Model (1)

Choose the correct answer(50 Marks)

1- Embedded system has a spicial operating system.

a-true   b-false

2- One of the advantages of computer network is high-cost installation.

   a-true   b-false

3- In--------both devices (nodes) can send data but one at a time.

   a- half-duplex   b- full-duplex   c-simplex   d-duplex

4- Point to point network uses unicast transmission.

5- a-true   b-false

6- In a star topology, all nodes are connected to a central hub or switch.

   a) True   b) False

7- Which of the following is an example of cloud storage service?

a) Microsoft Excel   b) Adobe Acrobat   c) Notepad   d)one drive

8- Broadcast refers to transmitting the same message or packets to all devices at the same time in the network

   a-true   b-false

9- Which network architecture is more scalable for large-scale enterprise environments?

   a) Client-server network   b) Peer-to-peer network

   c) Mesh network   d) Hybrid network

10- In multicasting, what is an advantage compared to broadcasting?

   a) Reduced network bandwidth usage   b) Simplicity in implementation

   c) Faster data transmission   d) Greater reachability to all devices

11- Broadcasting is slower while multicasting is faster.

   a-true   b-false

12- Which network architecture involves devices sharing resources and services without a dedicated central server?

   a) Client-server network   b) Peer-to-peer network

   c) Mesh network   d) Hybrid network

13- What network type typically spans a large geographical area, often covering multiple cities or even countries?

   a) PAN   b) LAN   c) MAN   d) WAN

14- What does the acronym "ML" stand for in the context of AI?

   a) Machine Language   b) Managed Learning

   c) Machine Learning   d) Multiple Layers

15- In 1997, IBM's Deep Blue made history by defeating the world chess champion. Who was the world chess champion at that time?

   a) Garry Kasparov   b) Anatoly Karpov

   c) Bobby Fischer   d) Viswanathan Anand

16- Who is considered the "father of artificial intelligence" and organized the Dartmouth Conference in 1956, which is considered the birth of AI?

   a) Alan Turing   b) John McCarthy   c) Marvin Minsky   d) Herbert Simon

17- When was the term "artificial intelligence" first coined?

   a) 1943   b) 1956   c) 1965   d) 1972

18- What is the Turing Test used for in the context of AI?

a) To determine if a machine exhibits intelligent behavior equivalent to that of a human

b) To evaluate the performance of machine learning algorithms

c) To assess the accuracy of natural language processing models

d) To measure the computational complexity of AI systems

19- All generated AI tools have the same functions and act like each other

a-true   b-false

20- What does IoT stand for?

a) Internet of Technologies   b) Internet of Telecommunications

c) Internet of Things   d) Integrated Online Technology

21- Which wireless technology is commonly used for short-range communication in IoT devices?

a) Bluetooth   b) Wi-Fi   c) LTE   d) Zigbee

22- Which of the following is NOT a characteristic of cloud computing?

a) On-demand self-service   b) Broad network access

c) Limited scalability   d) Resource pooling

23- Which cloud computing service model provides users with development and deployment tools over the internet?

a) Infrastructure as a Service (IaaS)   b) Platform as a Service (PaaS)

c) Software as a Service (SaaS)   d) Function as a Service (FaaS)

24- Which cloud computing characteristic refers to the ability to rapidly and elastically provision and release resources?

a) On-demand self-service   b) Resource pooling

c) Rapid elasticity   d) Measured service

25- Amazone is one of cloud computing service providers

a-true   b-false

26- What does SaaS stand for in cloud computing?

a) Software as a Service   b) Storage as a Service

c) Security as a Service   d) Server as a Service

27- Which cloud computing characteristic ensures that users only pay for the resources they consume?

a) On-demand self-service   b) Broad network access

c) Measured service   d) Rapid elasticity

28- Which cloud deployment model is characterized by a dedicated infrastructure maintained for a single organization?

a) Public cloud   b) Private cloud

c) Hybrid cloud   d) Community cloud

29- Which cloud deployment model involves sharing computing resources between multiple organizations?

a) Public cloud   b) Private cloud

c) Hybrid cloud   d) Community cloud

30- Which of the following is NOT a common cybersecurity threat?

a) Virus   b) Trojan horse   c) Firewall   d) Worm

31- What is a DDoS attack?

a) A type of malware that spreads through email attachments

b) A social engineering attack that targets specific individuals within an organization

c) A cryptographic protocol used to secure internet communications

d) An attack in which multiple compromised systems are used to flood a target system with traffic

