

Candidates are required to answer the question in their own words as far as practicable. Figures in the margin indicates the full marks.

Group 'A' [9x1=9]

Select the correct answer from the given alternative options.

- In a PN junction the potential barrier is due to the charges on either side of the junction, these charges are:**
 - Majority carriers
 - Minority carriers
 - Both (a) and (b)
 - Fixed donor and acceptor ions.**
- Which of the following semiconductor is mostly used to construct electronic circuits?**
 - Silicon**
 - Germanium
 - Selenium
 - Tin
- Which of the following is not a function of the output unit?**
 - It supplies the data and instructions to the computer for further processing.**
 - It produces results that can be easily understood by the user.
 - It accepts the results produced by the computer.
 - It supplies the data and instructions to the outside world.
- Which among the following is the most common device that accepts letters, numbers and command from a user?**
 - Optical Mouse
 - Keyboard**
 - USB
 - Touch screen
- Which of the following storage device can store maximum amount of data?**
 - Floppy disk
 - Magnetic optical Disk
 - Hard disk**
 - Compact disk
- Which of the following could be used to fix a windows start up problem?**
 - Use Good configuration
 - Use Safe mode**
 - Use CMOS to change settings to default
 - Use a bootable disk from an earlier version of you OS.

- Which of the following are power protection device?**
 - Surge suppressor
 - Phone line surge protectors
 - Line conditioner
 - All of the above**

- Virus that delete all the files after is infects?**
 - Multipartite Virus
 - Polymorphic Virus
 - Overwrite virus**
 - Nonresident virus
- To purpose of backup is**
 - To restore a computer to an operational state of disaster.
 - To restore small number of files after they have been accidentally deleted.
 - To restore one among many versions of same file for multiple backup environment.
 - All of the above.**

Group 'B' [5x5=25]

Write short answer of any five questions.

10. State and explain Kirchhoff's first and second law.

11. How to identify if there is problem in your video card.

Ans: Following symptoms helps to identify problem on video card:

No display on monitor, strange line, dots or distortion appear on screen, flickering screen, incorrect colours, screen freezing, low frame rates(video run slowly) , driver error message etc. (Explain each point briefly)

- Explain processing unit with ALU and control unit.
- Explain PCI bus in short.
- What are the types of virus? Explain them.
- What are the types of backup and recovery methods?

Group 'C' [8x2=16]

Write short answer of any two questions.

- How can you solve wireless issues? Explain.
- What can you do speed up the slow performing PC? Explain.
- How can you we perform formatting in computer? What are the types of formatting?

Group 'A' [9x1=9]

Select the correct answer from the given alternative options.

1. **Example of atom are:**
 - a) Sodium
 - b) Uranium
 - c) Chlorine
 - d) **All of them**
2. **The conductivity of metal is increased by adding an appropriate amount of suitable impurity is called.....**
 - a) **Doping**
 - b) Dopants
 - c) Semiconductor
 - d) None of them
3. **..... is considered both input and output device.**
 - a) Scanner
 - b) **Digital Camera**
 - c) Monitor
 - d) Mouse
4. **Which of the following is fastest memory?**
 - a) Cache
 - b) RAM
 - c) **Register**
 - d) SSD
5. **The storage in is BIOS.**
 - a) RAM
 - b) **ROM**
 - c) The CPU
 - d) The HDD
6. **Internal hard disk is.....**
 - a) Removable but not fixed
 - b) Removable
 - c) Not fixed
 - d) **Fixed**
7. **In the operating system software, what does “Booting” mean?**
 - a) **Restarting computer**
 - b) Install the program
 - c) To scan
 - d) To turn off
8. **In the process of troubleshooting the power supply unit, which test is carried out by keeping the power supply ON?**
 - a) Cold
 - b) **Hot**
 - c) Continuity
 - d) Impedance
9. **What does preventive maintenance means?**

- a) Protect computer from serious problem.
- b) Protect computer from spyware and viruses.
- c) Protect computer from hardware failure.
- d) **All of the above.**

Group 'B' [5x5=25]

Write short answer of the following questions.

