

Nuclear scientist Interview Questions And Answers Guide.



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Nuclear scientist Job Interview Preparation Guide.

Question # 1

If hired as Nuclear scientist, how do you intend on making a difference with our company?

Answer:-

You can trust me on any task in particular I am very sincere about the work assigned to me. And IIT Kanpur being an elite organisation in field of nuclear science I would be for me a silver opportunity to add a crown for this organization.

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Question # 2

What is your greatest strength as Nuclear scientist?

Answer:-

Sincerity and ability to guide a team and my thirst for knowing new things are my greatest strengths.

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Question # 3

Tell me have you ever been involved in an emergency setting? What actions did you and your team take?

Answer:-

Yes. It was during my b. Tech 3rd year again. When I was the coordinator of music team and we had to perform in a given time slot. But at the final moment we got to know that we are getting a very less time. Then I had to convert a solo performance into a group performance and we distributed the parts on the spot. The chorus and the interlude and other things and we performed that song on stage and we did it in time with loss of some performances but everyone performed in that single song.

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Question # 4

Explain me why are you the best candidate for us as Nuclear scientist?

Answer:-

I am very enthusiastic about having a specialization in this field and the research that I would carry out here. I am sincere and hard working and when given a task I put my back into it.

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Question # 5

Tell me why a career in nuclear power?

Answer:-

It's challenging. And it has a vast scope at least for the next 50 years. Because this is the branch of science where advancement in the field of science is directly affecting the common people. Electricity is the basic need of every one. And even if we consider the alarming rate of global warming it is very crucial that we develop our self towards nuclear technology.

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Question # 6

What is angular acceleration?

Answer:-

Angular acceleration is the rate of change of angular velocity or speed of a body moving along a circular path.

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Question # 7

What is Quantum tunnelling?



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Answer:-

Quantum tunnelling is the process where the particle passes through an obstruction or barrier to reach at another end. It is referred as tunnelling as the particle as "dug" out the way through the potential barrier.

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Question # 8

Explain me what is the speed of light in space?

Answer:-

In the space, light travels at a speed of 186,282 miles per second and sunlight takes about 8 min and 19 sec to reach the surface of the earth.

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Question # 9

If Nuclear Plants Are So Cheap, Why Aren't We Building Them Anymore?

Answer:-

Many nuclear plants are being built, they're just not being built in the United States. China, India, and other developing countries, which need to keep up with massive growth in energy demand as they develop, are building nuclear plants as fast as they can. The high up-front costs of building nuclear plants and the uncertainty about how fast energy demand would grow in rich countries populated with high-energy consumers resulted in the United States and other developed countries turning away from nuclear. However, President Obama recently approved loan guarantees for two new reactors in Georgia and South Carolina and development funding for new reactor designs that are smaller and cheaper to build.

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Question # 10

Tell me can nuclear power sites be terrorist-proof?

Answer:-

Al Qaeda has repeated expressed its intent to launch nuclear attacks on American soil. Pakistan's nuclear facilities have been attacked three times since 2007. South Africa's Pelindaba nuclear site was breached by gunman in 2007. According to Warren Buffet, concerned over his major stake in the insurance industry, a nuclear terrorist strike is matter not if, but when: "We're going to have something in the way of a major nuclear [terrorist] event in this country. It will happen. Whether it will happen in 10 years or 10 minutes, or 50 years ... it's virtually a certainty." Do we want to give terrorist elements-or even a "lone wolf" - thousands of new sources of radioactive material and the ability to kill thousands of people with one successful attack?

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Question # 11

Explain me isn't That Why We Need To Control Population Growth?

Answer:-

Providing universal access to abundant, cheap clean energy is one of the best population growth strategies we have. Consuming more energy allows people to live wealthier, healthier, and longer lives, which translates into lower population growth. As people become wealthier and more economically secure, they have fewer children. This is why leading advocates for human development and environmental sustainability, like Bill Gates and Jeffrey Sachs, strongly support the development and deployment of nuclear energy.

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Question # 12

Tell me what Is The Relationship Between The Principles And The Iaea?

