

# Biomedical Engineering Interview Questions And Answers Guide.



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# Biomedical Engineering Job Interview Preparation Guide.

## Question # 1

What is Biomedical Engineering?

### Answer:-

Biomedical engineering is an application of engineering in medicine. It combines the expertise of life sciences, engineering and medicine. Biomedical engineering deals with design and development of advanced medical devices, artificial replacement of organs, devices and methods for disease diagnosis and DNA chips. Biomedical engineering is one of the upcoming fields with its reach expanding exponentially everyday.

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## Question # 2

Do you know what is myoelectric control?

### Answer:-

Myoelectric control uses the signals from a residual limb for the movement of the prosthetics. Myoelectric control technologies obtain signals from the skin on the limbs.

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## Question # 3

Do you know about BMI?

### Answer:-

BMI is Body Mass Index. It is a comparison of a person's height and weight. It is a person's weight divided by the square of the height. Its SI unit is kg/sq.m.

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## Question # 4

What is MRI?

### Answer:-

MRI is Magnetic Resonance Imaging. It is a medical imaging technique that gives a detailed structure of internal organs, especially soft tissues. MRI uses a strong magnetic field and generates images and models of the specified organ.

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## Question # 5

Do you know what are the wave patterns seen in an EEG scan?

### Answer:-

Wave patterns seen in an EEG scan are delta - state of sleep, theta drowsiness, alpha - relaxation, beta - active thinking and gamma. Alpha also contains a mu-rhythm

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## Question # 6

Do you know about Alzheimer's disease?

### Answer:-

Alzheimer's is a brain disease caused due to tau protein misfolding. It is an incurable disease and can be diagnosed in a PET or MRI scan. Alzheimer's is related more with aging, where the disease is detected in human more than 65 years of age. The symptoms are memory losses, stress, confusion and also aggression. Diagnosis is mostly done by behavior related tests.

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## Question # 7

Do you know about epilepsy?

### Answer:-



Epilepsy is a neurological disorder. It occurs due to abnormal signals in the human brain. These abnormal signals cause seizures and unconsciousness.

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### Question # 8

Do you know what are the most commonly used technologies in medical imaging?

#### Answer:-

Electron microscopy, Computer Tomography, radiography, thermography, nuclear medicine, fluoroscopy, ultrasound, Positron Emission Tomography and Magnetic Resonance Imaging.

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### Question # 9

What you know about microarray?

#### Answer:-

Microarrays are arrays where DNA oligonucleotides of DNA sequences are spotted as a matrix. Microarrays are used in gene expression profiling, single nucleotide polymorphism detection, detection of alternative splicing etc. Microarrays perform hybridization of cDNA using probes. A microarray chip has the capability to perform a large set of genetic related experiments simultaneously.

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### Question # 10

What is therapeutic cloning?

#### Answer:-

Cloning is a method of duplicating a DNA or a part of the DNA. Therapeutic cloning otherwise called somatic cell nuclear transfer is a process where an embryo is utilized. The embryo contains stem cells, which can be used in regeneration applications. Embryonic stem cells have the capability of renewing and are pluripotent that is it can transform or grow into more than 220 types of cells of the human body.

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### Question # 11

What you know DNA fingerprinting?

#### Answer:-

DNA fingerprinting or genetic fingerprinting is a technique wherein a DNA sequence is used for identification of an individual. It is mostly used in forensics. Polymerase Chain Reaction and Short Tandem Repeats techniques are commonly used for DNA fingerprinting.

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### Question # 12

Do you know what is Biomedical Engineering?

#### Answer:-

Biomedical Engineering blends traditional engineering techniques with biological sciences and medicine to improve the quality of human health and life. The discipline focuses both on understanding complex living systems - via experimental and analytical techniques - and on development of devices, methods and algorithms that advance medical and biological knowledge while improving the effectiveness and delivery of clinical medicine.

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### Question # 13

Do you know what Biomedical Engineers actually do?

#### Answer:-

Biomedical engineers may work in hospitals, universities, industry and laboratories. They enjoy a range of possible duties, including the design and development of artificial organs, modeling of physical processes, development of blood sensors and other physiologic sensors, design of therapeutic strategies and devices for injury recovery, development and refinement of imaging techniques and equipment, development of advanced detection systems, testing of product performance, and optimal lab design.

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### Question # 14

What is Bioinstrumentation?

#### Answer:-

Bioinstrumentation involves use of engineering principles and methods, including computers, in developing devices for diagnosis and treatment of disease.

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### Question # 15

What is Biomechanics?

#### Answer:-

Biomechanics applies principles of mechanics to understand and simulate medical problems and systems such as fluid transport and range of motion. Prosthetic organs such as artificial hearts, kidneys, and joints are examples of devices developed by biomechanical engineers.

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### Question # 16

What is Biomaterials?

#### Answer:-

Biomaterials involves development of natural living tissue and artificial materials for use in the human body. Choice of materials with appropriate properties is critical to design of functional organs, bones and other implantable materials, which may include alloys, ceramics, polymers and composites.

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### Question # 17

What is Clinical Engineering in Biomedical Engineering?

#### Answer:-

Clinical Engineering involves development and maintenance of computer databases, inventorying medical equipment and instruments as well as purchase of medical equipment used in hospitals. Clinical engineers may work with physicians to customize equipment to the explicit needs of the hospital or medical procedure.

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### Question # 18

What is Medical Imaging?

#### Answer:-

Medical Imaging combines electronic data processing, analysis and display with understanding of physical phenomena to identify and characterize health problems such as tumors, malformations and the like. Magnetic resonance imaging (MRI), ultrasound and other techniques are commonly used

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### Question # 19

What is Rehabilitation Engineering?

