

**Nepal Engineering Council Registration Examination**  
**Model Question for Software Engineering (ASoE)**

**Section A (60\*1 = 60)**

1. Which of the following is an output device?
  - a) ROM
  - b) Joystick
  - c) Mouse
  - d) Printer
  
2. .... memory stores frequently accessed data and instructions, enabling faster processing.
  - a) Cache
  - b) RAM
  - c) ROM
  - d) SSD
  
3. Which of the following is an application software?
  - a) MS Windows 10
  - b) Ubuntu 20.04
  - c) MS Windows XP
  - d) MS Word
  
4. Which of the following represents largest computer network?
  - a) LAN
  - b) MAN
  - c) Internet
  - d) WAN
  
5. A protocol which defines how files are exchanged on the web is called as .....

  - a) FTP
  - b) SSH
  - c) DHCP
  - d) HTTP

  
6. Which of the following file type does not represent image?
  - a) .tif
  - b) .jpeg
  - c) .png
  - d) .gif
  
7. The process to gather the software requirements from client, analyze and document them is known as \_\_\_\_\_.
  - a) Feasibility Study
  - b) Requirement Gathering
  - c) Requirement Engineering

- d) System Requirements Specification
8. What is reference architecture?
    - a) It is a reference model mapped onto software components
    - b) It provided data flow with comments
    - c) It provides data flow with pieces
    - d) It is a reference model mapped onto software components & data flow with comments
  9. Which of the following testing is sometime called as Acceptance testing?
    - a) White-box testing
    - b) Grey box testing
    - c) Alpha testing
    - d) Beta testing
  10. What is the purpose of representing system behaviour in OOAD?
    - a) To document system architecture and components
    - b) To identify potential risks and challenges
    - c) To understand and model the dynamic aspects of the system
    - d) To create user interfaces and interactions
  11. In object-oriented design, what does visibility refer to?
    - a) The physical appearance of an object.
    - b) The accessibility of class members from other parts of the program.
    - c) The process of creating instances of classes.
    - d) The relationship between classes in a system.
  12. How are relationships between classes represented when mapping design to code?
    - a) Through inheritance and implementation of interfaces.
    - b) Through the use of composition and aggregation.
    - c) Through static method calls and global variables.
    - d) Through conditional statements and loops.
  13. .... only mentions what operations are to be performed but not how these operations will be implemented.
    - a) Function
    - b) Abstract Data Types
    - c) Class
    - d) Object
  14. While exception handling ..... block is used to enclose one or more statements that might throw an exception.
    - a) try
    - b) catch
    - c) throw
    - d) finally

15. A variable whose value is the address of another variable is called as .....
- a) keyword
  - b) constant
  - c) pointer
  - d) identifier
16. Which of the following represents function overloading?
- a) void add ( int a, int b), void add( double a, double b)
  - b) int add\_int ( int a, int b), float add\_float( float a, float b)
  - c) add ( int a, int b), add\_int ( int a, int b)
  - d) void add ( int a, int b), void add\_int ( int a, int b)
17. In C programming language, %u is used to indicate the format for .....
- a) short int
  - b) long int
  - c) int
  - d) unsigned int
18. The main benefit of the C++ Standard Template Library (STL) is that it provides a way to write generic, reusable code that can be applied to .....
- a) override functions
  - b) different data types.
  - c) same data type.
  - d) overloaded functions.
19. .... level is where the model becomes compatible and executable code
- a) Abstract level
  - b) Application level
  - c) Implementation level
  - d) All of the above
20. What is the hash function used in the division method?
- a)  $h(k) = k/m$
  - b)  $h(k) = k \bmod m$
  - c)  $h(k) = m/k$
  - d)  $h(k) = m \bmod k$
21. Redundancy is reduced in a database table by using the ----- form.
- a) Abnormal
  - b) Normal
  - c) Special
  - d) Exactly
22. It is advisable, to store the ----- before applying the actual transaction to the database.
- a) Data
  - b) Logs
  - c) Receive
  - d) Record

