
<p>2.</p>	<p>If $L\{F(t)\} = \frac{3s}{s^2+1}$, then $L\{F(2t)\}$ at $s=1$, is</p>
<p>Option A:</p>	$\frac{3}{5}$
<p>Option B:</p>	$\frac{2}{5}$
<p>Option C:</p>	$-\frac{3}{5}$
<p>Option D:</p>	$\frac{7}{5}$

Q.1) 3 & 4

3.	Inverse Laplace transform of $\frac{1}{s^2+4}$ is
Option A:	$\int_0^t \cos 2u du$
Option B:	$\int_0^t \sin 2u du$
Option C:	$\int_0^t \cos 3u du$
Option D:	$\int_0^t \cos u du$
4.	Inverse Laplace transform of $f(s) = \frac{6e^{-5s}}{(s+2)^4}$ is
Option A:	$f(t) = \begin{cases} 0 & 0 < t < 5 \\ e^{-2(t-5)}(t-5)^3 & t > 5 \end{cases}$
Option B:	$f(t) = \begin{cases} 0 & 0 < t < 5 \\ e^{-2(t-5)}(t-5)^4 & t > 5 \end{cases}$
Option C:	$f(t) = \begin{cases} 0 & t > 5 \\ e^{-2t}t^3 & t < 5 \end{cases}$
Option D:	$f(t) = \begin{cases} 0 & 0 < t < 5 \\ e^{-2t}t^5 & t > 5 \end{cases}$

Q.1) 5 to 7

5.	If $f(z) = u(x, y) + iv(x, y)$ is analytic then $f'(z)$ is equal to
Option A:	$\frac{\partial u}{\partial x} - i \frac{\partial v}{\partial y}$
Option B:	$\frac{\partial u}{\partial x} + i \frac{\partial v}{\partial x}$
Option C:	$\frac{\partial u}{\partial y} + i \frac{\partial v}{\partial x}$
Option D:	$\frac{\partial u}{\partial x} - i \frac{\partial v}{\partial x}$
6.	The value of 'm' so that $2x - x^2 + my^2$ is harmonic, is
Option A:	0
Option B:	-1
Option C:	1
Option D:	3
7.	The value of coefficient of correlation lies between
Option A:	0 to 1
Option B:	$-\infty$ to 1
Option C:	0 to ∞
Option D:	-1 to 1

Q.1) 8 to 10

8.	The rank correlation coefficients of the following data is						
	X	23	25	27	29	31	33
	Y	43	45	47	49	51	53
Option A:	0						
Option B:	-1						
Option C:	1						
Option D:	0.99						
9.	Expansion of Fourier series of $f(x)=x$ in $(-1, 1)$ is						
Option A:	$f(x) = \sum_{n=1}^{\infty} \frac{2}{n\pi} (-1)^n \sin n\pi x$						
Option B:	$f(x) = \frac{2}{\pi} \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} \sin nx$						
Option C:	$f(x) = \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} \sin n\pi x$						
Option D:	$f(x) = \frac{2}{\pi} \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} \sin n\pi x$						
10.	What would be the expectation of the number of failures preceding the first success in an infinite series of independent trials with the constant probability of success p and failure q						
Option A:	$\frac{p}{q}$						
Option B:	$\frac{q}{p}$						
Option C:	$\frac{p+1}{q}$						
Option D:	$\frac{p^2}{q^2}$						