32- Which type of malware is specifically designed to spread across a computer and perform automated tasks?

a) Worm   b) Trojan   c) viruse   d) Spyware

33- Which cybersecurity measure can help protect against malware attacks by scanning and filtering network traffic?

a) Firewall   b) Antivirus software

c) Intrusion Detection System (IDS)   d) Virtual Private Network (VPN)

34- Which type of malware disguises itself as legitimate software but performs malicious activities in the background?

a) Worm   b) Virus   c) Trojan   d) Adware

35- What is the primary purpose of spyware?

a) To encrypt files and demand ransom   b) To steal sensitive information

c) To slow down computer performance   d) To display unwanted advertisements

36- What does the term "malware" stand for?

a) Malicious Software   b) Malfunctioning Software

c) Malicious Hardware   d) Malicious Firmware

37- What is the purpose of a rootkit?

a) To encrypt files and demand ransom   b) To steal sensitive information

c) To slow down computer performance

d) To gain unauthorized access and hide malicious activity

38- Which term refers to a collection of infected computers controlled by a single entity?

a) Malware   b) Botnet   c) Adware   d) Rootkit

39- Which cybersecurity practice involves regularly backing up important data to prevent loss in the event of a malware attack?

a) Patch management   b) Vulnerability scanning

c) Data encryption   d) Data backup and recovery

40- What is the term used to describe a program that records keystrokes without the user's knowledge?

a) Adware   b) Spyware   c) Ransomware   d) Rootkit

41- Which cybersecurity measure helps protect against malware by detecting and removing malicious software?

a) Intrusion Detection System (IDS)   b) Antivirus software

c) Firewall   d) Virtual Private Network (VPN)

42- What is a blockchain?

a) A type of cryptocurrency   b) A distributed ledger technology

c) A centralized database   d) An online gaming platform

43- What is a block in a blockchain?

a) A group of transactions   b) A type of cryptocurrency

c) A digital signature   d) A network of computers

44- What is a smart contract in the context of blockchain technology?

a) A legally binding document

b) A computer program that automatically executes the terms of a contract

c) A type of cryptocurrency   d) A blockchain wallet

45- ChatGPT is considered as SAAS

a-true   b-false

46- Metaverse technology uses Blockchain and AI

a-true   b-false

47- We cannot use metaverse in Education field

a-true   b-false

48- Augmented reality (AR) is a technology that creates an immersive, computer-generated environment that can simulate physical presence and allow users to interact with the environment as if they were there.

a-true   b-false

49- Virtual reality (VR) is a technology that overlays digital information, such as images, videos, or data, onto the real world, enhancing the user's perception of their environment.

a-true   b-false

50- What is the metaverse?

a) A virtual reality headset   b) An augmented reality application

c) A collective virtual shared space, created by the convergence of virtually enhanced physical reality and physically persistent virtual spaces

d) A video game

51- How does the metaverse differ from traditional virtual reality environments?

a) The metaverse is exclusively accessible through gaming consoles.

b) The metaverse is not immersive.

c) The metaverse is a shared, persistent virtual space where users can interact with each other and digital objects.

d) The metaverse is limited to a single platform.

52- Metavers uses VR, AR and IOT technologuse But it doesn't use security technique

a-true   b-false

53- IOT technology can use cloud computing for processing collected data from the sensors

a-true   b-false

54- Artificial intelligence can be used in healthcare and education fields

a-true   b-false

55- Integrity is violated when there are any modifications on the data

a-true   b-false

56- In cloud computing, elasticity means scalability

a-true   b-false

57- Chess is one of the best examples of -----------

a)self awareness   b) limited memory   c) strong AI   d)theory of mind

58- An embedded system is a microcontroller-based system which is designed to perform many tasks for any system

a-true   b-false

59- The interconnection between two computers can occur without switch

a-true   b-false

60- The main objective of Blockchain is securing data communication

a-true   b-false

61- It is easy to develop a metavers applications using generative ai

a-true   b-false

62- Authorized users can change in blocks in blockchain

a-true   b-false

63- All information technologies are compatible

a-true   b-false

64- There is no difference between cloud computing models

a-true   b-false

65- Metaverse applications doesn't often utilize AI technologies

a-true   b-false

1- Determine the total charge entering a terminal between t = 1s and t = 2s if the current passing the terminal is $i = (3t^2 - t)$ A.

