Started on	Tuesday, 24 November 2020, 12:50 PM
State	Finished
Completed on	Tuesday, 24 November 2020, 2:25 PM
Time taken	1 hour 34 mins
Marks	51.0/60.0
Grade	**8.5** out of 10.0 (**85**%)

Question **1**

Complete

Mark 1.0 out of 1.0

[814] What is the value of following expression: 3 2 * 2 ^ 5 3 - 8 4 / * -

Select one:

- 30
- 36
- 34
- 32

The correct answer is: 32

Question **2**

Complete

Mark 1.0 out of 1.0

[7049] Determine whether a graph with the degree sequence 4, 3, 2, 2, 2, 1 has a Hamilton path, a Hamilton circuit.

Select one:

- Hamilton path: no, Hamilton circuit: yes
- Hamilton path: no, Hamilton circuit: no
- Hamilton path: yes, Hamilton circuit: no
- Hamilton path: yes, Hamilton circuit: yes

The correct answer is: Hamilton path: yes, Hamilton circuit: no

Question **3**
Complete
Mark 1.0 out of 1.0

[848] Given the following prefix codes:M: 00, N: 010, T: 011, I: 100, U: 101, A: 11.Find the word represented by 0010001001111

Select one:
- MINTA
- None of the others
- MINUA
- MITNA
- MIUNA

The correct answer is: MINTA

Question **4**
Complete
Mark 1.0 out of 1.0

[7018] Let ~G be complement graph of simple graph G. If G has v vertices and e edges, how many edges does ~G have?

Select one:
- v(v - 1) - e
- None of the others
- e(e - 1)/2 - v
- v(v - 1)/2 – e
- e(e - 1) – v

The correct answer is: v(v - 1)/2 – e

Question **5**
Complete
Mark 1.0 out of 1.0

[860] An n-vertex tree has _____ edges

Select one:
- n^2
- n + n
- n-1
- [n . (n+1)] / 2

The correct answer is: n-1

Question **6**

Complete

Mark 0.0 out of 1.0

[844] Use Huffman coding to encode these symbols with given frequencies: b: 0.1, c: 0.15, a: 0.2, d: 0.25, e: 0.3. What is the maximum number of bits required to encode a character?

Select one:

- 3
- 2
- 4
- 5

The correct answer is: 3

Question **7**

Complete

Mark 0.0 out of 1.0

[7072] Which degree sequence corresponds to a simple graph? (i) 5, 4, 3, 3, 2, 0 (ii) 6, 4, 4, 2, 2, 0

Select one:

- Both
- None
- (ii)
- (i)

The correct answer is: (ii)

Question **8**

Complete

Mark 1.0 out of 1.0

[857] What is the average number of bits required to encode the word “banana” using Huffman coding algorithm?

Select one:

- 6
- None of the others
- 5/3
- 2
- 5

The correct answer is: 5/3

Question **9**
Complete
Mark 1.0 out of 1.0

[7039] What is the length of the longest simple circuit in the graph K7?

Select one:
- None of the others
- 14
- 21
- 49
- 42

The correct answer is: 21

Question **10**
Complete
Mark 0.0 out of 1.0

[853] Represent the expressions (x + (x / y)) + 3 using binary tree, the height of the tree is ___

Select one:
- 1
- 3
- 4
- 2

The correct answer is: 3

Question **11**
Complete
Mark 1.0 out of 1.0

[872] What is the VALUE of each of the following POSTFIX expressions? 5 2 1 - - 3 1 4 + + *

Select one:
- 32
- 36
- 30
- 34

The correct answer is: 32

Question **12**

Complete

Mark 0.0 out of 1.0

[804] Set up a binary tree for the following list, in the given order, using alphabetical ordering: SHE, SELLS, SEA, SHELLS, BY, THE, SEASHORE. How many comparisons with words in the tree are needed to determine if the word SHARK is in the tree?

Select one:

- 2
- 3
- 5
- 4

The correct answer is: 2

Question **13**

Complete

Mark 0.0 out of 1.0

[7116] Determine whether the graph has a Hamilton circuit.

