

MIZORAM PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATIONS FOR JUNIOR GRADE OF M.E.S.
UNDER POWER & ELECTRICITY DEPARTMENT, AUGUST, 2018.

COMPUTER SCIENCE & ENGINEERING
PAPER - II

Time Allowed : 3 hours

FM : 200

SECTION - A (Multiple Choice questions)

(100 Marks)

All questions carry equal mark of 2 each. Attempt all questions.

*This Section should be answered only on the **OMR Response Sheet** provided.*

1. What is operating system?
 - (a) collection of programs that manages hardware resources
 - (b) system service provider to the application programs
 - (c) link to interface the hardware and application programs
 - (d) all of these
2. Which one of the following is not true?
 - (a) kernel is the program that constitutes the central core of the operating system
 - (b) kernel is the first part of operating system to load into memory during booting
 - (c) kernel is made of various modules which can not be loaded in running operating system
 - (d) kernel remains in the memory during the entire computer session
3. By operating system, the resource management can be done via
 - (a) time division multiplexing
 - (b) space division multiplexing
 - (c) both time and space division multiplexing
 - (d) none of these
4. When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called
 - (a) dynamic condition
 - (b) race condition
 - (c) essential condition
 - (d) critical condition
5. Inter process communication :
 - (a) allows processes to communicate and synchronize their actions when using the same address space
 - (b) allows processes to communicate and synchronize their actions without using the same address space
 - (c) allows the processes to only synchronize their actions without communication
 - (d) none of these
6. The link between two processes P and Q to send and receive messages is called :
 - (a) communication link
 - (b) message-passing link
 - (c) synchronization link
 - (d) all of these

7. The state of a process is defined by:
 - (a) the final activity of the process
 - (b) the activity just executed by the process
 - (c) the activity to next be executed by the process
 - (d) the current activity of the process
8. Which of the following do not belong to queues for processes ?
 - (a) Job Queue
 - (b) PCB queue
 - (c) Device Queue
 - (d) Ready Queue
9. The only state transition that is initiated by the user process itself is :
 - (a) block
 - (b) wakeup
 - (c) dispatch
 - (d) none of these
10. The interval from the time of submission of a process to the time of completion is termed as
 - (a) waiting time
 - (b) turnaround time
 - (c) response time
 - (d) throughput
11. Semaphores are mostly used to implement:
 - (a) System calls
 - (b) IPC mechanisms
 - (c) System protection
 - (d) None of these
12. Which scheduling algorithm allocates the CPU first to the process that requests the CPU first?
 - (a) first-come, first-served scheduling
 - (b) shortest job scheduling
 - (c) priority scheduling
 - (d) none of these
13. Scheduling is done so as to:
 - (a) increase CPU utilization
 - (b) decrease CPU utilization
 - (c) keep the CPU more idle
 - (d) None of these
14. The two kinds of semaphores are:
 - (a) mutex & counting
 - (b) binary & counting
 - (c) counting & decimal
 - (d) decimal & binary
15. Multithreaded programs are :
 - (a) lesser prone to deadlocks
 - (b) more prone to deadlocks
 - (c) not at all prone to deadlocks
 - (d) none of these
16. A system is in a safe state only if there exists a :
 - (a) safe allocation
 - (b) safe resource
 - (c) safe sequence
 - (d) all of these
17. Semaphore is a/an _____ to solve the critical section problem.
 - (a) hardware for a system
 - (b) special program for a system
 - (c) integer variable
 - (d) none of these
18. The disadvantage of a process being allocated all its resources before beginning its execution is :
 - (a) Low CPU utilization
 - (b) Low resource utilization
 - (c) Very high resource utilization
 - (d) None of these
19. Physical memory is broken into fixed-sized blocks called
 - (a) frames
 - (b) pages
 - (c) backing store
 - (d) none of these

20. Paging increases the _____ time.
- (a) waiting
 - (b) execution
 - (c) context – switch
 - (d) all of these
21. Each entry in a segment table has a :
- (a) segment base
 - (b) segment peak
 - (c) segment value
 - (d) none of these
22. What does your class can hold?
- (a) data
 - (b) functions
 - (c) both data & functions
 - (d) none of these
23. Which other keywords are also used to declare the class other than class?
- (a) struct
 - (b) union
 - (c) object
 - (d) both struct & union
24. Constructors are used to
- (a) initalize the objects
 - (b) construct the data members
 - (c) both initalize the objects & construct the data members
 - (d) none of these
25. Pick out the correct statement.
- (a) A derived class's constructor cannot explicitly invokes its base class's constructor
 - (b) A derived class's destructor cannot invoke its base class's destructor
 - (c) A derived class's destructor can invoke its base class's destructor
 - (d) None of these
26. Which of the following operators can't be overloaded?
- (a) ::
 - (b) +
 - (c) –
 - (d) []
27. Operator overloading is
- (a) making c++ operator works with objects
 - (b) giving new meaning to existing operator
 - (c) making new operator
 - (d) adding operation to the existing operators
28. Which rule will not affect the friend function?
- (a) private and protected members of a class cannot be accessed from outside
 - (b) private and protected member can be accessed anywhere
 - (c) protected member can be accessed anywhere
 - (d) none of these
29. What are the essential operators in c++?
- (a) +
 - (b) |
 - (c) <=
 - (d) All of these
30. What is the name of | operator?
- (a) sizeof
 - (b) or
 - (c) and
 - (d) modulus

