

Nepal Engineering Council Registration Examination
Model Question for Electronics, Communication and Information Engineering

(100* 1 = 100)

1. KVL is performed using:
 - a. Nodal analysis
 - b. Mesh analysis
 - c. Voltage analysis
 - d. Voltage ratio
2. A source delivers maximum power to a resistance through a network. The ratio of power delivered to the source power:
 - a. Is always 0.5.
 - b. May be 0.5 or less.
 - c. May be 0.5 or more.
 - d. Always 1.0
3. The peak factor is the ratio of:
 - a. Peak and rms values.
 - b. Peak and average values.
 - c. Rms and average values.
 - d. Average values of two consecutive waves.
4. The output V-I characteristics of enhancement type MOSFET has
 - a. Only an ohmic region
 - b. Only a Saturation region
 - c. An ohmic region at low voltage value and a saturation region at high voltage.
 - d. A saturation region at low voltage value and a saturation region at high voltage.
5. Regarding to various types of oscillators
 - a. LC oscillators are more stable than crystal oscillators.
 - b. Crystal oscillators have high Q
 - c. Phase shift oscillator has the widest range of frequency.
 - d. Wien Bridge oscillator is used when a single frequency oscillator is required
6. A push pull amplifier is a
 - a. Power amplifier
 - b. Voltage amplifier
 - c. Current amplifier
 - d. Both current and voltage amplifier

7. In which function is each term known as min term?
 - a. SOP
 - b. POS
 - c. Hybrid
 - d. Both SOP and POS
8. In 2's complement addition, the carry generated in the last stage is
 - a. Added to LSB
 - b. Neglected
 - c. Added to bit next to MSB.
 - d. Added to the bit next to LSB.
9. In a JK master slave Flip flop
 - a. Master is clocked when clock is low.
 - b. Slave is clocked when clock is high.
 - c. Master is clocked when clock is high, and slave is clocked when clock is low.
 - d. Master is clocked when clock is low, and slave is clocked when clock is high.
10. In a microcomputer the control bus,
 - a. Transmits and receives control signals between processor and other devices.
 - b. Transmits and receives control signals and sends and receives data.
 - c. Transmits and receives control signals, sends, and receives data and transmits address of the devices.
 - d. Transmits and receives addresses of devices.
11. During DMA transfer, DMA controller transfer data_____
 - a. Directly between memory and registers
 - b. Directly between the I/O module and main memory
 - c. Directly from memory to CPU
 - d. Directly from CPU to memory
12. Whenever number of devices interrupt a CPU at a time, and if the processor is able to handle them properly, it is said to have_____
 - a. Interrupt handling ability
 - b. Interrupt processing ability
 - c. Multiple interrupt processing ability
 - d. Multiple interrupts executing ability.
13. Which is not a valid keyword in C language?
 - a. For
 - b. While

- c. Do-while
- d. Switch

14. Function fwrite() works with_____

- a. Text files
- b. Binary files
- c. Hex files
- d. All types of files

15. In which case it is mandatory to provide a destructor in a class?

- a. Almost in every class
- b. Class for which two or more objects will be created.
- c. Class for copy constructor
- d. Class whose objects will be created dynamically.

16. In multilevel inheritance, which is the most significant feature of OOP used?

- a. Code efficiency
- b. Code reusability
- c. Code readability
- d. Flexibility

17. Which of the following operator overloads using the friend function in C++?

- a. *
- b. ()
- c. ->
- d. =

18. Why do we need to handle exceptions?

- a. To avoid unexpected behavior of a program during run-time.
- b. To let the compiler remove all exceptions by itself.
- c. To successfully compile the program
- d. To get correct output.

19. In CISC architecture most of the complex instructions are stored in_____.

- a. CMOS
- b. Register
- c. Transistors
- d. Diodes

20. Which of the following is not a write policy to avoid cache coherence?

- a. Write through
- b. Write within
- c. Write back.