10. Define semiconductor materials. Explain about majority and minority charge carrier.
11. Draw the neat and clean diagram of CRT monitor and explain about it.
12. Introduce motherboard. Explain the different form factors of motherboard.
13. What is troubleshooting? **Your system could not recognize newly purchased printer while printing. Write the possible cause and solution of it.**
Ans: Causes: 1.Driver issue, 2. connectivity issue, 3. hardware issue, 4. Check default printer setting, 5. Printer configuration.
Solution : 1. Install correct printer driver(updated driver), 2.check all the cables connect properly or not, 3. Check printer hardware that malfunction, contact with technician if you cannot find or fix hardware problem. 4. Set printer as default from printer setting, 5. Configure the printer properly. (Explain briefly each point)
14. Define preventive maintenance. “Preventive maintenance is better than cure.” Justify this statement with reasons.

Group 'C' [8x2=16]

Write short answer of the following questions.

15. Explore about PN junction formation, Forward biasing and Reverse biasing with neat and clean working diagram.
16. Define BIOS with its functions. Draw the geometric construction of hard disk and explain in brief.

~The end~

Pre-SEE Examination-2080

Class:- 10 'T'

Time:- 2 hour

F.M:-50

Subject:- Computer Hardware, Electronics, Repair and Maintenance (4221)

Candidates are required to answer the question in their own words as far as practicable. Figures in the margin indicates the full marks.

Group 'A' [9x1=9]

Select the correct answer from the given alternative options.

1. **In a P-type semiconductor, the majority carriers are:**
 - a) Holes
 - b) Electrons
 - c) Positive ions
 - d) Negative ions.
2. **Ctrl, Shift, and Alt are known as..... Keys.**
 - a) Function
 - b) Modifier
 - c) Alphanumeric
 - d) Adjustment
3. **Which of the following can hold data of at least one GB?**
 - a) Floppy disk
 - b) CD-ROM
 - c) **Hard Disk**
 - d) None of these
4. **The PCI bus supports..... address space/s.**
 - a) I/O
 - b) Memory
 - c) Configuration
 - d) **All of the mentioned.**
5. **Primary boot process is otherwise called.....**
 - a) Installation
 - b) Loading of OS
 - c) **POST**
 - d) Formatting
6. **Which is the first step of troubleshooting?**
 - a) **Information Gathering**
 - b) Analysis and Planning
 - c) Implementation of a solution
 - d) Documentation of the incident
7. **Is there anything on the computer you can actually touch?**
 - a) Software
 - b) **Hardware**
 - c) Application
 - d) None
8. **Which of the following does the number of pixels present in the frame define?**
 - a) Projection
 - b) Transformation
 - c) Rasterization
 - d) **Resolution**

9. What is the process of retrieving important files and folders from a backup on another medium?

- a) **Data Restoration**
- b) Data Backup
- c) Data integrity
- d) Data verification

Group 'B' [5x5=25]

Write short answer of the following questions.

10. Define Matter, Molecule and Atom. State Kirchoff's Current law. Explain with diagram.
11. What is monitor resolution? Define processing unit and explain its segments with neat and clean diagram.
12. Define hard disk. Draw neat and clean geometric construction of hard disk and explain them.
13. What is power protection method? How do you protect computer from virus? Mention any two symptoms of virus.
14. Define backup and recovery. Also, explain any four backup methods.

Group 'C' [8x2=16]

Write short answer of the following questions.

15. Define the term doping, CRT Monitor, and BIOS. Explain processing cooling methods. [1+1+2+4]
16. Define troubleshooting. Explain troubleshooting boot time error message. What do you recommend to make your friend's computer or laptop work faster?

Bonus:

- a. **Explain the virus detection methods.**
- b. **Why system cooling and ventilation is necessary in computer system?**
- c. **Explain the general troubleshooting techniques.**

~The end~

Attempt all questions.

