

## PREVIEW QUESTION BANK

Module Name : nou24-bt02 Biomedical Instrumentation and Sensors-ENG  
Exam Date : 18-May-2024 Batch : 15:00-18:00

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	13082001	<p>What is the advantage of using disposable biomedical sensors?</p> <ol style="list-style-type: none"> <li>1. They are more accurate than reusable sensors</li> <li>2. They are more cost-effective</li> <li>3. They are more durable</li> <li>4. They are easier to calibrate</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
Objective Question				
2	13082002	<p>Which of the following is a type of biosensor?</p> <ol style="list-style-type: none"> <li>1. Blood pressure monitor</li> <li>2. Pulse oximeter</li> <li>3. Glucometer</li> <li>4. Spirometer</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
Objective Question				
3	13082003	<p>What is the function of a biosensor?</p> <ol style="list-style-type: none"> <li>1. To detect the presence of biological molecules</li> <li>2. To measure temperature</li> <li>3. To monitor heart rate</li> <li>4. To measure blood pressure</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p>	2.0	0.00

A3 : 3

A4 : 4

## Objective Question

4	13082004	<p>Which of the following is NOT a type of biomedical sensor based on the parameter being measured?</p> <ol style="list-style-type: none"> <li>1. Electrochemical sensor</li> <li>2. Chemical sensor</li> <li>3. Mechanical sensor</li> <li>4. Optical sensor</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

5	13082005	<p>Which of the following is a characteristic of a good biomedical sensor?</p> <ol style="list-style-type: none"> <li>1. Low cost</li> <li>2. High sensitivity</li> <li>3. Limited range</li> <li>4. Slow response time</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

6	13082006	<p>What is the primary function of a biomedical instrument?</p> <ol style="list-style-type: none"> <li>1. To convert biological signals into digital signals</li> <li>2. To amplify biological signals</li> <li>3. To analyze biological signals</li> <li>4. To display biological signals</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p>	2.0	0.00
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A4 : 4

## Objective Question

7	13082007	<p>Which of the following is a type of biochemical sensor?</p> <ol style="list-style-type: none"> <li>1. pH sensor</li> <li>2. Thermocouple</li> <li>3. Accelerometer</li> <li>4. Pressure sensor</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

8	13082008	<p>Penetrating power of X-rays can be increased by</p> <ol style="list-style-type: none"> <li>1. Increasing the potential difference between anode and cathode</li> <li>2. Decreasing the potential difference between anode and cathode</li> <li>3. Increasing the cathode filament current</li> <li>4. Decreasing the cathode filament current</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

9	13082009	<p>Fetal heart rate is calculated in USG using</p> <ol style="list-style-type: none"> <li>1. A-mode</li> <li>2. B-mode</li> <li>3. C-mode</li> <li>4. M-mode</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

10	13082010	<p>What biological measurement is done by the Spirometer?</p> <ol style="list-style-type: none"> <li>1. Blood pressure measurement</li> <li>2. Blood Flow measurement</li> <li>3. Respiratory volume measurement</li> <li>4. Blood sugar measurement</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

11	13082011	<p>Which factor is crucial for the success of implantable sensors in medical applications?</p> <ol style="list-style-type: none"> <li>1. Low accuracy</li> <li>2. Limited range</li> <li>3. Biocompatibility</li> <li>4. High cost</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

12	13082012	<p>What role do implantable sensors play in the field of neurology?</p> <ol style="list-style-type: none"> <li>1. Monitoring heart rate</li> <li>2. Measuring brain activity</li> <li>3. Tracking physical activity</li> <li>4. Assessing lung function</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

13	13082013	<p>What distinguishes active electrodes from passive electrodes?</p> <ol style="list-style-type: none"> <li>1. Active electrodes require external amplifiers.</li> <li>2. Passive electrodes have built-in amplification circuitry</li> <li>3. Active electrodes are disposable</li> <li>4. Passive electrodes are reusable</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

14	13082014	<p>Which type of electrode is flat and circular, used for general-purpose applications?</p> <ol style="list-style-type: none"> <li>1. Cup electrodes</li> <li>2. Needle electrodes</li> <li>3. Disc electrodes</li> <li>4. Active electrodes</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

15	13082015	<p>Which category of electrodes is intended for scientific studies and experiments in research laboratories?</p> <ol style="list-style-type: none"> <li>1. Clinical electrodes</li> <li>2. Research electrodes</li> <li>3. Active electrodes</li> <li>4. Passive electrodes</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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## Objective Question

16	13082016		2.0	0.00
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What type of electrode is often used in neuroscience research for studying neuronal activity?

1. Surface electrode
2. Micro electrode
3. Needle electrode
4. Suction cup electrode

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

17 13082017

Which equation describes the relationship between ion concentrations and electrode potentials in electrochemical systems?

1. Ohm's Law
2. Nernst Equation
3. Faraday's Law
4. Newton's Law of Universal Gravitation

A1 : 1

A2 : 2

A3 : 3

A4 : 4

2.0 0.00

Objective Question

18 13082018

What is the function of a high gain amplifier in electromyography?