23. To enforce ..... two functions are provided enter-critical and exit-critical, where each function takes as an argument the name of the resource that is the subject of competition.
- a) Mutual Exclusion
  - b) Synchronization
  - c) Deadlock
  - d) Starvation
24. If you wanted to require that a user enter an Administrator password to perform administrative tasks, what type of user account should you create for the user?
- a) Administrator User account
  - b) Standard User account
  - c) Power User account
  - d) Authenticated User account
25. In 8086 microprocessors, there are ..... addressing modes.
- a) 11
  - b) 5
  - c) 8
  - d) 13
26. The main function of a ..... is to transfer data between memory and an auxiliary device directly, without involving the CPU.
- a) DMA controller
  - b) Asynchronous Transmission
  - c) Synchronous Transmission
  - d) Parallel Interface
27. There are ..... software interrupt types in 8086 microprocessors.
- a) 128
  - b) 256
  - c) 200
  - d) 512
28. The instruction which performs logical operation in 8086 microprocessors is .....
- a) XOR
  - b) AAD
  - c) JMP
  - d) CLC
29. As a part of memory management, pages are replaced which would not be used for the longest duration of time in the future with ..... algorithm.
- a) First in first out
  - b) Optimal page replacement
  - c) Least recently used
  - d) Most recently used

30. In ..... Mode, the entire data is transferred before CPU takes control of the buses back from direct memory access (DMA) controller.
- a) Cycle stealing mode
  - b) Burst mode
  - c) Interleaving mode.
  - d) Non-interleaving mode.
31. During asymptotic analysis, the big-O notation (O) is used to denote .....
- a) average case
  - b) best case
  - c) worst case
  - d) optimal case
32. Choose the sorting algorithm which is preferable in terms of average case time complexity .....
- a) Insertion
  - b) selection
  - c) bubble
  - d) quick
33. .... is an algorithmic approach which develops a solution piece by piece, always choosing the next piece that offers the most obvious and immediate benefit.
- a) Greedy approach
  - b) Searching approach
  - c) Divide and conquer approach
  - d) Backtracking approach
34. .... is a program residing in a ROM, which is automatically executed by the processor to read the hard drives boot sector and load the computer's operating system.
- a) Linker
  - b) Bootloader
  - c) Program linker
  - d) Macro processor
35. Macro processor replaces each macro instruction with the corresponding group of source language statements. This is known as .....
- a) macro linking
  - b) macro execution
  - c) macro call
  - d) macro expansion
36. During socket programming, ..... announces willingness to accept connections.
- a) accept
  - b) bind
  - c) socket
  - d) listen

37. In which type of environment, the next state of the environment is completely determined by the current state and the action taken by the agent?
- Observable environment
  - Deterministic environment
  - Episodic environment
  - Static environment
38. Which searching technique is guaranteed to find the optimal solution in a state space search problem, assuming no path costs?
- Depth-first search (DFS)
  - Breadth-first search (BFS)
  - Hill climbing
  - A\* search
39. What is the main goal of the resolution algorithm in inference?
- To derive new logical axioms
  - To simplify logical expressions
  - To prove the satisfiability or un-satisfiability of a given set of logical statements
  - To find contradictions in the knowledge base
40. What is the main goal of natural language understanding (NLU)?
- Translating text from one language to another
  - Generating human-like responses to user queries
  - Analyzing and interpreting the meaning of natural language text
  - Extracting entities and their relationships from a text
41. What is fuzzy learning in machine learning?
- A type of learning algorithm that uses fuzzy logic to handle uncertain or imprecise data
  - A learning technique that focuses on training neural networks with fuzzy inputs
  - A method that uses fuzzy inference to make predictions based on labelled data
  - A learning approach that emphasizes the use of fuzzy clustering algorithms
42. Which neural network architecture is commonly used for processing sequential data, such as time series or natural language?
- Feed-forward neural network (FNN)
  - Self-organizing map (SOM)
  - Radial basis function network (RBFN)
  - Recurrent neural network (RNN)
43. For a Java source file named "First.java", which of the following files represent bytecode
- First.java
  - First.class
  - First.exe
  - First.bin

