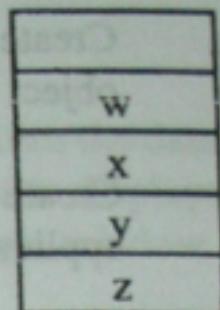
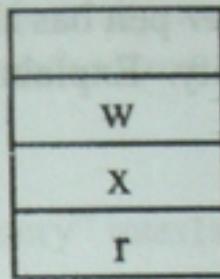
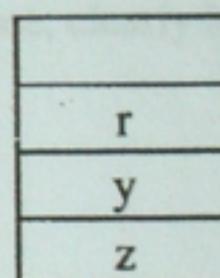
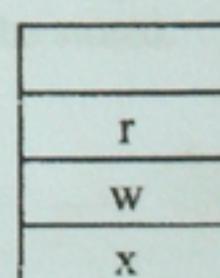
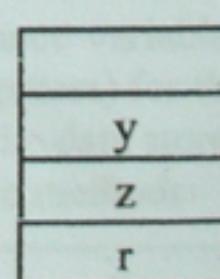


**COMPUTER SCIENCE
FOR CAPE
UNIT 2
PAPER 1 PAST PAPERS**

BATCH #1

COMPILED BY: ALEX STEWART

1. Which ADT is BEST described as a FIFO structure?
- (A) Queue
 (B) Stack
 (C) Linked list
 (D) Array
2. The queue ADT operation ENQUEUE(X)
- (A) adds the element X to the front of a queue
 (B) adds the element X to the rear of a queue
 (C) adds the element X to any free position in the queue
 (D) removes the element X from a queue
3. If the elements P, T, S, R and Q are added to a queue in that order and then removed one at a time, in what order will they be removed?
- (A) P,Q,R,S,T
 (B) Q,R,S,T,P
 (C) P,T,S,R,Q
 (D) Q,P,R,T,S
4. The Mount Hololo High School has one computer lab with 10 computers and one printer fully networked. What ADT would be BEST suited to handle the print jobs of the students?
- (A) Array
 (B) Stack
 (C) Queue
 (D) Linked list
5. A stack contains the elements w, x, y and z as shown below.
- 
- Which of the following would be the contents of the stack after 2 elements were removed, and element r was inserted?
- (A)
- 
- (B)
- 
- (C)
- 
- (D)
- 
6. Which of the following is true for BOTH a linear search and binary search?
- (A) On average they search half the list.
 (B) In the worst case scenario they search the entire list.
 (C) They can be used for searching an ordered list.
 (D) They require that the list be ordered.

7. Which of the following is a specification of a set of data and the set of operations that can be performed on the data?

- (A) Library
- (B) ADT
- (C) Package
- (D) Tracer

Item 8 refers to a segment of an algorithm for performing a linear search for *target* on an array *list* with size *n*.

```

count = 0
flag = false
REPEAT
    IF (list[count] = target) THEN
        I
    END IF
    II
UNTIL flag=true or III
IF flag = false THEN
    IV
END IF

```

8. Which sequence of the following steps would complete the procedure?

- (A) I – flag = true
II – add 1 to count
III – count = $n - 1$
IV – WRITE target not found
- (B) I – flag = true
II – add 1 to count
III – count = n
IV – WRITE target found
- (C) I – flag = true
II – add 1 to count
III – count = $n - 1$
IV – WRITE target found
- (D) I – flag = true
II – add 1 to count
III – count = n
IV – WRITE target not found

Items 9–10 refer to the following list.

frog, ant, dog, grasshopper, bee, fish, snake

9. Which of the following lists will NOT be obtained at any point while applying the selection sort algorithm?
- (A) Ant, frog, dog, grasshopper, bee, fish, snake
 - (B) Ant, bee, frog, dog, grasshopper, fish, snake
 - (C) Ant, bee, dog, fish, frog, grasshopper, snake
 - (D) Ant, bee, dog, grasshopper, frog, fish, snake

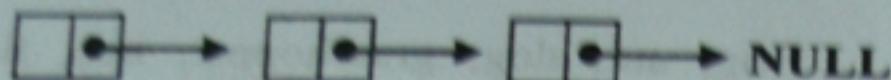
10. Assume that the list is sorted. When searching the sorted list, which of the following will be found MOST quickly using binary search?