1. To generate electrical signals
2. To detect nerve impulses
3. To amplify the electrical signals picked up by electrodes
4. To measure blood pressure

A1 : 1

A2 : 2

A3 : 3

A4 : 4

2.0 0.00

Objective Question

19 13082019

2.0 0.00

		<p>What type of signals can electromyography (EMG) be converted into for analysis?</p> <ol style="list-style-type: none"> <li>1. Visual signals</li> <li>2. Audio signals</li> <li>3. Chemical signals</li> <li>4. Thermal signals</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>		
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Objective Question

20	13082020	<p>What does EMG stand for?</p> <ol style="list-style-type: none"> <li>1. Electro Muscular Growth</li> <li>2. Electric Muscle Graph</li> <li>3. Electro Myo Graphy</li> <li>4. Electromagnetic Generator</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

21	13082021	<p>Which EEG component reflects a balance between lower-frequency and higher-frequency waves during cognitive tasks?</p> <ol style="list-style-type: none"> <li>1. Alpha waves</li> <li>2. Theta waves</li> <li>3. Beta waves</li> <li>4. Delta waves</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

22	13082022		2.0	0.00
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What is the primary application of Brain-Computer Interfaces (BCIs) based on EEG?

1. To study cognitive processes
2. To diagnose neurological disorders
3. To assess muscle function
4. To enable communication and control using brain signals

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

23 13082023 2.0 0.00

What is a common source of error in impedance cardiography measurements?

1. Patient movement
2. Equipment calibration
3. Catheter misplacement
4. Temperature fluctuations

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

24 13082024 2.0 0.00

Which clinical application of cardiac output measurement focuses on evaluating athletes' cardiovascular fitness?

1. Heart failure management
2. Ventilator management
3. Athlete assessment
4. Pediatric care

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

25 13082025 2.0 0.00



	<p>Which respiratory condition can be diagnosed and monitored using spirometry?</p> <ol style="list-style-type: none"> <li>1. Diabetes</li> <li>2. Hypertension</li> <li>3. Asthma</li> <li>4. Arthritis</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>		
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Objective Question

26	13082026	<p>What does FEV1 measure in respiratory function tests?</p> <ol style="list-style-type: none"> <li>1. The volume of air forcefully exhaled in the first second</li> <li>2. The maximum speed of air exhalation during forced breathing</li> <li>3. The volume of air in the lungs after a normal exhalation</li> <li>4. The concentration of oxygen in the bloodstream</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

27	13082027	<p>Which precaution is NOT essential for accurate respiratory function measurement?</p> <ol style="list-style-type: none"> <li>1. Proper equipment handling</li> <li>2. Review and validation of results</li> <li>3. Patient education and cooperation</li> <li>4. Performing measurements during vigorous exercise</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

28	13082028		2.0	0.00
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		<p>What is the purpose of a "honeypot" in the context of cybersecurity?</p> <ol style="list-style-type: none"> <li>1. To store sensitive data securely</li> <li>2. To attract and deceive attackers, thereby diverting them from real systems</li> <li>3. To encrypt communication between two parties</li> <li>4. To analyze network traffic for potential security threats</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>		
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Objective Question

29	13082029	<p>What is the role of a "bug bounty program" in healthcare cyber security?</p> <ol style="list-style-type: none"> <li>1. To detect and eliminate software bugs in medical devices</li> <li>2. To reward individuals who identify and report security vulnerabilities in healthcare systems</li> <li>3. To introduce intentional vulnerabilities into a system for testing purposes</li> <li>4. To provide financial support for cyber security research in healthcare</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

30	13082030	<p>Which of the following is NOT a common security measure to protect medical data?</p> <ol style="list-style-type: none"> <li>1. Firewall protection</li> <li>2. Regular data backups</li> <li>3. Sharing passwords openly</li> <li>4. Access control mechanisms</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

31	13082031		2.0	0.00
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		<p>What is telemedicine?</p> <ol style="list-style-type: none"> <li>1. Using technology to deliver medical services remotely</li> <li>2. A field in Agriculture</li> <li>3. Performing surgery with robots</li> <li>4. Studying rocks and minerals</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>		
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Objective Question

32	13082032	<p>When did significant developments in telemedicine emerge?</p> <ol style="list-style-type: none"> <li>1. 1900s</li> <li>2. 1980s</li> <li>3. 1950s and 1960s</li> <li>4. 2000s</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

33	13082033	<p>What is one of the challenges of telemedicine?</p> <ol style="list-style-type: none"> <li>1. Increased physical examinations</li> <li>2. Robust security measures</li> <li>3. Easy access to specialists</li> <li>4. Data privacy concerns</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

34	13082034		2.0	0.00
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How do Clinical Data Interchange/Exchange Standards support collaborative research efforts?