Group A

Choose the correct answer from the multiple choices. [9x1=9]

- 1) In forward biased positive and negative terminal of voltage are connected respectively
 - a. P type and N type material
 - b. P type and ground
 - c. N type and P type material
 - d. N type and ground
- 2) Conservation of energy is related to?
 - a. KCL
 - b. PN Junction
 - c. KVL
 - d. None of the above
- 3) The phosphor coating on a CRT monitor is responsible for:
 - a. Reflecting light from the screen
 - b. Emitting light when hit by an electron
 - c. Producing the image's sharpness
 - d. Cooling the tube
- 4) What is the main difference between ATX and microATX motherboard form factors?
 - a. MicroATX has more RAM slots than ATX
 - b. ATX is smaller in size compared to microATX
 - c. MicroATX has fewer expansion slots than ATX
 - d. ATX uses less power than microATX
- 5) What happens if the BIOS is corrupted or damaged?
 - a. The operating system will fail to load properly
 - b. The system will automatically fix the BIOS
 - c. The computer will run faster
 - d. The BIOS will reinstall itself
- 6) What is the first step to take if your computer displays no signal on the monitor, but the graphic card is properly installed?
 - a. Check the power cables to the monitor
 - b. Uninstall and reinstall the graphic card drivers
 - c. Replace the graphic card with a new one
 - d. Restart the computer in safe mode

7) What is virtual memory used for in a computer system?

- a. To store data when the physical RAM is full
- b. To back up system settings
- c. To increase the speed of the CPU
- d. To improve the quality of graphics rendering

8) "This method looks for suspicious behavior or code that resembles known viruses, allowing it to detect new, previously unknown viruses or variants". This statement is related to

- a. Signature based virus detection method
- b. Heuristic analysis virus detection method
- c. Real time scanning method
- d. Behavioral detection method

9) " Data is copied exactly to two or more drives (mirrored). If one drive fails, you still have an exact copy of your data on the other drive." This statement is related to

- a. RAID 0
- b. RAID 5
- c. RAID 1
- d. RAID 6

Group B

Write short answer of the following questions. [5x5=25]

- 10) What is atom and molecule? Compare KCL and KVL. [2+3]
- 11) "Digital camera is input and output device." Clarify this statement. Why LED monitor is popular these days? [2+3]
- 12) What is BIOS? Explain the major function of BIOS.
- 13) Define troubleshooting? Explain the steps of troubleshooting.
- 14) Explain about the backup methods.

Group C

Write long answer of the following questions. [8x2=16]

- 15) How do you troubleshoot dysfunctional of USB port? What are the causes of graphic card failure? Write the solution of graphic card issue.[2+3+3]
- 16) When you on computer, the system unit is on but monitor is not showing any visual " dark screen". How do you solve this problem?
Why power protection device is important in computer system? Explain any two system cooling method. [3+3+2]

****BEST OF LUCK ***

SEE BOARD EXAMINATION 2080(2024)
Regular & partial (combination)
COMPUTER HARDWARE, ELECTRONICS REPAIR AND
MAINTAINANCE

Time: 2 Hrs

Full mark: 50

(Group 'A')

choose the best alternative of the following question and write in your answer sheet. [9*1=9]

1. **Which of the given electronic parameters are calculated in Kirchoff's law?**
a. Resistance b. voltage c. Current **d. Both a and b**
2. **Which of the following monitor consume more power?**
a. LED **b. CRT** c. Plasma d. LCD
3. **Which of the backup system technique is most space efficient?**
a. Full Back up **c. Incremental Back up**
b. Differential Back up d. Half Back up
4. **From where boot option can be selected?**
a. CPU software menu
b. Advance BIOS feature
c. Advanced chipset features
d. Power management setup
5. **Which of the following software is related to Windows 11 ?**
a. Installation driver c. System BIOS
b. Application software **d. Operating software**
6. **Which types of mouse contains underneath ball?**
a. Laser mouse **c. mechanical mouse**
b. Optical mouse d. cordless mouse
7. **Which of the following is benefit of cloud backup?**
a. Limited data accessibility **c. Reduced storage cost**
b. Slower data access d. Local data storage
8. **What tool can we use to get rid of unnecessary files and compress older files, while running out of disk space?**
a. File manager **c. Disk cleaner**
b. Registry cleaner d. Disk makeup