- (A) Ant
- (B) Grasshopper
- (C) Fish
- (D) Dog

11. A queue is implemented using a one-dimensional array. Which of the following BEST describes the dequeue operation performed using the array?

- (A) Check that the queue is empty then return the first element in the array and shift the remaining elements up one place.
- (B) Return the first element in the array and shift the remaining elements up one place.
- (C) Check that the queue is not empty, then return the first element in the array and shift the remaining elements up one place.
- (D) Return the last element in the array.

Items 12–13 refer to the diagram below.



12. What is the Abstract Data type depicted above?

- (A) Stack
- (B) Queue
- (C) Enum
- (D) Linked list

13. Which of the following operations is associated with the ADT above?

- (A) Insert
- (B) Enqueue
- (C) Dequeue
- (D) Pop

Item 14 refers to the list below.

| | | | | | | |
|---|---|---|---|---|---|---|
| A | C | E | F | G | K | L |
|---|---|---|---|---|---|---|

14. The target value is I. A binary search is employed. How many comparisons are made before we can conclude that letter I does not appear in the list?

- (A) 2
- (B) 3
- (C) 4
- (D) 7

Item 15 refers to a segment of an incomplete algorithm for sorting an array list of size n using a bubble sort.

REPEAT

```

flag = false
FOR pos = 1 to n - 1 DO
  IF(list[pos] > list[pos+1]) THEN
    I
    II
    III
    IV
  END IF
END FOR
subtract 1 from n
UNTIL flag = false or n = 1
  
```

15. Which of the following sequences would complete the algorithm?

- (A) I – flag = true
II – list[pos] = list[pos+1]
III – temp = list[pos]
IV – list[pos+1] = temp

- (B) I – temp = list[pos]
II – list[pos] = list[pos+1]
III – list[pos+1] = temp
IV – flag = true

