

PNS School of Engineering & Technology

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Internal Assessment Examination-2022 (5th semester)

Subject:Th-4 –computer Hardware & Maintenance

Branch: computer science & Engineering

Time: 1½Hours

F.M. : 20

1. Answer the following questions (any five). [2×5]
 - (a) Write two advantage of requirement of experienced Personnel a computer center.
 - (b)What is hardware architecture?
 - (C)What is the difference between infrastructure an architecture?
 - (d)Differentiate input and output device.
 - (e)What is an interface?
 - (f)What is microprocessor?
2. Answer all questions.
 - (a)Explain layout factors and their effect.
 - (b)Explain isolation circuits.

ANSWER

1. (a)

- Speed
- Accuracy
- Multitasking
- Storage
- Data security
- Reduced cost

(b)

- (b) In computer science, hardware refers to the equipment on which applications operate .This involves processors , memory , storage ,and numerous other devices, Which work together.
- Hardware architecture is the design or arrangement of computer hardware .There are numerous different architectures . many involve the architecture of the processor, such as the instruction set . there is also the architecture of the overall system.

(c)

- Architecture
- System , information ,departments
 - Multiplicity of structures and views

- Infrastructure
- Processors , software, database, electronic links, data centers, standards ,skills, electronic processes.
 - We now tend to divide computing into applications and infrastructures.

(d)

- Input devices are used for giving input to the computer .but output devices are used to get the result back from the computer.
- The example of input device are keyboard, mouse , scanner ,digital camera etc . whereas out put devices include monitor , printer ,projector etc...

(e)

- These are the communication channel that enables your computer to exchange information with various devices.

(f)

- The most important electronic component on the computer.
- It is a programmable logical device for processing data. in world of personal computers, the terms microprocessor and cpu are used interchangeably.

2. (a) V Layout Factors and their effect Depending on the type of computer centre, certain factors have to be considered when installing computer system. The factors are:

- a) Local Support: It is important to discover the level of support available locally from different manufacturers of hardware. In most cases, the availability of such support would be a major factor in preferring a particular make of machine, even if initial cost are higher.

- b) **Hardware Security:** Physical security around computer centers and laboratories need to be stepped up because of the activities of looters. Security attention should be given to the computer hardware because of their small sizes; if the physical security is slack valuable and costly component of the system might be lost.
- c) **Dust:** It is almost always advisable to provide dust cover on computer equipment when not in use, and in some areas special dust filters may be needed to prevent dust penetrating the casing.
- d) **Heat:** Because of the heat been produced by the computer, full air conditioned office is highly imperative. It is advisable to buy portable air condition unit or install cooling fan in micro itself.
- e) **Power Supply:** Computers cannot function without electricity. Electric generators must be provided at the centre in case of the public power supply failure. In addition, the generator should be supported with power stabilizer and uninterruptible power supply (UPS). Power stabilizer protect the computer the harmful effects of fluctuations while UPS maintain the continuity of power supply in the gap between the switch over public supply to in- house generator or vice-versa.
- f) **Humidity:** An unusually assemble of humidity can also be a problem, leading to corrosion of electric contact, it may be advisable to use non- corrodible plugs and socket or to use a contactless keyboard for example.
- g) **Accessories:** It is essential to have a supply of computer accessories and part of a micro and all peripheral equipments.
- h) **Workshop:** Basic maintenance facilities will be needed. It is not necessary to be an electronic engineer to do routine maintenance such as disc head alignment, to change board in the computer, or to run the diagnostics programs which will at least help to locate a fault.
- i) **Communication Facilities:** These facilities must be provided to provide a link between the main computer centre and its terminals.
- j) **Space Requirement:** From 400sq. ft. to several hundred thousand sq. ft; length-to-width ratio should be approximately 2:3; no long, narrow rooms.
- k) **Floor loading:** should be sufficient, preferably with a sound-absorbent and anti static covering.

2.(b) Backbone to ensure highest availability of pure power depends on effective power distribution and its conditioning. Power distribution can be Achieve with help of panels, sockets, cables, Automatic transfer switch (ATS), Generator and PDU. While conditioning of power can be done with help of TVSS, K rated Isolation transformer, UPS etc. An isolation transformer is a transformer used to transfer electrical power from a source of alternating current (AC) power to some equipment or device while isolating the powered device from the power source, usually for safety reasons. Industrial electronic equipment commonly uses galvanic isolators to protect systems and users from potentially hazardous voltages.

It is well known that industrial equipment must operate reliably in the harshest environments, where strong electromagnetic fields, surges, fast transients, and high noise floors are the norm. This environment presents challenges for designing reliable isolation circuits that deliver error-free operation over long equipment lifetimes. Over the last four decades, opt couplers have been the —default|| signal isolation device, but recent breakthroughs in silicon isolation technology have spawned smaller, faster, and more reliable and cost-effective solutions that have already begun supplanting opt couplers in many end applications. This white paper discusses industrial isolation issues and ways RF isolation technology can be applied to increase system robustness and performance. Benefits of isolator circuits include:

- Higher integration: smaller size and lower cost-per-channel on multi-channel versions
- Higher performance: faster, tighter timing and substantially lower power
- Longer service life: no wear-out mechanisms as in opt couplers

- Higher reliability: operating parameters remains stable over VDD, temperature, and device age
- Easy to use: single-chip, complete isolation solution