Q.2

Q 2.	Solve any Four out of Six	5 marks each																						
A	Find Laplace transform of $e^{-3t}t\sqrt{1 - \sin 2t}$																							
B	Find inverse Laplace transforms of $\frac{5s^2 - 15s - 11}{(s+1)(s-2)^2}$																							
C	Expand Fourier Series for $f(x) = \frac{1}{2}(\pi - x)$ in $(0, 2\pi)$.																							
D	Find constants a, b, c, d and e, if $(ax^4 + bx^2y^2 + cy^4 + dx^2 - 2y^2) + i(4x^3y - exy^3 + 4xy)$ is analytic.																							
E	<p>Ten students got the following percentage of marks in mathematics and statistics</p> <table border="1" data-bbox="347 779 1390 902"> <tbody> <tr> <td>Maths</td> <td>78</td> <td>36</td> <td>98</td> <td>25</td> <td>75</td> <td>82</td> <td>90</td> <td>62</td> <td>65</td> <td>39</td> </tr> <tr> <td>Stats</td> <td>84</td> <td>51</td> <td>91</td> <td>60</td> <td>68</td> <td>62</td> <td>86</td> <td>58</td> <td>53</td> <td>47</td> </tr> </tbody> </table> <p>Calculate the coefficient of correlation.</p>		Maths	78	36	98	25	75	82	90	62	65	39	Stats	84	51	91	60	68	62	86	58	53	47
Maths	78	36	98	25	75	82	90	62	65	39														
Stats	84	51	91	60	68	62	86	58	53	47														
F	A bolt is manufactured by three machines A, B and C. A turns out twice as many times as B, and machines B and C produce equal number of items. 3% of bolts produced by A and B are defective and 5% of bolts produced by C are defective. All bolts are put into one stock pile and one is chosen from this pile. What is the probability that it is defective?																							

Q.3

Q. 3	Solve any Four out of Six 5 marks each																		
A	By using Laplace transform, evaluate $\int_0^{\infty} \frac{\sin 2t + \sin 3t}{te^t}$																		
B	By using Convolution theorem, find inverse Laplace transform of $\frac{s}{(s^2+1)(s^2+4)}$																		
C	Expand Fourier Series for $f(x) = 1 - x^2$ in $(-1, 1)$																		
D	Find the analytic function $f(z) = u + iv$, in terms of z , if $v = \frac{\sinh 2y}{\cosh 2y + \cos 2x}$																		
E	Obtain the equations of the lines of regression for the following data. <table border="1" data-bbox="357 891 1374 1003" style="margin-left: 20px;"> <tbody> <tr> <td>X</td> <td>65</td> <td>66</td> <td>67</td> <td>67</td> <td>68</td> <td>69</td> <td>70</td> <td>72</td> </tr> <tr> <td>Y</td> <td>67</td> <td>68</td> <td>65</td> <td>68</td> <td>72</td> <td>72</td> <td>69</td> <td>71</td> </tr> </tbody> </table>	X	65	66	67	67	68	69	70	72	Y	67	68	65	68	72	72	69	71
X	65	66	67	67	68	69	70	72											
Y	67	68	65	68	72	72	69	71											
F	A random variable X has the following probability distribution <table border="1" data-bbox="450 1059 1318 1171" style="margin-left: 20px;"> <tbody> <tr> <td>X</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>P</td> <td>0.1</td> <td>K</td> <td>0.1</td> <td>2K</td> <td>0.2</td> <td>3K</td> </tr> </tbody> </table> (i) Find the constant K. (ii) Find the mean and variance of X.	X	-2	-1	0	1	2	3	P	0.1	K	0.1	2K	0.2	3K				
X	-2	-1	0	1	2	3													
P	0.1	K	0.1	2K	0.2	3K													

Q.4

Q. 4	Solve any Four out of Six	5 marks each														
A	Find Laplace transform of $\int_0^t e^{-2u} \cos^2 u \, du$															
B	Find Inverse Laplace transform of $\frac{1}{s} \log \sqrt{\frac{s^2+9}{s^2+16}}$															
C	Find the half range cosine series for $f(x) = (x-1)^2$; $0 < x < 1$															
D	Find the family of curves orthogonal to the family of curves $x^3 y - xy^3 = c$															
E	Fit a straight line of the form $y=a+bx$ to the following data															
	<table border="1"><tr><td>X</td><td>1</td><td>3</td><td>5</td><td>7</td><td>8</td><td>10</td></tr><tr><td>Y</td><td>8</td><td>12</td><td>15</td><td>17</td><td>18</td><td>20</td></tr></table>	X	1	3	5	7	8	10	Y	8	12	15	17	18	20	
X	1	3	5	7	8	10										
Y	8	12	15	17	18	20										
F	A random variable x has probability density function $f(x) = \begin{cases} kx^2 e^{-x} & x > 0, & k > 0 \\ 0 & \text{Otherwise} \end{cases}$ Find 'k' and hence find mean and variance.															