#### Answer:-

Rehabilitation Engineering focuses on enhancing the independence, capabilities and quality of life of individuals with physical impairments. This specialty may involve development of customized solutions to address highly specific needs of individuals.

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### Question # 20

What is Systems Physiology?

#### Answer:-

Systems Physiology focuses on understanding - at the microscopic and submicroscopic levels - how systems within living organisms function, from pharmaceutical drug response to metabolic systems and disease response, voluntary limb movements to skin healing and auditory physiology. This specialty involves experimentation and modeling using mathematical formulations.

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### Question # 21

Do you know what are some important advances made by Biomedical Engineers?

#### Answer:-

Biomedical Engineers have developed many important techniques and equipment:

- \*Hip joint replacement
- \*Magnetic resonance imaging (MRI)
- \*Heart pacemakers
- \*Arthroscopic instrumentation for diagnostic and surgical purposes
- \*Heart-lung machines
- \*Angioplasty
- \*Bioengineered skin
- \*Time-release drug delivery
- \*Artificial articulated joints
- \*Kidney dialysis

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### Question # 22

Tell us what you know about Biomedical Engineering professions receptive to women?

#### Answer:-

Biomedical Engineering is extremely attractive to women as a degree program and career. Women earn a greater percentage of college degrees in Biomedical Engineering than any other engineering discipline, according to the American Society for Engineering education. Among those earning B.S. degrees in biomedical engineering, 39% were awarded to women in 2000; at the master's level, 34% of biomedical degrees awarded went to women; and at the doctoral level, 32% of biomedical engineering degrees awarded went to women.

The attractions for many women are: the flexibility and inherent creativity of the discipline relative to other engineering areas; the ability to work in a profession that strives to improve the quality of people's lives; the existing critical mass of women in medical professions; and the integration of biological sciences.

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### Question # 23

What is employment criteria in Biomedical Engineering?

**Answer:-**

Biomedical engineers held about 16,000 jobs in 2008. Manufacturing industries employed 36 percent of all biomedical engineers, primarily in the pharmaceutical and medicine manufacturing and medical instruments and supplies industries. Many others worked for hospitals. Some also worked for government agencies or as independent consultants.

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**Question # 24**

Do you know what is flow control in Biomedical Engineering?

**Answer:-**

Flow control, also called optimized production technology, focuses on the efficient flow of material through the production process. The philosophy of flow control focuses on bottlenecks. For example, an owner using flow control will not buy a machine capable of 1,000 units an hour if supply is only 500 units. Examine systems and determine where lowest flow is experienced, then address that point and make sure it operates at full capacity. Flow control applies well where maximum productivity is required.

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**Question # 25**

Do you know what is materials requirement planning?

**Answer:-**

A given quantity of finished goods requires a given quantity of raw materials and components to make them. Materials requirement planning systems are computerized tools that manage when materials must be ordered to supply production at a later date. MRP is effective when output quantities are known. Small business owners are often their own MRP systems, storing the information needed to supply production in their knowledge and experience. Activities such as computer tracking inventory and forecasting demand are MRP activities.

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**Question # 26**

Explain Is biomedical engineering really 'engineering' or is it better to study mechanical, electrical or chemical engineering?

**Answer:-**

Like most new fields, BME developed because of the need to address complex problems that require interdisciplinary knowledge. A strong BME program will provide students with the skills necessary to work as engineers as well as provide physiological and biological foundations that are not included in more traditional engineering programs. According to the National Science Foundation, BME is the fastest growing branch of engineering in terms of student enrollment.

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**Question # 27**

What you know about the popularity of BME a passing fad?

**Answer:-**

No one can know if the rapid growth of BME will continue at its current pace. All fields are susceptible to fluctuations in the economy. However, if we consider the explosion in scientific and medical knowledge of recent years, we can see that there are enormous opportunities to use that knowledge in the development of new medical devices and healthcare systems. The importance of healthcare in the U.S. appears to be increasing yearly and bodes very well for the future of biomedical engineering.

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**Question # 28**

Do you know what careers are open to BME graduates do after they complete their degree?

**Answer:-**

BME is an excellent preparation for a career in engineering in large, medium and start-up companies. It also prepares one very well for careers in management, medical administration, sales, and regulatory practices. Biomedical engineering graduates from NJIT have gone on to graduate study in medicine, dentistry, physical therapy, management and law, as well as biomedical engineering.

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**Question # 29**

Do you think is BME a good path toward a career in medicine and dentistry?

**Answer:-**

If a student has an interest in engineering, then BME is a wonderful path to medical school. Contrary to public opinion, one does not need to major in biology to be admitted to medical or dental school.

The undergraduate BME curriculum provides a strong preparation for both medicine and dentistry. Courses required for admission to medical and dental schools fit naturally into a BME student's program of study. The same problem solving skills that are at the core of an engineering education are essential in diagnosing and treating patients. As both medicine and dentistry become increasingly dependent on technology, engineering skills will even more valuable in medical and dental practice.

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**Question # 30**

Do you have any idea what kinds of jobs are available for BME graduates?

**Answer:-**

Graduates of the NJIT's Department of Biomedical Engineering have found employment as design engineers, development engineers, process and manufacturing engineers, and as product managers. NJIT's location in New Jersey provides proximity to the nation's largest concentration of medical device and pharmaceutical companies. Over 500 large and small biomedical businesses are located within 50 miles of the campus. Biomedicine is now New Jersey's largest industry.



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### **Question # 31**

Tell me will I need an advanced degree?

#### **Answer:-**

A BS in biomedical engineering allows the graduate to enter a professional career without further graduate study. NJIT's BME program prepares its students to function as engineers who can be highly successful in their first job.

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- 3 : [Electrical Engineering Frequently Asked Interview Questions and Answers Guide.](#)
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