9. **Which of the following software is called firmware?**
a. Installed driver **c. System BIOS**
b. Operating software d. Application software

(Group 'B')

Write short answer of the following questions. [5x5=25]

10. **What is electronic device? State and explain the Kirchoff's first and second law. [1+4]**
11. **Explain the hard disk drive and its parts with block diagram. [1+4]**
12. **What is resolution in monitor? Write difference between LCD and CRD monitor. [1+4]**
13. **What are the causes of video card failure? What are the solution related to video card failure? [2.5+2.5]**
14. **What is RAID ? Explain the methos of Backup. [1+4]**

(Group 'C')

Write long answer of the following questions. [8x2=16]

15. **Explain the steps of troubleshooting? If you face wireless internet connectivity problem in your laptop , how do you troubleshoot this problem. [4+4]**
16. **What are the techniques to increase the system performance speed? How processor with low quality lead to the system slowdown? Explain. [4+4]**

******BEST OF LUCK *****

Group 'A'

Re-Write the correct answer in your answer sheet.

Multiple choice questions [9x1=9]

1. **With the help of Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL) , you can find equivalent and of different conductors.**
 - a. Current , Frequency
 - b. **Current , Voltage**
 - c. Resistance , Current
 - d. Resistance , Voltage
2. **Nodal analysis is based on**
 - a. **KCL**
 - b. KVL
 - c. Both
 - d. Law of conservation of energy
3. **What are the five most important parts of a computer ?**
 - a. CPU , CD-ROM , Mouse , Keyboard , Sound card
 - b. Memory, Video card ,Monitor,software,Hardware .
 - c. Modem , Keyboard,Word Processor,Printer, Screen .
 - d. **CPU, Memory ,system bus ,Input, Output .**
4. **In a computer terminology , CRT stands for**
 - a. **Cathode Ray tube**
 - b. Computer Remote terminal
 - c. Combat Result Tale
 - d. Computerized regular Thermography
5. **The main circuit board in the system unit is also called the :**
 - a. Bus board
 - b. Daughterboard
 - c. Chipboard
 - d. **Motherboard**
6. **The PCI BUS supports address spaces**
 - a. I/O
 - b. Memory
 - c. Configuration
 - d. **All of the mentioned**
7. **Which of the following storage devices can store maximum amount of data .**
 - a. Floppy disk
 - b. Magnetic optical disk
 - c. **Hard disk**
 - d. Compact disk
8. **In operating system , what does "booting " mean ?**
 - a. **Restarting computer**
 - b. Install the program
 - c. To scan
 - d. To turn off

9. **If you turn on a pc and the system unit is clearly ON , but the monitor is dark , the problem could be that :**

- a. The monitor is not turned ON
- b. The monitor is not plugged in
- c. The monitor is not connected to the pc
- d. **All of the above**

Group 'B'

Short Answer Question [5X5=25]

1. State Kirchhoff's voltage law ? Explain with diagrams .
2. Explain the working Fig. of computer system.
3. Define BIOS ? Explain its function and operation.
4. Define troubleshoot ? Explain General troubleshooting technique .
5. **How can you make your RAM to be used Completely ?**
Ans: 1. Run memory intensive application(s/w that require more memory),2. Adjust system setting to use more RAM for caching
Steps: system properties>advanced>performance setting>advanced>adjust for best performance, 3. Disable virtual memory, 4. Use Ram optimization tools that help manage and maximum RAM uses, 5. Use more application simultaneously if memory is underutilization , 6. Close unnecessary background application to free up RAM for more demanding task. (explain points briefly)

Group 'C'

Long answer question [2X8=16]

1. Define Semiconductor . Explain Doping , p-type , N-type, Majority and minority charge carrier.
2. **Define Bootstrap loader ?** Explain the block diagram of power supply.
Ans: *Bootstrap loader(bootloader) is small program that initiates the loading of OS when a computer is turn on. It is critical part of booting process. BIOS , UEFI is bootloader program. It bridge the gap between hardware and OS.*

Best Wishes

Attempt all questions.