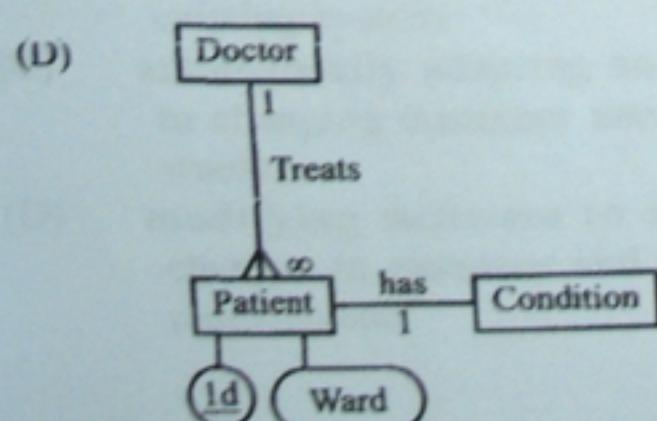
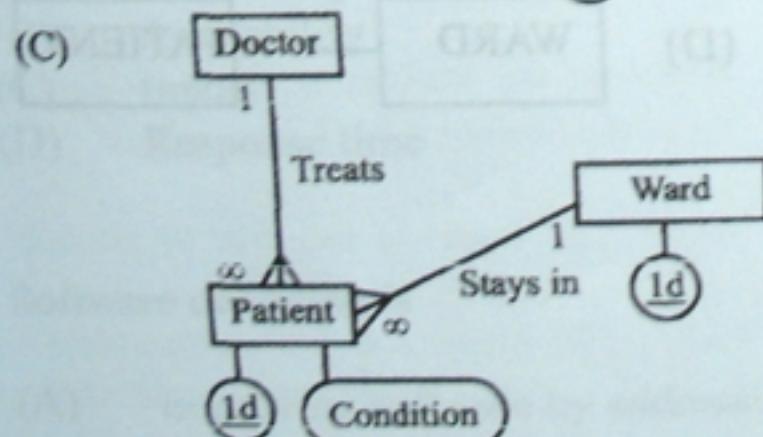
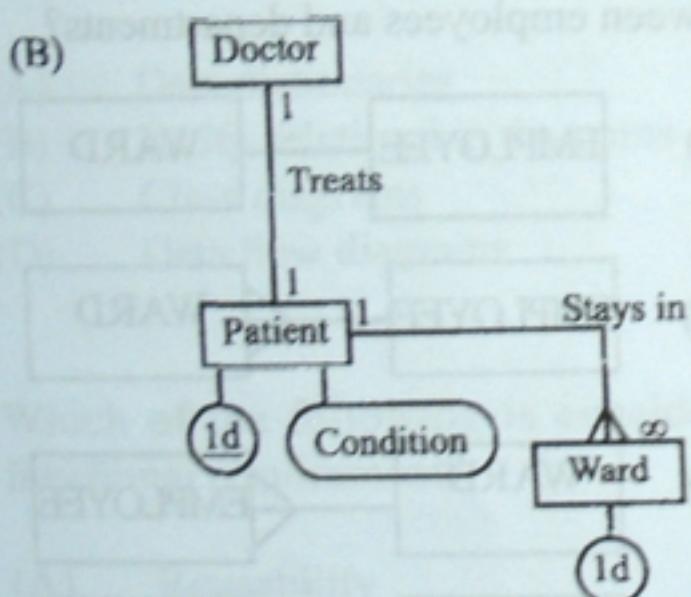
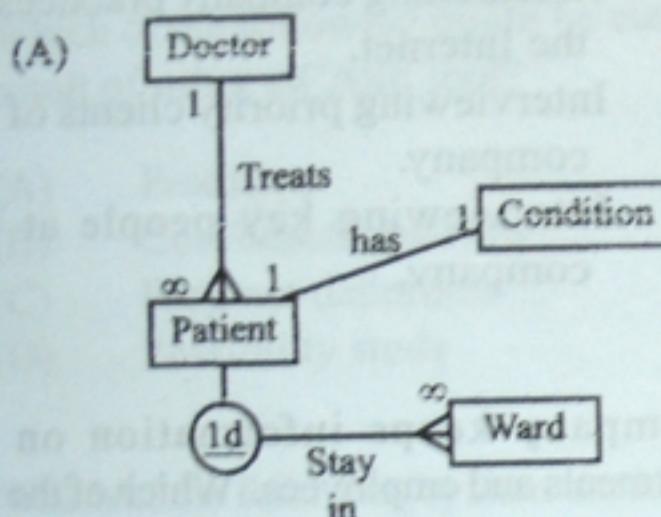
- (C) I – flag = true
II – temp = list[pos]
III – list[pos+1] = temp
IV – list[pos] = list[pos+1]

- (D) I – temp = list[pos]
II – list[pos+1] = temp
III – list[pos] = list[pos+1]
IV – flag = true

Item 16 refers to the following scenario.

A doctor is assigned to one or more patients who are assigned to a specific ward. Attributes of a patient include their patient id and information on their condition. The ward also has an id.

16. Which of the ER diagrams below BEST illustrates this information?



17. Which of the following is NOT an attribute of a well-engineered software product?

- (A) Creativity
- (B) Efficiency
- (C) Maintainability
- (D) Appropriate documentation

18. Which of the following design processes refers to the identification of subsystems and their relationships?

- (A) Architectural
- (B) Component
- (C) Data structure
- (D) Interface

19. One of the MAIN weaknesses of the waterfall model is that it

- (A) requires significant technical support
- (B) encourages increase in project size
- (C) is a highly inflexible development model
- (D) consumes a lot of time and resources

20. Which of the following are the essential features of well-engineered software?

- (A) Security, portability, efficiency, usability
- (B) Maintainability, dependability, efficiency, usability
- (C) Reusability, security, maintainability, portability
- (D) Reliability, user friendliness, efficiency, portability