- d. Buffered write.
21. Cycle stealing method is used in_____?
- a. Data transfer based on interruption.
 - b. Data transfer based on polled mode.
 - c. BUS
 - d. DMA based data transfer
22. Which level simulates the algorithms that are used within the embedded systems?
- a. Algorithmic level
 - b. Switch level
 - c. Gate level
 - d. Circuit level
23. How to control structure and timing of the entity can be changed?
- a. By using TIME variable in the entity
 - b. By changing the entity declaration from time to time
 - c. By using some special code
 - d. By using GENERICS
24. The concurrent execution of multiple jobs in a single-user system is known to be:
- a. Multitasking
 - b. Multi-scheduling
 - c. Multiprogramming
 - d. Multiprocessing
25. If you use either Telnet or FTP, which is the highest layer you are using to transmit data?
- a. Presentation
 - b. Application
 - c. Session
 - d. Transport
26. In Ethernet CSMA/CD, the special bit sequence is transmitted by media access management to handle collision is called_____.
- a. Preamble
 - b. Postamble
 - c. Jam
 - d. Jitter
27. An IPV4 address is a _____ address, which is categorized into different IP classes.
- a. 256 bits
 - b. 128 bits
 - c. 16 bits
 - d. 32 bits

28. What is the main function of a Packet Tracer?
- Network bandwidth monitoring
 - Network security analysis
 - Network simulation and configuration testing
 - Network performance reporting
29. In IPsec, what is the purpose of the IKE (Internet Key Exchange) protocol?
- To encrypt data packets
 - To manage encryption keys and establish secure connections.
 - To define security policies for web applications
 - To filter incoming network traffic
30. In a network with a large bandwidth-delay product, which flow control mechanism is more suitable?
- Stop-and-Wait.
 - Sliding Window
 - Go-Back-N
 - Token Bucket
31. Which of the following relation is true?
- $\vec{E} = -\nabla V$
 - $\vec{E} = \nabla V$
 - $\vec{E} = -\nabla^2 V$
 - $\vec{E} = \nabla^2 V$
32. Which of the following factors affects the skin depth in a conductor?
- The frequency of the electromagnetic wave
 - The temperature of the conductor
 - The color of the conductor
 - The length of the conductor
33. Which modulation technique is more resistant to amplitude noise, making it suitable for high-quality audio transmission?
- AM
 - FM
 - PM
 - Both AM and FM
34. What is the primary drawback of quantization in data communication?
- It increases data accuracy.
 - It introduces quantization error.

- c. It improves signal-to-noise ratio.
- d. It has no impact on data transmission.

35. What unit is typically used to express Power Spectral Density (PSD)?

- a. Watts per Hertz (W/Hz)
- b. Watts per second (W/s)
- c. Hertz per watt (Hz/W)
- d. Watts per radian (W/rad)

36. For a causal and stable discrete-time signal, what can be said about its ROC?

- a. It must include the entire complex plane.
- b. It must be a circular region centered at the origin.
- c. It is restricted to the region outside a circle in the complex plane.
- d. It is determined by the number of poles and zeros of the signal.

37. Which data structure is based on Last In First Out (LIFO) principle?

- a. Tree
- b. Linked List
- c. Stack
- d. Queue

38. The searching technique in which there are no unnecessary comparisons is called:

- a. Binary searching
- b. Sequential searching
- c. Linked searching
- d. Hashing

39. The entity set that does not have sufficient attributes to form a primary key is termed as:

- a. Strong entity set
- b. Weak entity set
- c. Variant set
- d. Variable set

40. Any deadlock situation is detected in advance by the mechanism.

- a. Deadlock detection
- b. Deadlock Recognition
- c. Deadlock Avoidance
- d. Deadlock Rehabilitation

41. Which of the following multithreading models multiplexes many user-level threads to a smaller or equal number of kernel threads?

- a. Many to one model
- b. One to many model

- c. Many to many model
- d. One to one mode.

42. The virtual memory manager loads other components of the process only when they are needed. This technique is called:

- a. Thrashing
- b. Swapping
- c. Demand paging
- d. Segmentation

43. In Mealy machine, the O/P depends upon_____.

- a. State
- b. Previous state
- c. State and input
- d. Only input

44. Which of the following statements is false?

- a. Context free language is the subset of context sensitive language.
- b. Regular language is the subset of context sensitive language.
- c. Recursively enumerable language is the super set of regular language.
- d. Context sensitive language is a subset of context free language.

45. A Turing machine that is able to simulate other Turing machines:

- a. Nested Turing machines
- b. Universal Turing machine
- c. Counter machine
- d. Register machine.

46. In which type of graphics, the images are represented by mathematical equations?

- a. Bitmap
- b. Vector
- c. 3D
- d. Animated

47. Liang Barsky Clipping algorithm uses _____ equation for a line and solves four inequalities.

- a. Linear
- b. Quadratic
- c. Cubic
- d. Parametric

48. What should be sequence of transformations that are required to perform rotation of an object around an arbitrary point?