1. By prioritizing data security and privacy
2. By streamlining administrative tasks in healthcare organizations
3. By providing a standardized framework for pooling and analyzing data from different sources
4. By integrating AI and telemedicine technologies into existing systems

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

35	13082035	<p>Which CDISC standard defines a standard structure for datasets, variables, and metadata to ensure consistency and interoperability?</p> <ol style="list-style-type: none"> <li>1. SDTM</li> <li>2. ADaM</li> <li>3. CDASH</li> <li>4. CT</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

36	13082036	<p>What role does Health Information Exchange (HIE) play in healthcare data exchange?</p> <ol style="list-style-type: none"> <li>1. It ensures compatibility among different healthcare technologies</li> <li>2. It facilitates secure and electronic sharing of patient health information</li> <li>3. It focuses on developing standards for medical imaging data exchange</li> <li>4. It promotes interoperability among diverse healthcare organizations</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

37	13082037		2.0	0.00
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What does AI and ML contribute to medical imaging?

1. Decreased accuracy, efficiency, and diagnostic capabilities
2. Increased patient outcomes and healthcare costs
3. Improved diagnostic accuracy, efficiency, and overall patient care
4. Reduced ability to make precise predictions

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

38 13082038

How has the integration of AI and ML impacted biomedical instrumentation?

1. Reduced the capabilities of traditional sensors and instruments
2. Hindered the accuracy and reliability of medical diagnosis
3. Enhanced the accuracy, efficiency, and reliability of medical diagnosis, monitoring, and treatment
4. Decreased the complexity of data patterns analysis

A1 : 1

A2 : 2

A3 : 3

A4 : 4

2.0 0.00

Objective Question

39 13082039

What role do sensors play in biomedical instrumentation?

1. They are not essential for collecting data
2. They enable the acquisition of data for analysis and decision-making
3. They are only used for monitoring patients' names
4. They provide medical treatment to patients

A1 : 1

A2 : 2

A3 : 3

A4 : 4

2.0 0.00

Objective Question

40 13082040

2.0 0.00

		<p>What do intelligent sensors do in biomedical instrumentation ?</p> <ol style="list-style-type: none"> <li>1. Only collect data but don't analyze it</li> <li>2. Transmit data to patients</li> <li>3. Process data locally and provide real-time feedback</li> <li>4. Require external devices for data processing</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>		
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Objective Question

41	13082041	<p>How does Robotics contribute to healthcare?</p> <ol style="list-style-type: none"> <li>1. Enhances surgical precision and assists in patient care</li> <li>2. Encrypts patient data for security</li> <li>3. Improves efficiency of medical billing</li> <li>4. Enables seamless sharing of medical records</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

42	13082042	<p>What are some consequences of data breaches in healthcare?</p> <ol style="list-style-type: none"> <li>1. Reduced patient safety and increased trust</li> <li>2. Improved medical decision-making and continuity of care</li> <li>3. Identify theft, insurance fraud, and compromised patient safety</li> <li>4. Cost savings and enhanced patient engagement</li> </ol> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	2.0	0.00
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Objective Question

43	13082043		2.0	0.00
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Why is protecting patient data crucial in healthcare?

1. To increase medication errors
2. To ensure compliance with legal requirements and maintain trust
3. To limit access to medical records
4. To delay treatment for patients

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

44 13082044

In time-frequency analysis, which method is used to represent a signal in both the time and frequency domains simultaneously?

1. Fourier transform
2. Wavelet transform
3. Laplace transform
4. Z-transform

A1 : 1

A2 : 2

A3 : 3

A4 : 4

2.0 0.00

Objective Question

45 13082045

Which of the following is true about the bandwidth of an amplifier?

1. It is the difference between the maximum and minimum frequencies in a signal
2. It is the range of frequencies over which the amplifier operates effectively
3. It is the rate at which the amplifier can change its output voltage
4. It is the measure of the amplifier's efficiency

A1 : 1

A2 : 2

A3 : 3

A4 : 4

2.0 0.00

Objective Question

46 13082046

2.0 0.00

What is the main advantage of using an operational amplifier (op-amp) in biomedical instrumentation?

1. Low gain
2. Low input impedance
3. High output impedance
4. High gain and differential input

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

47 13082047

Which amplifier class has the highest efficiency but is also the most susceptible to distortion?

1. Class A amplifier
2. Class B amplifier
3. Class AB amplifier
4. Class D amplifier

A1 : 1

A2 : 2

A3 : 3

A4 : 4

2.0 0.00

Objective Question

48 13082048

Which of the following is a disadvantage of using a digital filter compared to an analog filter in signal processing?

1. Digital filters are more susceptible to noise
2. Digital filters are more expensive
3. Digital filters have limited flexibility in design
4. Digital filters require analog-to-digital conversion

A1 : 1

A2 : 2

A3 : 3

A4 : 4

2.0 0.00

Objective Question

49 13082049

2.0 0.00



What is the primary function of an analog-to-digital converter (ADC) in data acquisition systems?

1. Convert digital signals to analog signals
2. Convert analog signals to digital signals
3. Amplify analog signals
4. Filter digital signals

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

50 13082050

Which of the following is NOT a characteristic of digital signal processing (DSP)?

1. High-speed processing
2. Real-time processing
3. Low noise sensitivity
4. Analog signal output

A1 : 1

A2 : 2

A3 : 3

A4 : 4

2.0 0.00