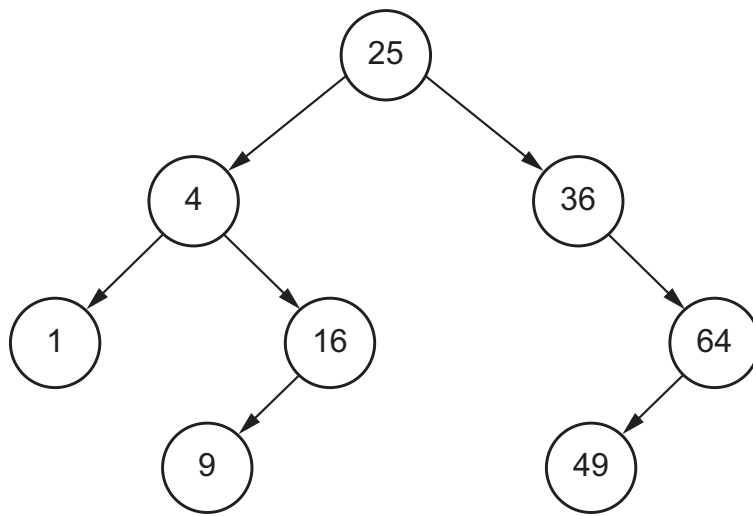


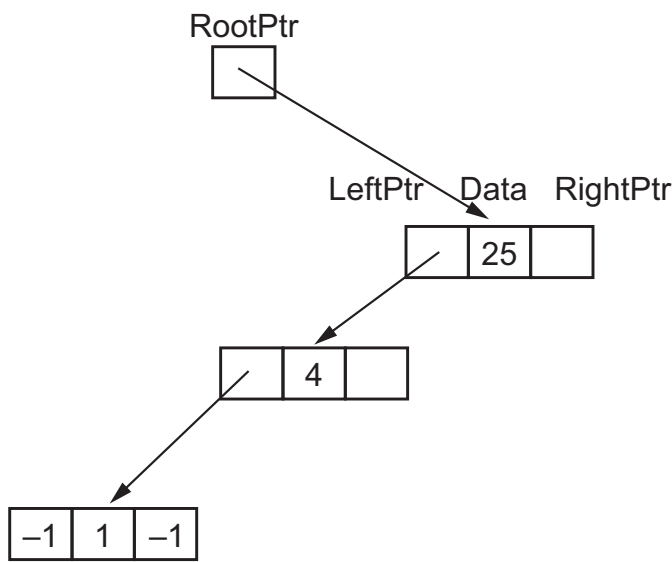
11 This binary tree shows an ordered list of integers.



(a) A linked list of nodes is used to store the data. Each node consists of a left pointer, the data and a right pointer.

-1 is used to represent a null pointer.

Complete this linked list to represent the given binary tree organisation.



[4]

(b) A 2D array is used to store the nodes of the linked list in part (a).

Complete the diagram using your answer for part (a).

RootPtr	Index	LeftPtr	Data	RightPtr
0	0		25	
	1		4	
	2		36	
	3		1	
	4		16	
	5		64	
	6		9	
	7		49	
	8			

FreePtr

[4]

(c) The linked list in part (a) is implemented using a 1D array of records. Each record contains a left pointer, data and a right pointer.

The following pseudocode represents a function that searches for an element in the array of records LinkList. It returns the index of the record if the element is found, or it returns a null pointer if the element is not found.

Complete the pseudocode for the function.

```

FUNCTION SearchList(Item : INTEGER) .....
  NullPtr ← -1

  ..... ← RootPtr
  WHILE NowPtr <> NullPtr
    IF LinkList[NowPtr].Data < Item THEN
      NowPtr ← LinkList[NowPtr].RightPtr
    ELSE
      IF ..... THEN
        NowPtr ← .....
      ELSE
        RETURN NowPtr
      ENDIF
    ENDIF
  ENDWHILE
  RETURN NullPtr
ENDFUNCTION
  
```

[4]