

University of Mumbai
Examination 2020 under cluster 7 (Lead College: SSJCOE)

Examinations Commencing from 7th January 2021 to 20th January 2021

Program: **Information Technology**

Curriculum Scheme: Rev2019

Examination: SE Semester III

Course Code: ITC305 and Course Name: Paradigms and Computer Programming Fundamentals
 Time: 2 hour Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Which is NOT , one of the standard Haskell type
Option A:	Booleans
Option B:	Lists
Option C:	Tuples
Option D:	Structures
2.	<p>Consider following predicates shown in Image 1 that are defined in two distinct prolog files. Which of the following statements is TRUE about the above two KBs</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>KB-1: link(b,c). link(c,d). route(X, X). route(X, Y) :- link(Z, Y), route(X, Z).</p> <p>KB-2: link(b,c). link(c,d). route(X, Y) :- route(X, Z), link(Z, Y). route(X, X).</p> <p style="text-align: center;">Image 1</p> </div>
Option A:	Query route(b,b) will evaluate as true in both KBs
Option B:	Query route(b,b) will evaluate as false in both KBs
Option C:	Query route(b,b) will evaluate as true in KB-1 and false in KB-2
Option D:	Query route(b,b) will evaluate as true in KB-1 and will not terminate in KB-2
3.	While declaring a subroutine, names of parameter are known as _____.
Option A:	Formal parameters
Option B:	Actual parameters
Option C:	Normal parameters
Option D:	Additional parameters

4.	Which of the following programming concepts shown by Object Oriented Programming Languages are examples of use of polymorphism?
Option A:	function overriding, extending an interface, abstract base class
Option B:	function overloading, friend function, creation of package/module
Option C:	creation of package/module, multiple constructors for same class, encapsulating members in Class
Option D:	function overriding, function overloading, encapsulating members in Class
5.	<p>Consider the knowledge base shown in Image 2 below. Which option represents all result/s in the correct order, when the query “colleagues(amar,X).” is submitted to a prolog interpreter.</p> <div style="border: 1px solid black; background-color: #e6f2ff; padding: 10px; margin: 10px 0;"> <pre>worksfor(amar, infosys). worksfor(amar, infosys). worksfor(anagha, syntel). worksfor(ajit, syntel). colleagues(X, Y) :- worksfor(X, Z), worksfor(Y, Z).</pre> <p style="text-align: center;">Image 2</p> </div>
Option A:	X=amar; X=amit
Option B:	X=amit; X=amar
Option C:	X=amit
Option D:	X=amar
6.	While implementing synchronization, in which method a thread runs a loop which keeps reevaluating particular conditions until that condition becomes true.
Option A:	chaining
Option B:	blocking
Option C:	clocking
Option D:	busy-wait
7.	Mnemonics to machine language translation is job of a System Program known as _____
Option A:	converter

Option B:	processor
Option C:	assembler
Option D:	debugger
8.	Which of the following is not one of the six principal mechanisms for thread creation in language or library.
Option A:	Co-begin
Option B:	Fork
Option C:	Implicit receipt
Option D:	Finally
9.	Which of the following statements is TRUE about scripting languages?
Option A:	Scripting languages requires the declaration of types for variables.
Option B:	Most scripting languages perform extensive compile-time checks to make sure that values are never used in inappropriate ways
Option C:	Some scripting languages even store numbers as strings, so calculations may not always be what you expect, although most auto-converting if needed.
Option D:	Scripting languages do not handle the type errors and require the programmer to check for these errors if they require to.
10.	Image 3 shows the haskell code. Which of the following options represents correct output when main is executed? <div style="border: 1px solid black; background-color: #e6f2ff; padding: 10px; margin: 10px 0;"> <pre> mySelect :: (a-> Bool) -> [a] -> [a] mySelect _ [] = [] mySelect f (a : ab) = if f a then a : mySelect f ab else mySelect f ab main :: IO () main = do print \$ mySelect (/=25) [20..30] print \$ mySelect (==25) [20..30] </pre> <p style="text-align: center;">Image 3</p> </div>
Option A:	[20, 21, 22, 23, 24, 26, 27, 28, 29, 30] [25]
Option B:	[20, 21, 22, 23, 24, 26, 27, 28, 29, 30] 25
Option C:	[21, 22, 23, 24, 26, 27, 28, 29] [25]
Option D:	20, 21, 22, 23, 24, 26, 27, 28, 29, 30 25
11.	JavaScript is _____ and PHP is _____ side scripting language.
Option A:	client, server