1. Kn - complete graph on n vertices, for n >=1
2. Wn - A wheel graph on n vertices, for n ≥ 3.
3. A cycle graph on n vertices, for n ≥ 3.
4. A graph has at least a vertex of degree 1.

Select one:

- None of them
- 1. and 2.
- All of them, except for 4.
- 2. and 3.
- All of them
- 1. and 3.

The correct answer is: All of them, except for 4.

Question **14**
Complete
Mark 1.0 out of 1.0

[7057] Which of the following graphs does not have a Hamilton circuit?

Select one:

- Km,n, 0
- Kn, n>3
- Cn, n>2
- None of the others

The correct answer is: None of the others

Question **15**
Complete
Mark 1.0 out of 1.0

[822] Construct a binary search tree for the words: TO, COST, AN, ARM, AND, A, LEG. How many comparisons are used to locate the word "ARM"?

Select one:

- 2
- 3
- 1
- 5
- 4

The correct answer is: 3

Question **16**
Complete
Mark 1.0 out of 1.0

[802] Which codes are prefix codes?(i) a: 1010, b: 010, c: 1100, d: 100(ii) a: 10, b: 010, c: 1110, d: 1001

Select one:

- None
- (ii)
- Both
- (i)

The correct answer is: (i)

Question **17**
Complete
Mark 1.0 out of 1.0

[7024] Study the statements: (i) K2,3 has no an Euler circuit, but has an Euler path. (ii) K2,3 has an Euler circuit.Which statement is true?

Select one:
- (ii)
- Both
- None
- (i)

The correct answer is: (i)

Question **18**
Complete
Mark 1.0 out of 1.0

[856] _____ is a listing of the nodes of an ordered rooted tree defined recursively, as follow: (1) the first subtree is listed, (2) followed by the root, and (3) followed by the other subtrees in the order they occur from left to right.

Select one:
- postorder traversal
- inorder traversal
- levelorder traversal
- preorder traversal

The correct answer is: inorder traversal

Question **19**
Complete
Mark 1.0 out of 1.0

[811] What is the value of following postfix expression: 3 4 * 5 3 - + 2 2 ^ *

Select one:
- 9
- 56
- 37
- 12

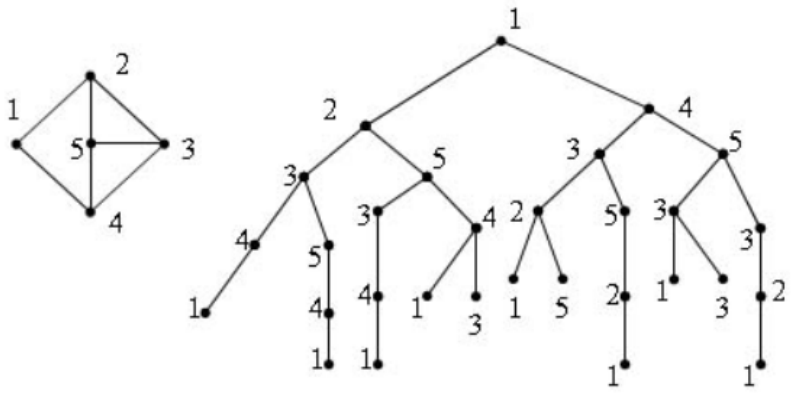
The correct answer is: 56

Question **20**

Complete

Mark 0.0 out of 1.0

[7109] Given the figure, shown below. The left part is called graph G. Then, the right part is the tree of enumerating all _____ cycles.



Select one:

- None of the others.
- Simple.
- Hamilton.
- Euler.

The correct answer is: Hamilton.

Question **21**

Complete

Mark 0.0 out of 1.0

[7017] The length of an Euler circuit in K10 is:

Select one:

- 45
- 55
- 22
- The graph has no an Euler circuit.

The correct answer is: 45

Question **22**

Complete

Mark 1.0 out of 1.0

[7084] What is a bipartite graph?

