THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0222] **FEBRUARY 2022** **Sub. Code: 2302**
(OCTOBER 2021 EXAM SESSION)

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2019-2020 onwards – Paper II)
(Candidates admitted from 2020-2021 onwards – Paper III)
PAPER II & III – COMPUTERS, FUNDAMENTALS OF ELECTRICITY AND ELECTRONIC
Q.P. Code : 282302

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate notes on: **(2 x 20 = 40)**

1. Write in detail about applications of computer in Nuclear Medicine.
2. Explain different types of Power Supply.

II. Write Short Notes on: **(10x6 = 60)**

1. Functional units of computer.
2. Networking software.
3. How to insert table in word application.
4. Types of Operating system.
5. TCP/IP Protocol.
6. Ohm’s law and the triangle.
7. Half wave rectifier.
8. Field effect transistor.
9. Filter circuits.
10. Pulse height analyser.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1022] **OCTOBER 2022** **Sub. Code: 2302**

M. Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2019-2020 onwards – Paper - II)
(Candidates admitted from 2020-2021 onwards – Paper - III)
PAPER – II & III – COMPUTERS, FUNDAMENTALS OF ELECTRICITY AND ELECTRONIC

Q. P. Code: 282302

Time: Three hours **Maximum : 100 Marks**

Answer ALL Questions

I. Elaborate on: **(2 x 20 = 40)**

1. With the help of a neat diagram explain basic structure and operation of a computer. Explain the functions of central processing unit (CPU), control unit (CI) and arithmetic logic unit (ALU).

2. What is pulse a height analyzer and it role in nuclear medicine imaging? What is the difference between single channel analyzer (SCA) and multi-channel analyzer (MCA)?

II. Write notes on: **(10 x 6 = 60)**

1. What are Input and output devices? Give 3 examples.
2. Networking in nuclear medicine.
3. Boolean algebra.
4. Different type of logical gates.
5. Full wave rectifier.
6. Function of analog to digital converter and its application in computer.
7. Bit, nibble, byte and word.
8. Different types of computer operating system.
9. SMPS power supply.
10. Fourier Transforms.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1023] **OCTOBER 2023** **Sub. Code: 2302**

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER III – COMPUTERS, FUNDAMENTALS OF ELECTRICITY AND ELECTRONIC

Q. P. Code: 282302

Time: Three hours **Maximum: 100 Marks**

Answer ALL Questions

I. Elaborate on: **(2 x 20 = 40)**

1. With the help of a neat diagram explain the working principle of Single Channel Analyzer (SCA). What is Multi-Channel Analyzer (MCA)? What are the difference between SCA and MCA?

2. (a) What are the different generations of computer?
   (b) Enumerate various parts of a computer.
   (c) Explain the role of Center Processing Unit (CPU) in a computer.

II. Write notes on: **(10 x 6 = 60)**

1. Explain Analogue to Digital Converter (ADC) and Digital to Analogue Converter (DAC).
2. What are semiconductors? Describe n-type and p-type semiconductors.
3. Working principle of pn- junction and semiconductor transistors.
4. What is logical gate? Explain working principle of any two.
5. What is Boolean Algebra? Explain Boolean Algebra for NOR gate.
6. Enumerate various type of computer operating system.
7. What is SMPS power supply and what is the need SMPS for computer?
8. What is binary system? How do you convert 256 in to binary number?
9. What is DICOM and its importance in medical imaging?
10. What are the different types of rectifiers? Explain its advantage and disadvantages.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1024] **OCTOBER 2024** **Sub. Code: 2302**

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER III – COMPUTERS, FUNDAMENTALS OF ELECTRICITY AND ELECTRONIC

Q. P. Code: 282302

Time: Three hours **Maximum: 100 Marks**

Answer ALL Questions

I. Elaborate on: **(2 x 20 = 40)**

1. Discuss various computer operating and application software used in nuclear medicine.

2. (a) With the help diagram explain the working principle of Pulse Height Analyzer (PHA).
   (b) Single Channel Analyzer (SCA) and Multichannel Analyzer (MCA).

II. Write notes on: **(10 x 6 = 60)**

1. n-type, p-type semiconductors and pn-junction and it use.
2. Different type internet protocols.
3. AND, OR, XOR, NOT, NAND and NOR Gates.
4. Coincidence and anti coincidence circuits and its use in nuclear medicine.
5. Describe the working principle of half wave rectifier.
6. LAN and WAN.
7. Static, Dynamic, list and Gated acquisition modes.
8. Center Processing Unit, Control Unit and Arithmetic Logic Unit.
9. Different types power supplies used in computer.
10. ADC and DAC.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1025] **OCTOBER 2025** **Sub. Code: 2302**

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER III – COMPUTERS, FUNDAMENTALS OF ELECTRICITY AND ELECTRONICS

Q. P. Code: 282302

Time: Three hours **Maximum: 100 Marks**

Answer ALL Questions

I. Elaborate on: **(2 x 20 = 40)**

1. Explain the four modes of data acquisition used in nuclear medicine imaging.

2. Explain about the Circuit components with neat diagram.

II. Write notes on: **(10 x 6 = 60)**

1. Basic aspects of computer structure.
2. Gamma camera.
3. Word processing software.
4. Computer interface card.
5. Operating System and its types.
6. Ohm's Law.
7. Logic gates – AND, OR, NAND, NOR.
8. Euclid's equation.
9. Number system.
10. Fourier Transforms.

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