21. Which of the following graphical tools is BEST suited to showing how a software development project and its subtasks should be completed within a specified timeframe?
- (A) Gantt chart
 (B) Decision tree
 (C) Dataflow diagram
 (D) System flowchart
22. When the individual modules of a software system were tested, no errors were discovered. However, when all the modules were merged together and tested, the system failed.
- Which of the following would MOST likely help in identifying the failure?
- (A) Acceptance testing
 (B) Integration testing
 (C) Testing individual modules
 (D) Testing using live data
23. Which of the following are examples of non-functional requirements?
- I. Platform constraints
 II. Response times
 III. Reliability
 IV. Fault tolerance
- (A) I and III only
 (B) II and III only
 (C) I, II and III only
 (D) I, II, III and IV
24. A small company with fewer than ten employees is interested in replacing its existing paper-based system with a software application. Which of the following is MOST appropriate for gathering information during analysis?
- (A) Distributing questionnaires to employees and clients of the company.
 (B) Researching company practices on the Internet.
 (C) Interviewing priority clients of the company.
 (D) Interviewing key people at the company.
25. A company keeps information on its departments and employees. Which of the ER diagrams below BEST shows the relationship between employees and departments?
- (A) An ER diagram showing two rectangular boxes labeled "EMPLOYEE" and "WARD". A straight line connects them, representing a 1:1 relationship.
- (B) An ER diagram showing two rectangular boxes labeled "EMPLOYEE" and "WARD". A line originates from the "EMPLOYEE" box and points to the "WARD" box, representing a 1:M relationship.
- (C) An ER diagram showing two rectangular boxes labeled "WARD" and "EMPLOYEE". A line originates from the "WARD" box and points to the "EMPLOYEE" box, forming a diamond shape, representing a M:M relationship.
- (D) An ER diagram showing three rectangular boxes labeled "WARD", "PATIENT", and "EMPLOYEE". A line originates from the "WARD" box and points to the "PATIENT" box, representing a 1:M relationship.

26. The software process model defined by its approach of refining an initial system based on user input is the

- (A) waterfall approach
- (B) evolutionary development
- (C) formal transformation
- (D) reuse - oriented approach

27. Which of the following might be output as a result of using a CASE tool?

- (A) Prototype
- (B) Cost/benefit analysis
- (C) Program definition
- (D) Feasibility study

28. Which of the following system models depict data transformation as data is processed?

- (A) Data dictionaries
- (B) Entity-relationship diagrams
- (C) Class diagrams
- (D) Data flow diagrams

29. Which of the following is considered a functional requirement?

- (A) Reusability
- (B) Availability
- (C) Inputs
- (D) Response time

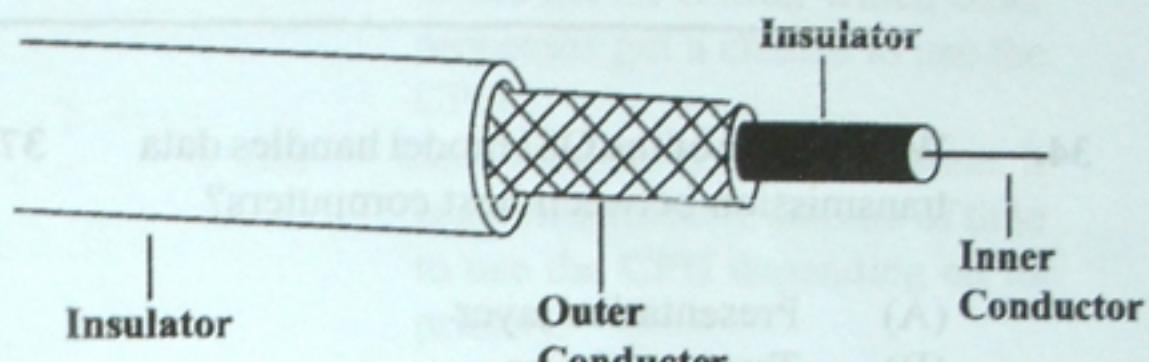
30. Software evolution is

- (A) improving software by addressing bugs
- (B) developing new software from an existing system
- (C) automatically adapting software to changing customer needs and wants
- (D) modifying software to satisfy changes in customer and market requirements

31. If a node fails in a ring network, what other stations are affected?

- (A) All other stations
- (B) No other computer
- (C) Only the computer directly attached to the failed computer
- (D) No other station