Select one:

- a graph which has odd number of vertices and even number of edges
- a graph which consists of more than 3 number of vertices
- a graph which contains no cycles of odd length
- a graph which contains only one cycle

The correct answer is: a graph which contains no cycles of odd length

Question **23**

Complete

Mark 1.0 out of 1.0

[846] Construct a binary search tree for the sequence: 7, 3, 9, 2, 8, 6, 5, 11What is the order after applying post-order traversal to this tree?

Select one:

- None of the others
- 2, 5, 6, 3, 8, 11, 9, 7
- 5, 2, 6, 3, 8, 8, 11, 7
- 7, 3, 2, 6, 9, 8, 11
- 2, 3, 5, 6, 7, 8, 9, 11

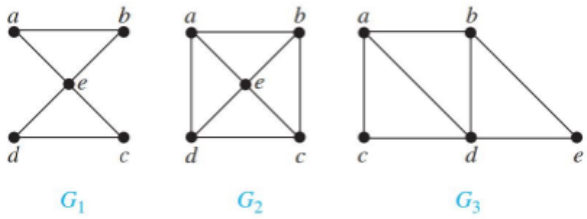
The correct answer is: 2, 5, 6, 3, 8, 11, 9, 7

Question **24**

Complete

Mark 1.0 out of 1.0

[7113] Which of the directed graphs in the Figure have an Euler circuit? Of those that do not, which have an Euler path?



Select one:

- The graph G1 has an Euler circuit.
- G2 does not have an Euler cicuit but it has an Euler path
- G2 has an Euler circuit
- G3 has an Euler path

The correct answer is: The graph G1 has an Euler circuit.

Question **25**

Complete

Mark 1.0 out of 1.0

[7016] The graph K3,7 has ____ edges and ____ vertices.

Select one:

- 10, 21
- 21, 10
- 10, 10
- 21, 21

The correct answer is: 21, 10

Question **26**

Complete

Mark 1.0 out of 1.0

[842] A full 4-ary tree with 10 internal nodes contains .... nodes.

Select one:

- 40
- 44
- Another value
- 51
- 41

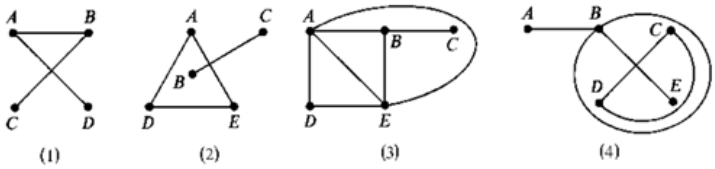
The correct answer is: 41

Question **27**

Complete

Mark 0.0 out of 1.0

[7105] Which are simple graphs ?



Select one:

- (1), (2) and (3)
- (1) and (2)
- All of them
- Only (1)

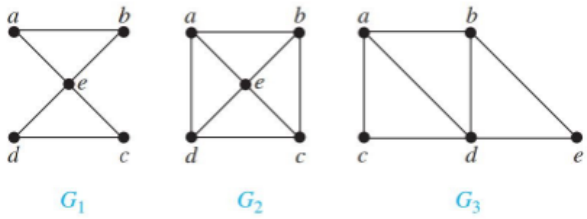
The correct answer is: (1) and (2)

Question **28**

Complete

Mark 1.0 out of 1.0

[7114] Which of the directed graphs in the Figure have an Euler circuit? Of those that do not, which have an Euler path?



Select one:

- G3 has an Euler path
- G2 does not have an Euler cicuit but it has an Euler path
- G3 does not have an Euler cicuit but it has an Euler path
- G2 has an Euler circuit

The correct answer is: G3 does not have an Euler cicuit but it has an Euler path

Question **29**

Complete

Mark 1.0 out of 1.0

[7045] How many 1-entries are there in the adjacency matrix of the complete graph K10 ?

Select one:

- 45
- 90
- None of the others
- 100
- 10

The correct answer is: 90

Question **30**

Complete

Mark 1.0 out of 1.0

[843] Given the coding scheme a: 001, b: 0001, e: 1, r: 0000, s: 0100, t: 011, x: 01010. Find the word represented by 00010010000010011011

Select one:

- barseet
- barsex
- bersart
- None of the others.