- a. Inverse Translation, Rotation, Translation
 - b. Scaling, Translation, Rotation
 - c. Translation, Rotation, Inverse Translation
 - d. Rotation, Translation, Scaling
49. Which of the following factors can mitigate fading in wireless communication?
- a. Increasing the distance between the transmitter and receiver.
 - b. Using a higher carrier frequency.
 - c. Reducing the transmit power.
 - d. Decreasing the antenna height.
50. In packet switching, data is divided into small packets for transmission. What is the primary reason for this packetization?
- a. To increase data security
 - b. To improve data compression
 - c. To enable efficient sharing of network resources
 - d. To simplify data storage
51. Which equalization technique is commonly used in wireless communication to combat multipath fading?
- a. Zero-Forcing Equalization
 - b. Maximum Likelihood Equalization
 - c. Decision Feedback Equalization
 - d. Diversity Equalization
52. What is the data transfer rate of a single B-channel in Basic Rate Interface (BRI) ISDN?
- a. 64 Kbps
 - b. 128 Kbps
 - c. 256 Kbps
 - d. 384 Kbps
53. What is the purpose of the Time-to-Live (TTL) field in the IP header?
- a. It specifies the total number of bytes in the packet.
 - b. It determines the maximum hop count a packet can traverse before being discarded.
 - c. It defines the maximum packet size for the network.
 - d. It indicates the source of the packet.
54. In ADSL, what is the purpose of the splitter or microfilter device?
- a. It splits the voice and data signals so they can be transmitted separately.
 - b. It amplifies the data signals for faster transmission.
 - c. It filters out unwanted noise from the phone line.

d. It combines voice and data signals for transmission.

55. Standard dimensions of A3 drawing sheet in mm is

- a. 11.69×16.54
- b. 29.7×42
- c. 297×420
- d. 420×280

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 bein the Council.

- a. affiliated
- b. united
- c. recognized
- d. associated

61. Superposition theorem can be applied only to:
- a) Digital circuits
 - b) Linear circuits
 - c) Non-linear circuits
 - d) Both linear and no linear circuits
62. The usual frequency of AC in Nepal is:
- a) 50 Hz
 - b) 25 Hz
 - c) 60 Hz
 - d) 100 Hz
63. In which condition can a transistor be approximated as a linear device?
- a) During cutoff region
 - b) During saturation region
 - c) Around its Q-point with small signal
 - d) At very excessive current
64. The Q-point of a transistor is also called:
- a) Quality point
 - b) Quasi point
 - c) Quiescent point
 - d) Quantum point
65. Which of the following is a non-weighted code?
- a) BCD
 - b) Excess-3
 - c) Octal
 - d) 2421
66. Which of the following is true about 2's complement method?
- a) Uses adder circuit
 - b) Requires separate hardware circuit
 - c) cannot handle negative numbers
 - d) Needs multiplier
67. The main purpose of a master-slave flip-flop is:
- a) To increase speed
 - b) To prevent race-around condition
 - c) To reduce propagation delay
 - d) To synchronize input and output
68. Advantage of vectored interrupts is:
- a) Faster service since ISR address is provided by device
 - b) Slower service
 - c) Reduced hardware requirement
 - d) CPU must search ISR
69. Which of the following is correct to access the third element of an array using pointer?
- a) *(arr + 3)
 - b) *(arr + 1)
 - c) *(arr + 2)
 - d) *arr[3]

70. A friend function:
- a) Can access private members of a class
 - b) Cannot access private members
 - c) Is the same as a member function
 - d) Can only access public members
71. Constructor in a class is used for:
- a) Destroying objects
 - b) Initializing objects
 - c) Copying objects
 - d) Modifying objects
72. Which C function is used to jump back to a saved execution point?
- a) jmp
 - b) setjmp
 - c) catch
 - d) throw
73. Which of the following is true about a microprogrammed control unit?
- a) It is faster than a hardwired control unit
 - b) It uses microinstructions stored in control memory
 - c) It does not require control memory
 - d) It is more difficult to modify than a hardwired control unit
74. In direct mapping of cache memory, a main memory block can be placed:
- a) Anywhere in the cache
 - b) In a fixed cache line determined by block address
 - c) Only in the first line of the cache
 - d) In any set of cache lines chosen randomly
75. Which I/O technique is most efficient for transferring large blocks of data between memory and an I/O device?
- a) Programmed I/O
 - b) Interrupt-driven I/O
 - c) Direct Memory Access (DMA)
 - d) Memory-mapped I/O
76. Which of the following is a key characteristic of an embedded system?
- a) General-purpose computing with large memory
 - b) Dedicated functionality with real-time constraints
 - c) Multitasking operating system required
 - d) No interaction with external environment
77. In the OSI model, which layer is responsible for end-to-end error detection and reliable delivery of data?
- a) Network Layer
 - b) Transport Layer
 - c) Data Link Layer
 - d) Session Layer
78. The main function of ARP in networking is to:
- a) Map IP addresses to port numbers
 - b) Map MAC addresses to IP addresses
 - c) Map IP addresses to MAC addresses