A- 17.5 C   B- 3.5 C   C- 5.5 C   D- 7 C
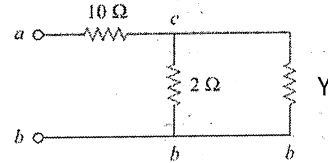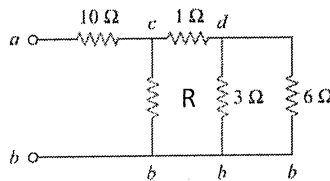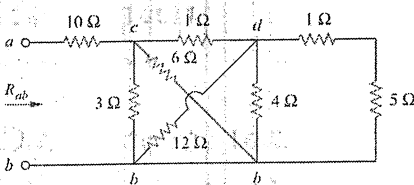
2- Find the power delivered to an element at $t = 3\ ms$ if the current entering its positive terminal is $i = 5\cos 60\pi t\ \ A$, and the voltage is $v = 3di/dt$

A- $4.5\ \pi \sin 60\pi t \cos 60\pi t\ W$ B- $75\ cos^2 60\pi t\ W$
B- $75\ \cos 60\pi t\ W$ D- $-4.5\ \pi \sin 60\pi t \cos 60\pi t\ KW$

3- The value of the resistor R is
   A- 4   B- 3.5   C- 5.5   D- 2
4- The value of the resistor Y is
   A- 1   B- 3   C- 5.5 C   D- 7

5- The node voltages V_1 is   A- 2.1   B- -2

                                        C- 4.8   D- -4

6- The node voltages V_2 is   A-28   B- -28

                                        C- 2.4   D- 4.5
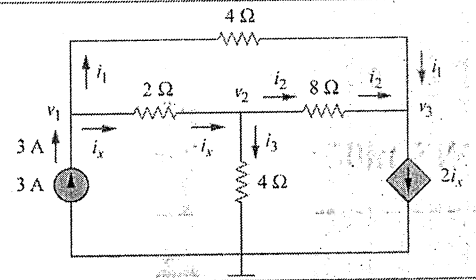
Find the Thevenin equivalent of the following circuit if $v_o = 1$ and
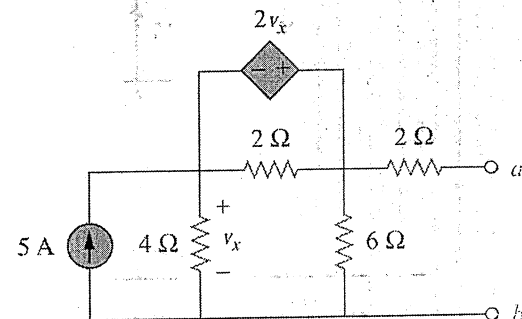
$i_3 = -1/6\ A$

7- R_{th} is   A- 2   B- 4
                            C- 6   D- 8
8-   The v_{th} is
                  A- 20   B- 15
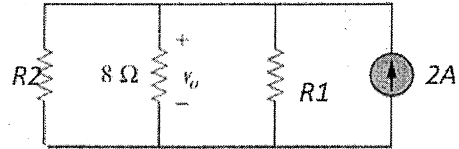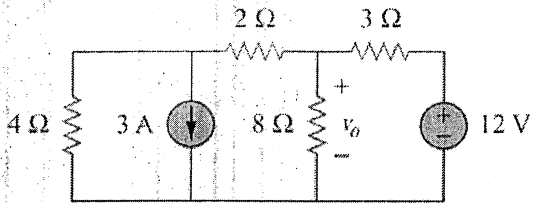   C- 25   D- 30

Find the value of R_2, and V_O by using source transformation

9- R_2 **10-** V_O

A- 5   B- 6   C- 3.2   D- 2.3

Course Title: Math 2		Arab republic of Egypt
Course Code: MA 113		Ministry of Higher Education
Time: 1 Hour		Tanta University
Date: 23 - 3 – 2024		Faculty of Computers and Information Science

Midterm Exam – 2nd Term 2023/2024	Total Assessment Marks: 20

Answer the following questions

1. Find all partial derivatives up to second order ($f_x, f_y, f_{xx}, f_{xy}, f_{yy}$) for the function:

$$f(x,y) = (x^2 + 3x)\, sin(y)$$

2. Prove that the equation $4\,x\,y\,dx + (2\,x^2 + 3\,y)\,dy = 0$ is <u>exact</u> and obtain its solution.

3. Use homogeneous differential equation to solve the following differential equation

$$(y - x)\frac{dy}{dx} = 2x + y$$

4. Use linear differential equation to solve the following differential equation

$$(x + 1)\frac{dy}{dx} - 2y = (x + 1)^3$$