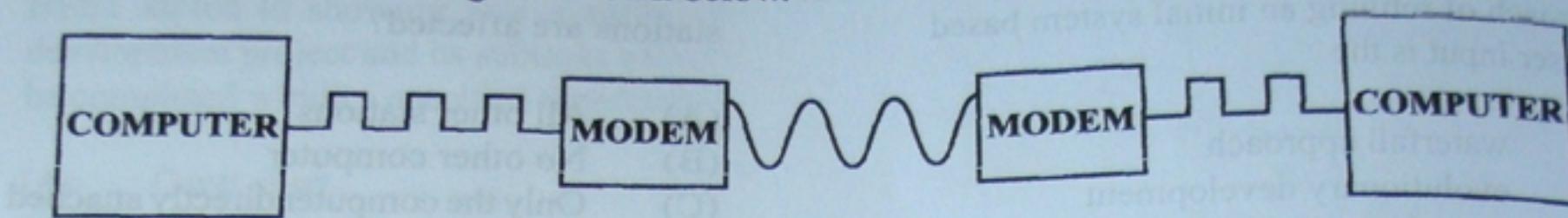
Item 32 refers to the cable shown in the diagram below.



32. What type of cable is shown in the diagram?

- (A) Coaxial
- (B) Fibre optic
- (C) Firewire
- (D) Shielded twisted pair

Item 33 refers to the diagram shown below.



33. The diagram BEST illustrates
- (A) addressing
 - (B) modulation and demodulation
 - (C) multiplexing and expandibility
 - (D) routing
-
34. Which layer of the OSI model handles data transmission between host computers?
- (A) Presentation layer
 - (B) Transport layer
 - (C) Network layer
 - (D) Application layer
35. Which of the following is NOT a method of securing files being transmitted on a network?
- (A) Compression
 - (B) Encryption
 - (C) Firewalls
 - (D) Passwords
36. Which of the following BEST describes 'paging'?
- (A) The division of documents into smaller chunks.
 - (B) The assignment of chunks of a program called frame chunks of main memory called pages.
 - (C) The assignment of chunks of a program called frames to different secondary storage media.
 - (D) The assignment of chunks of a program called pages to chunks of memory called frames.
37. What are the layers of the OSI model in order from the LOWEST to the HIGHEST?
- (A) Physical, datalink, network, transport, presentation, session, application
 - (B) Physical, transport, datalink, network, presentation, session, application
 - (C) Physical, datalink, network, transport, session, presentation, application
 - (D) Physical, datalink, session, network, presentation, transport, application
38. Which of the following is the BEST reason for compressing a file?
- (A) To encrypt the file to protect its contents
 - (B) To make the file compatible with other applications and hardware
 - (C) To increase transmission time over a network
 - (D) To occupy less space on storage media

39. Which of the following BEST describes an absolute file path?
- (A) It includes a reference to a storage device.
 - (B) It refers ONLY to files which reside in the root directory of the root drive.
 - (C) It explicitly identifies all the elements to locate the file, excluding the disk name.
 - (D) It explicitly identifies all the elements to locate the file, including the disk name.
40. Which protocol is used by web pages to transmit information?
- (A) HTTP
 - (B) HTML
 - (C) FTP
 - (D) TCP/IP
41. Which IEEE standard can be employed when setting up a wireless LAN for wireless devices needing transfer rates GREATER than 20 mbps?
- I. 802.11 a
 - II. 802.11 b
 - III. 802.11 g
- (A) I only
 - (B) II only
 - (C) I and II only
 - (D) I and III only
42. Which of the following is true about a process being scheduled with a non-preemptive algorithm?
- (A) It is placed at the top of the ready queue if it has a higher priority than all the processes already in the queue.
 - (B) Once it enters the running state, it is allowed to run to completion or until it yields the processor.
 - (C) Once it enters the running state, it is given a fixed amount of time to use the CPU after which other processes get a chance to use the CPU.
 - (D) Once it enters the running state, it is given a variable amount of time to use the CPU depending on its priority.
43. A client suspects suspicious activity on his network which contains computers that frequently access the Internet. Which of the following should he implement?
- (A) Firewall
 - (B) Firewire
 - (C) Activity logs
 - (D) Passwords
44. Which of the following determines the amount of time a running process gets to use the CPU when a round-robin scheduling algorithm is used?
- (A) The order of arrival of the process on the ready queue.
 - (B) The priority of the process.
 - (C) The estimated running time of the process.
 - (D) The time is fixed by the operating system.

45. A running process initiates an input request to get data from the keyboard. Which of the following state transitions will take place when the data is made available?

- (A) Ready to running
- (B) Running to ready
- (C) Blocked to ready
- (D) Blocked to running

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.