Answer:-

The Principles of Conduct reflect the special role that the IAEA occupies in the development and codification of best practices applicable to the design, construction, operation, and decommissioning of nuclear power plants. Many of the conventions, norms, and standards cited the Principles originated with the IAEA.

Several of the expert advisers to the Principles have served in various capacities at the IAEA or lead IAEA committees tasked with the further advancement of best practices for nuclear power, and many of the vendors' representatives have also interacted with the Agency in various capacities. But this is not an IAEA initiative, although it is intended to complement work done by the IAEA. In some areas it addresses issues that lie outside the IAEA competence or mandate or for which the IAEA has yet to put forward clear norms.

Much of the difference stems from the fact the IAEA is an international organization whereas the Principles are a private-sector initiative. The IAEA's senior leadership was briefed regularly about the Principles in the course of their development, but the Principles themselves have been developed without governmental or IAEA oversight. The vendors will continue to look to the IAEA in the future as a trusted source of best practices applicable to some aspects of nuclear energy, and will discuss updating the POC in light of IAEA actions.

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Question # 13

Tell me what Is $E=Mc^2$?

Answer:-

This is mass-energy lesion.

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Question # 14

Tell me cadmium Rods Are Provided In A Nuclear Reactor. Why?

Answer:-

Cadmium rods are provided in nuclear reactors because when we start nuclear reactor then more energy is required for start the reactor , we can not start nuclear reactor with less energy, the rod is used specially for stopping contact of newtron particles with the system.



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Question # 15

Explain me what Is Fusion?

Answer:-

It is a nuclear reaction in which two nuclei combine to form a larger (with nearly combined mass) nuclei. It releases lot of energy. Sun and stars release energy in this fashion.

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Question # 16

Tell me what do you know about our company and our work?

Answer:-

ABC program is not only an authentic program. On nuclear engineering in our country but its in the whole of Asia. And I presume that the coming 30 years are going to witness a huge development in the field of nuclear technology. And Global guideline is playing a major role is making engineers in this field.

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Question # 17

Tell me how important are the following:
safety, rules, and procedures when dealing with nuclear energy?

Answer:-

Nuclear Energy can be utilised in a constructive manner as well as in destructive manner so it is very important to handle this dangerous technology very well. So are safety measure and rules and procedures which keep this under check. With out proper safety of the man power and the equipment used in the technology it is not possible to harness the positive side of the nuclear energy. Fukushima disaster in japan in 2011 is a benchmark to remind us that nuclear technology should be handled with very care which is only possible by setting us certain procedures and safety rules.

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Question # 18

Tell me do you work well on a team?

Answer:-

Yes, I have worked with a team. My b. Tech final year project was on TL circuits which was done as a part of 3 member team. Also as an co-curricular activity I coordinated music team of my college.

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Question # 19

Tell me do you manage your time well as Nuclear scientist?

Answer:-

Yes I think so. I try to keep myself busy with one task and what is to be done next keeps going in my mind.

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Question # 20

Tell me can An Electron Be Obtained (or Come Out) From The Nucleus?

Answer:-

Yes, electron having an energy higher than the ordinary atomic electron may come out of the nucleus due to beta decay process. A negative beta is identical to an electron in all respect except with difference in kinetic energy.

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Question # 21

Tell me how Asteroids Are Formed?

Answer:-

Due to impact of planets, rocks are escape in the space and became asteroid. in some case the gaseous material and vapour produced in the supernova are coagulated in the space and form asteroid.

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Question # 22

Tell me are There Any Vendors Who Declined To Be Involved In The Development Of The Principles?

Answer:-

No. All of the current and aspiring vendors exporting nuclear power plants at the time the Principles initiative began agreed to participate in the drafting process.

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Question # 23

Tell me but Aren't Solar And Wind Growing Rapidly?

Answer:-



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It's easy to achieve high rates of growth when you start from a tiny amount of installed wind and solar. But the fact remains that solar generated just 0.18 percent of electricity in the United States, and wind 3.5 percent, in 2012.¹³ This was after more than \$50 billion in renewable electricity subsidies over the past three decades. Even Germany, which since 2000 has committed over \$130 billion to solar photovoltaics (PV) in the form of above-market-price 20-year feed-in tariff contracts,¹⁴ only gets 5 percent of its annual electricity from solar.