- d) Translate domain names to IP addresses
79. Which of the following is a key feature of Link State Routing compared to Distance Vector Routing?
- Uses hop count as the only metric
 - Each router maintains information about its neighbors only
 - Each router builds a complete map of the network and applies Dijkstra's algorithm
 - Relies on broadcasting routing tables periodically
80. Which of the following was the first encryption standard for securing wireless LANs but is now considered weak?
- WPA2
 - WEP
 - WPA3
 - IPSec
81. The electric field intensity E is related to the electric potential V by:
- $E = -\nabla V$
 - $E = \nabla \cdot V$
 - $E = \nabla / \epsilon$
 - $E = \nabla \times V$
82. The Hilbert transform of a signal is mainly used to:
- Shift the signal in amplitude
 - Shift the signal by $+90^\circ$ or -90° in phase
 - Reduce noise
 - Increase signal bandwidth
83. For a plane electromagnetic wave propagating in free space, the ratio of electric field to magnetic field is equal to:
- ϵ_0
 - μ_0
 - Zero
 - The speed of light $c = \frac{1}{\sqrt{\mu_0 \epsilon_0}}$
84. In FIR filter design using window functions, the main purpose of the window is to:
- Reduce transition bandwidth
 - Increase filter order arbitrarily
 - Convert FIR to IIR
 - Reduce Gibbs phenomenon and control sidelobes
85. Which of the following is an example of an abstract data type (ADT)?
- int, float
 - Array, Linked List
 - Stack, Queue
 - char, double
86. In Depth First Traversal (DFS), the nodes are visited using:
- Queue
 - Stack or Recursion
 - Hash Table
 - Priority Queue

87. A weak entity:
- a) Has a primary key of its own
 - b) Cannot have attributes
 - c) Depends on a strong entity and has a partial key
 - d) Is the same as a strong entity
88. During the startup procedure, the OS is loaded from:
- a) Cache memory
 - b) Network only
 - c) Secondary storage (e.g., hard disk or ssd)
 - d) Registers
89. Which of the following is true about DFA and NDFA?
- a) Every DFA can be converted into an equivalent NDFA
 - b) NDFA cannot accept regular languages
 - c) DFA can recognize more languages than NDFA
 - d) Every NDFA can be converted into an equivalent DFA
90. According to Church-Turing Thesis, a Turing machine can:
- a) Compute any function that is algorithmically computable
 - b) Solve all mathematical problems in finite time
 - c) Only simulate finite automata
 - d) Only recognize regular languages
91. Which line clipping algorithm is based on region codes?
- a) Liang-Barsky
 - b) Bresenham
 - c) Cohen-Sutherland
 - d) DDA
92. A 3D composite transformation is obtained by:
- a) Applying only translation
 - b) Combining multiple transformations like scaling, rotation, and translation
 - c) Applying only rotation
 - d) Using only reflection
93. Which of the following is a guided transmission medium?
- a) Free space
 - b) Microwave
 - c) Radio waves
 - d) Optical fiber
94. Adaptive equalization in communication systems is used to:
- a) Detect user identity
 - b) Increase signal power only
 - c) Compensate for inter symbol interference
 - d) Reduce free space loss
95. Traffic intensity in telecommunication is measured in:
- a) Erlangs
 - b) Bits per second
 - c) Hertz
 - d) Packets per second

96. The xDSL family includes which of the following technologies?
- a) ADSL, VDSL, SDSL
 - b) 3G, 4G, 5G
 - c) Ethernet, Wi-Fi
 - d) Bluetooth, Zigbee
97. In engineering drawings, a sectional view is used to:
- a) Show the external shape of an object
 - b) Indicate dimensions only
 - c) Show the internal features by cutting through the object
 - d) Replace orthographic projection
98. The time value of money concept states that:
- a) All money has the same value at all times
 - b) Interest is irrelevant in project analysis
 - c) Inflation does not affect money
 - d) Money available now is worth more than the same amount in the future
99. A soft risk analysis in project management involves:
- a) Quantitative methods only
 - b) Financial auditing
 - c) Qualitative assessment of project uncertainties
 - d) Contract signing
100. When was the Nepal Engineering Council (NEC) established?
- a) 1999
 - b) 1995
 - c) 2005
 - d) 2010