

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

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

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.  $11.69 \times 16.54$
  - 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. In a transistor amplifier, if  $\beta=100$ , then the value of  $\alpha$  is:
- 0.99
  - 1.01
  - 101
  - 99
62. If the line frequency is 60Hz, the output frequency of a bridge rectifier is.
- 30Hz
  - 60Hz
  - 120Hz
  - 240Hz
63.  $268_{10} = \underline{\hspace{2cm}}?$
- $10A_{16}$
  - $10B_{16}$
  - $10C_{16}$
  - $10D_{16}$
64. Consider a computer system with DMA support. The DMA module is transferring a 1-byte character in one CPU cycle from a device to memory through cycle stealing at regular intervals. Consider a 4 MHz processor. If 1% processor cycles are used for DMA, then the data transfer rate of the device is                  bytes per second.
- 20000
  - 40000
  - 2000
  - 4000

65. What will be the output of the following C++ code?

```
#include <iostream>
Using namespace std;
int main()
{
    int a, b, c;
    a=3;
    b=8;
    c=(a>b)?a:b;
    cout << c;
    return 0;
}
```

- a. 12
- b. 3
- c. 8
- d. 24

66. If data members are private, what can we do to access them from the class object?

- a. Private data members can never be accessed from outside the class.
- b. Create public member functions to access those data members.
- c. Create private member functions to access those data members.
- d. Create protected member functions to access those data members.

67. What is the approximate data access time of SRAM?

- a. 2ns
- b. 20ns
- c. 10ns
- d. 4ns

68. What is 80/20 rule?

- a. 80% instruction is generated, and 20% instruction is generated.
- b. 80% instruction is executed, and 20% instruction is executed.
- c. 80% instruction is executed and 20% instruction is not executed.
- d. 80% instruction is generated and 20% instructions are not generated.

69. Given an IPv4 address of 10.0.0.55 with a subnet mask of 255.255.255.192, how many subnets are created, and how many hosts are available in each subnet?

- a. 4 subnets with 62 hosts each
- b. 64 subnets with 4 hosts each
- c. 2 subnets with 126 hosts each
- d. 8 subnets with 30 hosts each

70. In a VPN, what does “tunneling” refers to?
- Encrypting the entire network traffic
  - Creating a secure path for data to travel through an untrusted network
  - Setting up a virtual private network
  - Blocking unwanted network traffic
71. The percentage of saving in power of 100% modulated suppressed carrier AM signal is:
- 100%
  - 66.66%
  - 150%
  - 50%
72. VHF waves travel as:
- Space wave
  - Sky wave
  - Ground wave
  - Surface wave
73. Consider the relation  $R(A, B, C, D, E, F, G)$  with the following functional dependencies:
- $A \rightarrow BC$   
 $B \rightarrow DG$   
 $E \rightarrow F$
- Identify the candidate key.
- A
  - B
  - AE
  - AD
74. What is value of the postfix expression  $6\ 3\ 2\ 4\ +\ -\ *?$
- 74
  - 18
  - 22
  - 40
75. Let  $T = \{p, q, r, s, t\}$ . The number of strings in  $S^*$  of length 4 such that no symbols can be repeated.
- 120
  - 625
  - 360
  - 36

76. If the original point  $P = (5, 7, 3)$  and the translation factor,  $T = (-2, -1, 3)$ , then what will be the value of the final point  $P1$ ?
- $P1 = (7, 8, 6)$
  - $P1 = (3, 6, 0)$
  - $P1 = (7, 8, 0)$
  - $P1 = (3, 6, 6)$
77. During a hard handover, what happens to the connection with the old base station before establishing a connection with the new base station?
- Both connections exist simultaneously
  - The old connection is dropped before the new connection is established.
  - The new connection is established before dropping the old one.
  - The new connection is established instantly without affecting the old one.
78. In a network with an offered traffic of 800 Erlangs, the total available channels are 1000. What is the grade of service (GoS)?
- 0.8
  - 0.5
  - 0.2
  - 0.25
79. Effective monthly interest rate will be ....., if nominal interest rate of 10% accounted for continuous compounding
- 1%
  - 0.84%
  - 1.2%
  - 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

- 9 days
- 10 days
- 15 days
- 24 days