31. Which of the these is the functionality of 'Encapsulation'?
- (a) Binds together code and data
 - (b) Using single interface for general class of actions.
 - (c) Reduce Complexity
 - (d) All of these
32. Which of the following is a mechanism by which object acquires the properties of another object?
- (a) Encapsulation
 - (b) Abstraction
 - (c) Inheritance
 - (d) Polymorphism
33. Which of the following concept is often expressed by the phrase, 'One interface, multiple methods'?
- (a) Abstraction
 - (b) Polymorphism
 - (c) Inheritance
 - (d) Encapsulation
34. Runtime polymorphism is achieved by
- (a) Friend function
 - (b) Virtual function
 - (c) Operator overloading
 - (d) Function overloading
35. At which point of time a variable comes into existence in memory is determined by its
- (a) Scope
 - (b) Storage class
 - (c) Data type
 - (d) All of these
36. Exception handling is targeted at
- (a) Run-time error
 - (b) Compile time error
 - (c) Logical error
 - (d) All of these
37. Member functions, when defined within the class specification
- (a) Are always inline
 - (b) Are not inline
 - (c) Are inline by default, unless they are too big or too complicated
 - (d) Are not inline by default
38. The members of a class by default are
- (a) Public
 - (b) Protected
 - (c) Private
 - (d) Mandatory to specify
39. In graphical system, the array of pixels in the picture are stored in
- (a) Memory
 - (b) Frame buffer
 - (c) Processor
 - (d) All of these
40. The devices which converts the electrical energy into light is called
- (a) Liquid-crystal displays
 - (b) Non-emitters
 - (c) Plasma panels
 - (d) Emitters
41. The process of digitizing a given picture definition into a set of pixel-intensity for storage in the frame buffer is called
- (a) Rasterization
 - (b) Encoding
 - (c) Scan conversion
 - (d) True color system
42. The Cartesian slope-intercept equation for a straight line is
- (a) $y = m.x + b$
 - (b) $y = b.x + m$
 - (c) $y = x.x + m$
 - (d) $y = b + m.m$

43. On raster system, lines are plotted with
- (a) Lines
 - (b) Dots
 - (c) Pixels
 - (d) None of these
44. If the boundary is specified in a single color, and if the algorithm proceeds pixel by pixel until the boundary color is encountered is called
- (a) Scan-line fill algorithm
 - (b) Boundary-fill algorithm
 - (c) Flood-fill algorithm
 - (d) Parallel curve algorithm
45. The algorithm which displays line-type attributes by plotting pixel spans is
- (a) Raster line algorithm
 - (b) Raster scan algorithm
 - (c) Random line algorithm
 - (d) Random scan algorithm
46. The color code "000" is for
- (a) White
 - (b) Black
 - (c) Blue
 - (d) Green
47. Which one is not a type of basic fill styles?
- (a) Hollow
 - (b) solid color
 - (c) Pattern
 - (d) Dark
48. A translation is applied to an object by
- (a) Repositioning it along with straight line path
 - (b) Repositioning it along with circular path
 - (c) Only b
 - (d) All of these
49. In 2D-translation, a point (x, y) can move to the new position (x', y') by using the equation
- (a) $x' = x + dx$ and $y' = y + dx$
 - (b) $x' = x + dx$ and $y' = y + dy$
 - (c) $X' = x + dy$ and $Y' = y + dx$
 - (d) $X' = x - dx$ and $y' = y - dy$
50. The objects transformed using the equation $P' = S * P$ should be
- (a) Scaled
 - (b) Repositioned
 - (c) Both a and b
 - (d) Neither a nor b

SECTION - B (Short answer type question)
(100 Marks)

All questions carry equal marks of 5 each.

*This Section should be answered only on the **Answer Sheet** provided.*

1. What is the Difference between a Job and a Process?
2. What are the differences between multiprocessing and multiprogramming?
3. Shown below is the workload for 5 jobs arriving at time zero in the order given below “

| Job | Burst Time |
|-----|------------|
| 1 | 10 |
| 2 | 29 |
| 3 | 3 |
| 4 | 7 |
| 4 | 12 |

Now find out which algorithm among FCFS, SJF And Round Robin with quantum 10, would give the minimum average time.

4. Explain one method for avoiding deadlock.
5. Describe priority scheduling algorithm.
6. Describe LRU page replacement algorithm.
7. Differentiate between Random Scan and Raster Scan displays.
8. Consider three different raster systems with resolutions of 640 x 480, 1280 x 1024 and 2560 x 2048. How much storage (in bytes) is required for each system if 24 bits per pixel are to be stored?
9. What is Transformation? What are general Transformations Techniques?
10. Describe flood fill algorithm.
11. What is Line Clipping? Explain Cohen Sutherland Method of Line Clipping
12. Write a function to generate first n prime numbers on which object is passed by reference.
13. Write a program to overload the + operator to concatenate strings.
14. Write a program to handle division by zero exception.
15. Consider the Work Queue: 23, 89, 132, 42, 187; there are 200 cylinders numbered from 0 - 199; and the disk-head starts at number 100. Compute the total time using SCAN algorithm going towards 0.
16. Write a program to convert polar to rectangular coordinates using object pass by value.
17. What are Bezier Curves and Surfaces?
18. Define files. And how are they organized in a system.
19. Describe multi-level inheritance.
20. Discuss the advantages and disadvantages of Round Robin Scheduling.