The correct answer is: barseet

Question **31**

Complete

Mark 1.0 out of 1.0

[820] Study the following prefix expression: + - * 2 3 5 / * 2 4 4It will be evaluated to _____

Select one:

- 5
- 4
- None of the others
- 3
- 7

The correct answer is: 3

Question **32**

Complete

Mark 1.0 out of 1.0

[847] Which of the following codes is not prefix code?

Select one:

- a: 00, e: 01, t: 10, k: 110, u: 1110, h: 1111
- a: 00, e: 010, t: 011, k: 100, u: 101, h: 11
- a: 1, e: 0, t: 10, k: 11, u: 101, h: 110
- None of the others.

The correct answer is: a: 1, e: 0, t: 10, k: 11, u: 101, h: 110

Question **33**
Complete
Mark 1.0 out of 1.0

[850] Write the postfix expression of the infix expression((x + 8) * (y – 7)) + 2.

Select one:
- x 8 y 7 2 + - * +
- x 8 + y 7 - * 2 +
- x 8 y 7 + - * 2 +
- None of the others

The correct answer is: x 8 + y 7 - * 2 +

Question **34**
Complete
Mark 1.0 out of 1.0

[841] A full ternary (3-ary) tree with 73 nodes has ____ internal nodes.

Select one:
- 19
- 24
- 2
- 20

The correct answer is: 24

Question **35**
Complete
Mark 1.0 out of 1.0

[7068] Study the statements: (1) K9 has an Euler circuit. (2) K2,7 has an Euler circuit.Then, (1) is ___ and (2) is ___.

Select one:
- true, true
- false, false
- false, true
- true, false

The correct answer is: true, false

Question **36**
Complete
Mark 1.0 out of 1.0

[815] The post-fix expresion 5 3 – 6 4 - * 8 2 / + will be evaluated to _____

Select one:
- 4
- 8
- 10
- 9
- 2

The correct answer is: 8

Question **37**
Complete
Mark 1.0 out of 1.0

[868] Use HUFFMAN coding to encode the following symbols with the frequencies listed: A: 0.08, B: 0.10, C: 0.12, D: 0.15, E: 0.20, F: 0.35. The encoding produced encodes

Select one:
- None of the others
- A by 00, B by 10, C by 010, D by 011, E by 110, and F by 111
- A by 111, B by 110, C by 011, D by 010, E by 10, and F by 00
- A by 111, B by 110, C by 010, D by 011, E by 10, and F by 00

The correct answer is: A by 111, B by 110, C by 011, D by 010, E by 10, and F by 00

Question **38**
Complete
Mark 1.0 out of 1.0

[7102] A _____ in a graph G is a simple circuit which consists of every vertex of G exactly once.

Select one:
- Hamilton cycle
- Hamiltonian path
- Euler cycle
- Euler path

The correct answer is: Hamilton cycle

Question **39**

Complete

Mark 1.0 out of 1.0

[7060] Which of the following graphs is bipartite?

Select one:

- C5
- W4
- C6
- K5

The correct answer is: C6

Question **40**

Complete

Mark 1.0 out of 1.0

[803] Set up a binary search tree for the following list 5, 3, 6, 2, 4, 7. Write the preorder traversal of the tree.

Select one:

- 5, 2, 3, 4, 6, 7
- 2, 4, 3, 7, 6, 5
- None of the others
- 2, 3, 4, 5, 6, 7
- 5, 3, 2, 4, 6, 7

The correct answer is: 5, 3, 2, 4, 6, 7

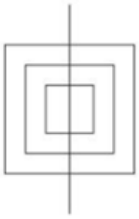
Question **41**

Complete

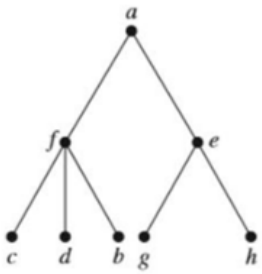
Mark 1.0 out of 1.0

[7117] Can we draw the bellow picture with a pencil in a continuous motion without lifting the pencil or retracing part of the picture?

(Graph 1)



(Graph 2)



Select one:

- All
- None
- Graph 1
- Graph 2

The correct answer is: Graph 1

Question **42**

Complete

Mark 1.0 out of 1.0

[831] Write the expression (x + y)*(x - y) in postfix notation.