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Q.1) 1 to 3

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Which one of the following channels has higher data rates as compared to the other wired communication channels?
Option A:	Coaxial cable channel
Option B:	Shielded Twisted pair cable channel
Option C:	Optical fiber channel
Option D:	Unshielded Twisted pair cable channel
2.	In a Super heterodyne receiver
Option A:	the RF stage has better selectivity than IF stage
Option B:	the IF stage has better selectivity than RF stage
Option C:	the RF stage has same selectivity than IF stage
Option D:	the antenna has better selectivity than IF stage
3.	A broadcast radio transmitter radiates 15Kwatt .when the modulation percentage is 60. How much of this is carrier power
Option A:	14.2KW
Option B:	12.711KW
Option C:	20.07KW
Option D:	17.89KW

Q.1) 4 to 7

4.	The function of an AM detector circuit is to
Option A:	Add input signal and carrier signal
Option B:	Discard the carrier signal
Option C:	Amplify the signal
Option D:	Remove baseband signal
5.	Quantizing error occurs in
Option A:	AM
Option B:	Pulse Position Modulation
Option C:	Pulse Width Modulation
Option D:	Pulse Code Modulation
6.	Which multiplexing is based on Orthogonality
Option A:	TDM
Option B:	WDM
Option C:	Pulse Modulation
Option D:	OFDM
7.	The Pulse Modulation technique most effected by noise
Option A:	PWM
Option B:	PPM
Option C:	PAM
Option D:	Adaptive Delta Modulation

Q.1) 8 to 10

8.	Sampling technique having minimum noise is
Option A:	Instantaneous sampling
Option B:	Flat Top Sampling
Option C:	Natural Sampling
Option D:	Periodic Sampling
9.	In PWM signal reception Schmitt Trigger circuit is used
Option A:	To remove noise
Option B:	To produce ramp signal
Option C:	For synchronization
Option D:	Boost the signal
10.	Which phenomenon do the waves arrive at receiving antenna in ionospheric propagation
Option A:	Defraction
Option B:	Refraction
Option C:	Reflection or scattering
Option D:	Radiated

Q.2, Q.3 & Q.4

Q2	Solve any Two Questions out of Three	10 marks each
A	Draw and explain the block diagram of Digital communication system and compare with analog communication system.	
B	Compare AM and FM, Derive the expression for AM Wave.	
C	Derive Friss Formula for two stage cascade amplifier	

Q3	Solve any Two Questions out of Three	10 marks each
A	State and prove the following properties of Fourier Transform with example i. Time Shifting ii. Convolution in Time domain	
B	Explain Foster Seeley discriminator with neat diagram	
C	With reference to AM receiver explain I. Selectivity ii. Sensitivity iii. Fidelity iv. Image Frequency Rejection v. Double Spotting	

Q4.	Solve any Two Questions out of Three	10 marks each
A	Explain PCM Encoder and decoder with block diagram	
B	Draw and explain OFDM Transmitter and receiver	
C	Explain Space Wave Propagation with its advantages and disadvantages	

4. Upload your answer papers *

Files submitted:

5. Have you uploaded required pdf file of answers? *

Mark only one oval.

Yes

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1) The Question Paper will have MCQs (for 20 marks) and Subjective/Descriptive Questions (for 60 marks).