Option B:	server, client
Option C:	proxy, client
Option D:	server, proxy
12.	<p>Consider the following expression shown in Image 4 is executed in ghci on prelude prompt, What will be the output?</p> <div style="border: 1px solid black; padding: 10px; background-color: #e6f2ff; margin: 10px 0;"> <pre>Prelude> zipWith (++) ['A','O','C','M'] ["pple", "range", "herry", "ango"]</pre> <p style="text-align: center;">Image 4</p> </div>
Option A:	["Apple", "Orange", "Cherry", "Mango"]
Option B:	"Apple", "Orange", "Cherry", "Mango"
Option C:	['Apple', 'Orange', 'Cherry', 'Mango']
Option D:	Error in execution as we cannot concatenate char with [char]
13.	Which of the following is true for Implicit parametric polymorphism
Option A:	Parameter types are not specified at all and not type-safe
Option B:	Parameter types to be specified explicitly, but still type-safe
Option C:	Parameter types are incompletely specified and not type-safe
Option D:	Parameter types are incompletely specified, but still type-safe
14.	Which of the following statements is incorrect about operator overloading
Option A:	Only existing operators can be overloaded
Option B:	The overloaded operator must preserve the original operation
Option C:	Post and pre increment operators can't be overloaded at the same time
Option D:	An operator may be overloaded in multiple way at the same time
15.	<p>Consider declaration of predicate “<i>natural</i>” shown in Image 5 below Which is the most appropriate description for this declaration ?</p> <div style="border: 1px solid black; padding: 10px; background-color: #e6f2ff; margin: 10px 0;"> <pre>natural(1). natural(N) :- natural(M), N is M+1.</pre> <p style="text-align: center;">Image 5</p> </div>
Option A:	It represents a generator for an infinite set of all natural numbers.
Option B:	It is a test for checking whether an input number is natural or not.
Option C:	It represents a generate and validate idiom in prolog programming.

Option D:	It will only be true for natural(1) and will throw an error for any query natural(n) where n is a natural number other than 1.
16.	Subroutine call stack is maintained in response to _____.
Option A:	Called function
Option B:	Calling sequence
Option C:	Calling subroutine
Option D:	Calling parameters
17.	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.
18.	<p>What would be the output of the code shown in Image 6 below?</p> <pre> class Parent{ public: Parent(){ cout<<"Parent Con "; } ~Parent(){ cout<<"Parent Dest "; } }; class Child: public Parent{ public: Child(){ cout<<"Child Con "; } ~Child(){ cout<<"Child Dest "; } }; int main(){ Child c; return 0; } </pre> <p style="text-align: center;">Image 6</p>
Option A:	Parent Con Child Con Parent Dest Child Dest

Option B:	Parent Con Child Con Child Dest Parent Dest
Option C:	Child Con Parent Con Child Dest Parent Dest
Option D:	Runtime Error
19.	<p>Image 7 refers to the definition for user defined Haskell function “rope”. what will be the output, if we apply the “rope” function to input 21?</p> <pre> rope :: (Integral a) => a -> [a] rope 1 = [1] rope n even n = n:rope (n `div` 2) odd n = n:rope (n*3 + 1) </pre> <p style="text-align: center;">Image 7</p>
Option A:	[21,64,32,16,8,4,2,1]
Option B:	21,64,32,16,8,4,2,1
Option C:	[64,32,16,8,4,2,1]
Option D:	64,32,16,8,4,2,1
20.	In case of divide by zero statement execution, which Exception is thrown?
Option A:	NoSuchFieldException
Option B:	IOException
Option C:	ArithmeticException
Option D:	NullPointerException

Q2.	Solve any Four out of Six	5 marks each
A	What are Scripting Languages? List common characteristics of scripting languages.	
B	Explain with example the difference between declarative and imperative programming paradigm.	
C	Briefly describe the process of resolution and unification in logic programming with example.	
D	What is Data Hiding in Object Oriented Programming Paradigm? Describe how data hiding is implemented in C++ or Java.	
E	Define Haskell function that inputs one operator +,-,*,^ and two operands which may be Int, Integer, Float or Double. The function will perform the operation and computes the result. Clearly mention the type signature for the function. Note: Students are not expected to write the main function and do user IO.	

F	Explain the different communication and synchronization techniques in Concurrent Programming model.
Q3.	Solve any Four out of Six 5 marks each
A	What is type checking and type clash? What do you mean by statically typed and strongly typed programming language? List any two statically typed languages.
B	Explain following terms: Concurrent system, Parallel system, Distributed system, Race condition, Context switching.
C	What mathematical formalism underlies functional programming?
D	Write a note on Naming and Scoping rules for scripting languages.
E	Demonstrate in object oriented programming how to resolve a call to one of the multiple methods with the same name and signature in the superclass and subclass is made.
F	What is the role of an Exception Handler in a programming language ? Briefly explain important tasks it performs.

University of Mumbai
Examination 2020 under cluster 7 (Lead College: SSJCOE)

Examinations Commencing from 7th January 2021 to 20th January 2021

Program: Information Technology

Curriculum Scheme: Rev2019

Examination: SE Semester III

Course Code: ITC305 and Course Name: Paradigms and Computer Programming Fundamentals
Time: 2 hour Max. Marks: 80

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	D
Q3.	A
Q4	A
Q5	A
Q6	D
Q7	C
Q8.	D
Q9.	C
Q10.	A
Q11.	A
Q12.	D
Q13.	D
Q14.	D
Q15.	A
Q16.	B
Q17.	C
Q18.	B
Q19.	A
Q20.	C