44. For the button source object, its appropriate listener interface is .....
- a) ItemListener
  - b) MouseListener
  - c) ActionListener
  - d) WindowListener
45. Each time when a servlet is called, which method is called first?
- a) start()
  - b) init()
  - c) run()
  - d) service()
46. Main design aim of XML is to ..... and ..... data.
- a) store, style
  - b) design, transport
  - c) store, transport
  - d) design, style
47. Which of the following method does not fall into crude operation?
- a) create
  - b) delete
  - c) update
  - d) init
48. Which of the following is used to call stored procedure?
- a) Statement
  - b) PreparedStatement
  - c) CrudeStatement
  - d) CallableStatment
49. The ..... scheduling algorithm schedules periodic tasks using a static priority policy by considering the priorities.
- a) Round robin
  - b) Shortest job first
  - c) First come first serve
  - d) Rate monotonic
50. A real time operating system is characterized by .....
- a) all processes have the same priority.
  - b) all tasks must be serviced by its deadline period.
  - c) sometimes deadline may be missed when ensuring high level of accuracy.
  - d) Kernel is not required.
51. .... is characterized by services and applications, which run over a distributed network utilizing virtualized resources.
- a) Parallel computing
  - b) Distributed computing

- c) Client server computing
  - d) Cloud computing
52. .... acts as the 'glue' between the client and server applications, respectively, and that Object Request Broker (ORB).
- a) ORB interface
  - b) Dynamic invocation interface
  - c) Object adapter
  - d) CORBA IDL stubs and skeletons
53. Which of the following is a type of cloud computing service?
- a) Software-as-a-Service (SaaS)
  - b) Software-as-a-Server (SaaS)
  - c) Service-as-a-Server (SaaS)
  - d) Service-as-a-Software (SaaS)
54. If timestamps of two or more events are the same, then the events are called to be .....
- a) non-monotonic
  - b) monolithic
  - c) monotonic
  - d) concurrent
55. Standard dimensions (mm x mm) of A3 drawing sheet is
- a)  $11.69 \times 16.54$
  - b)  $29.7 \times 42$
  - c)  $297 \times 420$
  - d)  $420 \times 280$
56. Which of the following methods of charging depreciation of an asset has increased amount of depreciation as the age of asset increases
- a) sum-of-year digit
  - b) sinking fund
  - c) diminishing balance
  - d) straight line
57. The process of optimizing the project's limited resources without extending the project duration is known as
- a) project crashing
  - b) resource levelling
  - c) resource smoothing
  - d) networking
58. The process of composing/raising the required fund from different sources such as equity, preferred stock, bond and debenture is known as



- a) capital structure planning
  - b) project financing
  - c) capital budgeting decision
  - d) deducing earning per share
59. In which of the following society, people used to seek their existence on growing plants for their cattle and domestic animals
- a) pastoral society
  - b) tribal society
  - c) horticultural society
  - d) agricultural society
60. According to Nepal Engineering Council Act, 2055 (Revised, 2079), all engineering academic institutions shall be ..... in the Council.
- a) affiliated
  - b) united
  - c) recognized
  - d) associated

**Section-B (20\*2 = 40)**

61. Select the data which is given in nominal form.
- a) 4,8,12,16
  - b) 2.1,3.1,4.3,7.6
  - c) blue, gray,red, pink
  - d) first, last, second, fourth
62. The binary value for decimal number 120 is .....
- a) 1111000
  - b) 1100000
  - c) 0100000
  - d) 01FF
63. Which of the following statements best describes the role of a configuration management tool in software engineering?
- a) It helps a graphical user interface for designing software architectures.
  - b) It helps the process of generating code from high-level models or specifications.
  - c) It helps track, control, and manage changes to software artifacts throughout the development lifecycle.
  - d) It helps the testing and debugging software applications to ensure their correctness.
64. What is the correct order of phases in the Object-Oriented Development Cycle?
- a) Analysis, Design, Implementation, Testing, Maintenance
  - b) Design, Analysis, Implementation, Maintenance, Testing
  - c) Analysis, Design, Implementation, Maintenance, Testing
  - d) Design, Analysis, Testing, Implementation, Maintenance

65. Consider ptr as an integer pointer that stores 1000 as an address. After performing `ptr=ptr+5`, the resultant value in ptr will be .....
- 1000 + 5
  - 1000 + sizeof(int) + 5
  - 1000 + sizeof(int) \* 5
  - 1000 + 4 \* 5
66. Inline functions may not be useful for many embedded systems because, ..... in embedded systems.
- function call overhead is negligible.
  - overhead of a return call from a function is not important.
  - thrashing due to inlining does not increase the size of the binary executable file
  - code size is more important than speed.
67. What does the following function do for a given Linked List with first node as head?
- ```
void fun1(struct node* head)
{
if (head == NULL)
return;
fun1(head->next);
printf("%d ", head->data);
}