Select one:

- x y + x y - *
- + x y - x y *
- None of the others
- * + x y - x y
- x y - x y + *

The correct answer is: x y + x y - *

Question **43**

Complete

Mark 1.0 out of 1.0

[866] What is the VALUE of each of the following POSTFIX expressions? 9 3 / 5 + 7 2 - *

Select one:

- 10
- 20
- 30
- 40

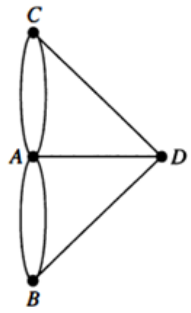
The correct answer is: 40

Question **44**

Complete

Mark 0.0 out of 1.0

[7025] Which statement about the graph below is true? (i) The graph has an Euler circuit. (ii) The graph has an Euler path.



Select one:

- (ii)
- None
- (i)
- Both

The correct answer is: Both

Question **45**
Complete
Mark 1.0 out of 1.0

[870] Set up a binary search tree for the following list 5.5, 3.3, 6.6, 2.2, 4.4, 7.7. Write the PRE-ORDER traversal of the tree.

Select one:
- 2.2, 3.3, 4.4, 5.5, 6.6, 7.7
- None of the others
- 5.5, 3.3, 2.2, 4.4, 6.6, 7.7
- 2.2, 4.4, 3.3, 7.7, 6.6, 5.5

The correct answer is: 5.5, 3.3, 2.2, 4.4, 6.6, 7.7

Question **46**
Complete
Mark 1.0 out of 1.0

[818] Given the coding scheme: A: 00, B: 010, C: 1010, E: 111, D: 1101, find the word represented by 0011011111010

Select one:
- BDCE
- ABDC
- ACED
- None of the others
- ADEC

The correct answer is: ADEC

Question **47**
Complete
Mark 1.0 out of 1.0

[7031] Which graphs have a Hamilton circuit? (i) W8 (ii) Q3

Select one:
- (i)
- (ii)
- Neither (i) nor (ii)
- Both

The correct answer is: Both

Question **48**
Complete
Mark 1.0 out of 1.0

[7026] The complete graph with four vertices has k edges where k is __

Select one:
- 4
- 6
- 5
- 12

The correct answer is: 6

Question **49**
Complete
Mark 1.0 out of 1.0

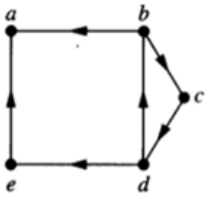
[7081] A _____ in a graph G is a simple vertex which consists of every vertex (except first/last vertex) of G exactly once

Select one:
- Euler path
- Euler circuit
- Hamiltonian path
- Hamiltonian circuit

The correct answer is: Hamiltonian path

Question **50**
Complete
Mark 1.0 out of 1.0

[7092] The following directed graph H is .....



Select one:
- Both of them
- Weakly connected
- Strongly connected
- None of them

The correct answer is: Weakly connected

Question **51**

Complete

Mark 1.0 out of 1.0

[7044] Which of these graphs have an Euler circuit? (i) K6(ii) K7

Select one:

- (ii)
- (i)
- Neither (i) nor (ii)
- Both

The correct answer is: (ii)

Question **52**

Complete

Mark 1.0 out of 1.0

[7050] Every Euler circuit of K5 has length ____

Select one:

- 5
- 20
- 10
- 8

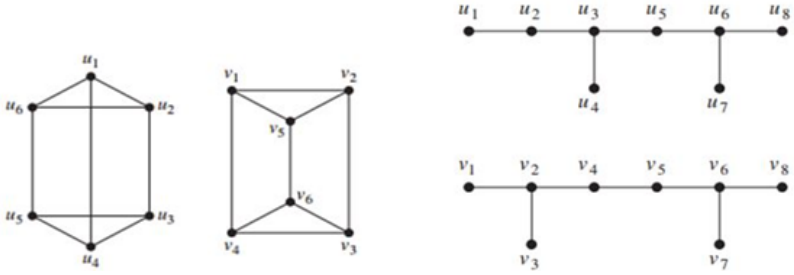
The correct answer is: 10

Question **53**

Complete

Mark 1.0 out of 1.0

[7091] Determine whether the given pair(s) of graphs is (are) ISOMORPHIC.