Group A

Choose the correct answer from the multiple choices. [9x1=9]

1. Which of the following have fixed volume but not fixed shape?
a. Solid
b. liquid
c. gas
d. plasma
2. In reverse biased diode, the majority carrier are?
a. Attracted toward the junction
b. moved away from the junction
c. unaffected by the applied voltage
d. converted into minority carrier
3. If you saw a motherboard having 2 PCI slot, can you identify which is this motherboard form factor?:
a. Standard ATX
b. Mini ITX
c. Micro ATX
d. Nano ITX
4. What is the unit of measurement used to describe the rotational speed of a hard disk platter?
a. Gigabytes
b. Revolution per minute(RPM)
c. megabytes per second(MB/s)
d. Hertz
5. Which of the following is not the cause of boot time error message?
a. Fault on hard disk
b. SATA/IDE cable connection
c. Incorrect BIOS boot order
d. Power supply fail
6. If impurity is added into pure semiconductor, what it is called?
a. Dropping
c. Doping
b. Debugging
d. doubling

7. "These viruses change their code each time they infect a new system, making it harder for antivirus software to detect them".

This term related to

- a. Email virus
 - b. Polymorphic virus**
 - c. Boot sector virus
 - d. Direct action virus
8. Which raid level called hybrid level?
a. RAID 6
b. RAID 5
c. RAID 10
d. RAID 0
 9. Which of the following could be cause a laptop to fail to connect to a Wi-Fi network?
a. Incorrect wi-fi password
b. Outdated network driver
c. Router malfunction
d. All of the above

Group B

Write short answer of the following questions. [5x5=25]

10. what is semiconductor? Write difference between forward and reverse biased. [1+4]
11. define monitor. Explain the CRT monitor working mechanism with suitable diagram. [1+4]
12. write two features of PCI bus? Explain the internal structure of HDD with suitable diagram and also interpret its major component. [2+3]
13. if your computer show the insufficient memory message, what are the causes and solution of this issue? [2+3]
14. what is backup scheduling and media rotation? Explain the level(0,5,10) of RAID with block diagram. [2+3]

Group C

Write long answer of the following questions. [8x2=16]

15. What is boot time error message? How do you troubleshoot boot time error message "disk boot failure"? what are the effects of graphic card failure in computer system?[1+4+3]
16. Define antivirus? What are the symptoms of computer affected by virus? What are the ways of virus transfer? [1+4+3]

RE – COE 4221

SEE 2081 (2025)
COMPUTER HARDWARE, ELECTRONICS REPAIR AND
MAINTENANCE

समय : २ घण्टा

पूर्णाङ्क : ५०

दिइएका निर्देशनका आधारमा आफ्नै शैलीमा सिर्जनात्मक उत्तर दिनुहोस् :

समूह 'क' (Group 'A')
Multiple Choice Questions

दिइएका विकल्पहरूमध्ये सबैभन्दा मिल्ने उत्तर छान्नुहोस् :

Choose the best answer from the following options : [9×1=9]

१. कुन semiconductor यन्त्रले करन्टलाई एक दिशामा प्रवाह गर्न अनुमति दिन्छ र अर्को दिशामा रोक्छ ?
Which semiconductor device allows current to flow in one direction and blocks it in the other?
a. Diode b. Transistor c. Capacitor d. Register
२. Keyboard मा function keys को सङ्ख्या हुन्छन् ।
The number of function keys in keyboard is
(a) 14 (b) 12 (c) 13 (d) 15
३. तपाईंको कम्प्युटर स्टार्टअपको समयमा Beep ध्वनिको एक श्रृङ्खला उत्पन्न हुन्छ । यी Beep Codes ले सामान्यतया के सङ्केत गर्दछ ?
Your computer emits a series of beeping sounds during startup. What do these beep codes typically indicate?
(a) successful boot (b) hardware or post errors
(c) software conflicts (d) internet connectivity issues
४. Hard disk drive भित्रको spinning disk लाई भनिन्छ ।
The spinning disks inside a hard disk drive are called
(a) actuators arms (b) read/write heads
(c) platters (d) sectors
५. तल दिएका मध्ये कुन Backup Technique सबैभन्दा space efficient हुन्छ ?
Which of following backup technique is most space efficient?
(a) Full backup (b) Incremental backup
(c) Differential backup (d) All of the above
६. कुन प्रकारको 'semiconductor' समूह V तत्वको साथ doping द्वारा सिर्जना गरिन्छ ?
Which type of semiconductor is created by doping with group V elements?
(a) P-type (b) N- type (c) Intrinsic (d) Extrinsic