```
- Prints all nodes of linked lists
  - Prints all nodes of linked list in reverse order
  - Prints alternate nodes of Linked List
  - Prints alternate nodes in reverse order
68. Consider the following three processes in the FCFS.

| Process ID. | Brust-time | Arrival-time |
|-------------|------------|--------------|
| P1          | 3          | 3            |
| P2          | 6          | 6            |
| P3          | 9          | 9            |

What is the average waiting time?

- 2
  - 3
  - 4
  - 5
69. In 8086 microprocessors, `MOV AX, BX` is an example of .....
- Immediate addressing mode
  - Register addressing mode
  - Based indexed addressing mode
  - Direct addressing mode
70. Which of the following flags is not a part of 8085 microprocessor?

- a) Sign Flag, Zero Flag
  - b) Auxiliary Carry Flag
  - c) Parity Flag
  - d) Overflow Flag
71. A typical TCP client application issues a sequence of TCP system calls as follows .....
- a) socket, bind, connect, send, receive
  - b) socket, bind, listen, send, receive
  - c) socket, bind, listen, connect, send
  - d) socket, bind, listen, connect, send, receive
72. The macro expansion for the following code in C programming language is .....
- ```
#define then
#define begin {
#define end ;}
if( i>0) then begin a=1; b=2 end
```
- a) if(i>0) then {a=1;b=2}
  - b) if(i>0) {a=1;b=2}
  - c) if( i>0) then begin a=1; b=2 end
  - d) if( i>0) then begin{ a=1; b=2 end}
73. Greedy Best-First Search is an informed search algorithm that:
- a) Expands nodes based on their depth in the search tree
  - b) Expands nodes based on their evaluation function value
  - c) Expands nodes randomly without any heuristic guidance
  - d) Expands nodes in a breadth-first manner
74. Which of the following activation functions is commonly used for the output layer of a binary classification neural network?
- a) Sigmoid activation function
  - b) Tanh activation function
  - c) ReLU activation function
  - d) Softmax activation function
75. What will be the output of the following Java code?
- ```
import java.util.*;
class Test
{
    public static void main(String []x)
    {
        int i, list[] = new int [6];
        for (i = 6; i > 0; i--)
            list[6 - i] = i;
        Arrays.sort(list);
        for (i = 0; i < 6; ++i)
            System.out.print(list[i]);
    }
}
```
- a) 654321
  - b) 123456
  - c) 12345
  - d) 54321

76. During SSL operation, sometimes padding may have to be appended to the last block of plaintext. Now, estimate the number of bytes which have to be handled by padding for the given case: Size of Plaintext – 50 bytes; Size of MAC – 20 bytes; Block Length – 8 bytes.
- a) 1
  - b) 2
  - c) 3
  - d) 4
77. Select the statement which does not agree to the notion of cloud computing.
- a) The key benefit of cloud computing ubiquitous access.
  - b) Data center operates under average loads
  - c) Private cloud may not employ the same level of virtualization
  - d) Shared resource usage does not fall under the key benefits of cloud computing
78. CAMA/CA employs ..... approach such that the data transmission channel is first examined and if the channel is not idle, the data sender must wait for an arbitrary amount of time (not continuously), before sending the data via the channel.
- a) 1-Persistent
  - b) Non-Persistent
  - c) P-Persistent
  - d) O-Persistent
79. Effective monthly interest rate will be ....., if nominal interest rate of 10% accounted for continuous compounding
- a) 1%
  - b) 0.84%
  - c) 1.2%
  - d) 2%

80. By considering following activities of a project, the project duration will be

| Activity               | A | B | C | D | E       |
|------------------------|---|---|---|---|---------|
| Immediate predecessors | - | - | - | C | A, B, D |
| Duration (days)        | 4 | 5 | 3 | 7 | 5       |

- a) 9 days
- b) 10 days
- c) 15 days
- d) 24 days