Select one:

- The right pair
- Both of them
- None of them
- The left pair

The correct answer is: The left pair

Question **54**

Complete

Mark 1.0 out of 1.0

[7119] Determine whether each of the propositions is true or false.(i) The adjacency matrix for K5,6 (Kuratowski graph) has 30 columns.(ii) There are 90 1-entries in the adjacency matrix for K10 (complete graph)(iii) The incidence matrix of wheel Wn has n rows.(iv) There are $(2 \cdot n)$ vertices in n-cube Qn.

Select one:

- (ii) and (iii)
- None
- All
- (ii) and (i)
- (ii) and (iv)

The correct answer is: (ii) and (iv)

Question **55**

Complete

Mark 1.0 out of 1.0

[871] Find the PREFIX form of the expression (3*x + y)/(x – y)

Select one:

- None of the others
- 3 * x y + - x y /
- 3 x * y + x y - /
- / + * 3 x y - x y

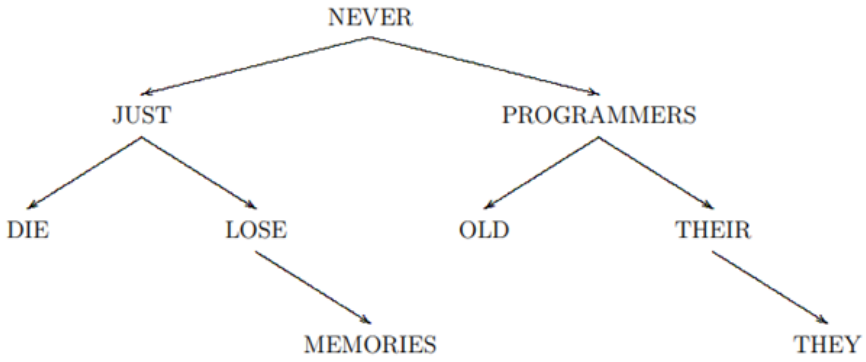
The correct answer is: / + * 3 x y - x y

Question **56**

Complete

Mark 1.0 out of 1.0

[867] Which is the ARRAY of strings that can be used to BUILD the following binary search tree?



Select one:

- "DIE JUST LOSE MEMORIES NEVER PROGRAMMERS OLD THEIR THEY"
- None of the others
- "OLD PROGRAMMERS THEY NEVER DIE JUST LOSE THEIR MEMORIES"
- "OLD PROGRAMMERS NEVER DIE THEY JUST LOSE THEIR MEMORIES"
- "NEVER JUST DIE PROGRAMMERS THEIR THEY LOSE OLD MEMORIES"

The correct answer is: "NEVER JUST DIE PROGRAMMERS THEIR THEY LOSE OLD MEMORIES"

Question **57**
Complete
Mark 1.0 out of 1.0

[827] How many leaves does a full 5-ary tree with 101 nodes have?

Select one:
- None of the others
- 100
- 505
- 20
- 81

The correct answer is: 81

Question **58**
Complete
Mark 1.0 out of 1.0

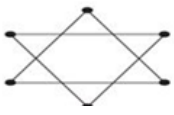
[7101] In a 6-node undirected complete graph, we need an algorithm of the complexity _____ to find all its Hamiltonian cycles.

Select one:
- O(n^2)
- O(n!)
- O(n^n)
- None of the others

The correct answer is: O(n!)

Question **59**
Complete
Mark 1.0 out of 1.0

[7086] How many connected components does each of two following graphs have?



Select one:
- 3, 1
- 2, 2
- 3, 2
- 2, 1

The correct answer is: 3, 2

Question **60**

Complete

Mark 1.0 out of 1.0

[810] How many leaves does a full 3-ary tree with 100 nodes have?

Select one:

- 68
- 76
- 67
- 78

The correct answer is: 67