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७. निम्नमध्ये कुन कम्प्युटर भाइरस हो ?
Which of the following is the computer virus?
(a) McAfee (b) Trojan Horse (c) NOD32 (d) Avira
८. Troubleshooting प्रक्रियामा पहिलो चरण कुन हो ?
What is the first step in the troubleshooting process?
(a) Identify the problem (b) Test the solution
(c) Gather information (d) Implement the solution
९. Motherboard मा PCI भनेको हो ।
PCI in motherboard stands for
(a) Peripheral Components Interconnect
(b) Peripheral Components Internet
(c) Peripheral Common Interconnect
(d) Proper Component Interconnect

समूह 'ख' (Group 'B')

(५×५=२५)

छोटो उत्तर लेख्नुहोस् :

Write short answers to the following questions.

१०. PN Junction परिभाषित गर्नुहोस् । Kirchoff's law लाई उल्लेख र व्याख्या गर्नुहोस् ।
Define PN junction. State & Explain Kirchoff's law. (1+4)
११. ALU र CU सँग Processing unit को व्याख्या गर्नुहोस् ।
Explain processing unit with ALU and control Unit. (5)
१२. Computer Virus परिभाषित गर्नुहोस् । यसको प्रकारहरू व्याख्या गर्नुहोस् ।
Define computer virus. Explain its types. (1+4)
१३. तपाईं wireless issues हरू कसरी समाधान गर्न सक्नुहुन्छ ? व्याख्या गर्नुहोस् ।
How can you solve wireless issues? Explain. (5)
१४. RAID के हो ? यसको दुईओटा प्रकारहरू व्याख्या गर्नुहोस् ।
What is RAID? Explain any two types of RAID. (1+4)

समूह 'ग' (Group 'C')

(२×८=१६)

लामो उत्तर लेख्नुहोस् ।

Write long answer to the following questions.

१५. (a) Troubleshooting भनेको के हो ? तपाईं कसरी Boot Problem समस्याहरू पहिचान गर्नुहुन्छ ?
What is troubleshooting? How will you identify the boot problem issues? (1+4)

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(३)

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- (b) जब एक ल्यापटप अप्रत्याशित रूपमा धेरै तातो र shutdown हुन्छ, तपाईंले यस समस्यालाई सम्बोधन गर्न के गर्न सक्नुहुन्छ ?
When a laptop overheats and shut down unexpectedly, what can you do to address this issue? (3)
१६. (a) System BIOS को कार्यहरूको व्याख्या गर्नुहोस् ।
Explain the functions of system BIOS. (5)
- (b) Disk Partitioning के हो ? यो कम्प्युटर भण्डारण व्यवस्थापनमा किन महत्वपूर्ण छ ।
What is disk partitioning? Why is it important in computer storage management? (3)

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समूह 'ग' (Group 'C')

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सबै प्रश्नहरूको लामो उत्तर लेख्नुहोस् :

Attempt all long answer questions:

(2×8=16)

१५. (a) Processor cooling किन आवश्यक पर्दछ ? Processor cooling गर्ने कुनै चारओटा तरिकाहरू व्याख्या गर्नुहोस् ।

Why processor cooling system is required in computer? Explain any four ways of cooling a processor. [1+4]

(b) System slowdown हुनुमा low quality processor को भूमिका लेख्नुहोस् । How can a processor with low quality lead to the system slowdown? [3]

१६. System BIOS र यसका functions का बारेमा व्याख्या गर्नुहोस् । (PCI) Local bus र Power Supply को वर्णन गर्नुहोस् । Explain system BIOS and its functions. Illustrate the term PCI local bus and power supply. [4+4]

...

Solution