2) MCQ correct options and subjective question answers to be written on A4 size papers. Scan all pages of answer papers of Q.1 to Q.4 and create single file in pdf format to upload in the link given.

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Q.1) 1 to 3

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Variables whose value will be same across multiple function calls throughout the program execution is _____.
Option A:	static variable
Option B:	stack
Option C:	non static variable
Option D:	heap
2.	Size of an object is _____
Option A:	Sum of the size of all the variables declared inside the class
Option B:	Sum of the size of all the variables along with inherited variables in the class
Option C:	Size of the largest size of variable
Option D:	Size of smallest size of variable
3.	Prolog relates variables and atoms by the process of _____ and the variables that receive values as said to be _____
Option A:	unification and initialization
Option B:	initialization and assignment
Option C:	unification and instantiated
Option D:	Initialization and paging

Q.1) 4 to 7

4.	What are the types signatures of the Haskell functions: head, take, filter
Option A:	<code>[a] -> a, [a] -> Int -> [a], [a] -> [b] -> (a -> b)</code>
Option B:	<code>[a] -> a, [a] -> Int -> [a], (a -> b) -> [a] -> [b]</code>
Option C:	<code>[a] -> a, Int -> [a] -> [a], (a -> b) -> [a] -> [b]</code>
Option D:	<code>[a] -> a, Int -> [a] -> [a], (a -> Bool)</code>
5.	Which of the following is true about polymorphism in Haskell?
Option A:	Type variables in haskell are an instance of parametric polymorphism.
Option B:	Type variables in haskell are an instance of ad-hoc polymorphism.
Option C:	Type classes in haskell are an instance of parametric polymorphism.
Option D:	Type classes in haskell are an instance of non-parametric polymorphism.
6.	Which statement is false about scripting languages?
Option A:	Scripts can be used for batch processing
Option B:	Scripting languages support high level data types.
Option C:	Scripting languages are statically typed
Option D:	In script variables needn't be declared.
7.	In which of the following scenarios, a compiler is preferable to an interpreter?
Option A:	When Program development is easier
Option B:	To perform debugging faster.
Option C:	There are lesser resources to run a program
Option D:	We need to develop a standalone application that can run without installation.

Q.1) 8 to 10

8.	When the parent class has a parameterized constructor then it is _____ for the child class to have a parameterized constructor to pass arguments to the parent class.
Option A:	Compulsory
Option B:	Optional
Option C:	Error
Option D:	Based on compiler
9.	Which of the following is used in logic programming?
Option A:	classes
Option B:	resolution and unification
Option C:	monad
Option D:	iterative constructs
10.	Message passing system allows processes to
Option A:	communicate with one another without resorting to shared data
Option B:	communicate with one another by resorting to shared data
Option C:	share data
Option D:	name the recipient or sender of the message

Q.2 & Q.3

Q2	Solve any Four out of Six	5 marks each
A	Describe the different Types in Haskell.	
B	With an example explain how constructors are different from other member functions	
C	How scripting languages differ from other programming languages	
D	Mention features of Functional Programming languages.	
E	When and why do we use “is” instead of “=” in Prolog?	
F	Explain lifecycle of a thread.	

Q3	Solve any Two Questions out of Three	10 marks each
A	Write a Prolog code to find if a list is sorted or not.	
B	Explain the Exception handling mechanism with example	
C	Explain Type System and Type checking.	

Q.4

Q4	Solve any Two Questions out of Three	10 marks each
A	Explain the different mechanisms in which storage is allocated to a program and data.	
B	i) Explain the concept of higher order functions in Functional Programming. Name and specify input output characteristics of any 2 Haskell higher order functions. (4 marks) ii) Write your own Haskell implementation for any one of the functions you stated in the previous question. (03 marks) iii) Write a corresponding imperative algorithm to achieve the same input output characteristics. (03 marks) Note: you may assume and state a suitable data structure while writing imperative algorithm.	
C	Discuss how to implement Polymorphism in C++ with example program.	

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