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Question # 24

Tell me how are we going to transport the waste?

Answer:-

Another unsolved problem is how to safely transport nuclear material across the country. During the decades long debate over storing the nation's radioactive waste at Yucca Mountain, transportation experts estimated that waste disposal from existing nuclear plants would require 1 truck, every 4 hours, 24-hours a day, 365 days a year for 38 years. They estimated that over the same period there would be 130 truck and 440 rail accidents. Each transport container heading to Yucca would hold enough radiation to create a devastating dirty bomb. Shipments would need to travel through 43 states, within one half mile of the homes of tens of millions of people, and through more than 100 of America's largest cities. Barge shipments would move through 17 port cities on the Atlantic seaboard and through the drinking water of the Great Lakes via Lake Michigan. Do we want to build new nuclear power plants when we have yet to figure out a safe way to transport radioactive material across the country?

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Question # 25

Tell me is it True There Are Nuclear Reactors That Can't Melt Down?

Answer:-

Many new reactor designs feature fuels that stop reacting when temperatures rise too high, fuel cladding that cannot melt, and coolants that can cool the reactor with no human or mechanical intervention even if there is a total loss of power. These features make meltdown and serious accidents virtually impossible.

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Question # 26

Tell us what are the properties of fourth matter Plasma?

Answer:-

After Solid, liquid and gas there is one more matter that exists known as Plasma. Properties of Plasma are

- * Plasma has neither a definite shape nor a definite volume
- * Plasma often seen in ionized gases, and heating produces it and ionizing a gas
- * Free electrical charges which are not bound to atoms or ions can cause plasma to be electrically conductive
- * Some of the examples of plasma are lightning, stars, inside fluorescent lights and neon signs

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Question # 27

What are the properties of Photon?

Answer:-

- * It moves at a constant velocity
- * It has zero mass and rest energy
- * When exposed (absorbed/emitted) to radiation it can be destroyed or created
- * With the electron and another particle it will show particle like interaction
- * It carries energy and momentum

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Question # 28

What is term "Convection"?

Answer:-

Convection is the process of transferring heat by movement of heated fluid such as water or air. In this process, the heated fluid expands, and gravity pulls the denser masses under them thus forcing them into motion. One good example is a draft of lamps and stoves.

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Question # 29

Explain me did Fukushima Kill Hopes Of A Nuclear Renaissance?

Answer:-

China, India, the United States, and several Middle Eastern countries paused their new nuclear programs for a safety review after Fukushima, but all have gone forward with planned nuclear plant construction. Even Japan, which shut down all of its 54 nuclear power plants immediately after the earthquake, has begun to restart its reactors.

Germany did accelerate its nuclear phaseout after Fukushima, but this had been under way since 2000. Not a single country cancelled a new nuclear power plant in response to Fukushima. Several countries, like the United Arab Emirates, Turkey, and Jordan, are currently moving forward with plans to build their first commercial nuclear power plants.

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Question # 30

Do you know how are we going to store the waste?

Answer:-



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Spent nuclear fuel rods have a half-life of nearly 30,000 years; depleted uranium will remain toxic for an estimate 4.5 million years. After decades of scientific research at locations like Yucca Mountain in Nevada, no one has figured out how and where to store the radioactive waste created by nuclear power generation. Energy Secretary Steven Chu recently admitted that he has no firm plans for the radioactive wastes created by the proposed new reactors, or by the 104 currently licensed. And according to CBS News, waste is currently leaking from a quarter of US nuclear power sites. In the last three years alone, cancer-causing tritium was found in the water and soil around nuclear sites in New Jersey, Massachusetts and Vermont. How can we move forward with more nuclear power plants when we do not have the capability - or even a plan - to safely store existing toxic waste?

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Question # 31

Tell me isn't The Real Problem That We Simply Consume Too Much Energy?

Answer:-

Most people on the planet actually need to consume more energy, not less. Energy consumption is highly correlated with better health outcomes, longer life spans, and higher living standards. High-energy societies have liberated billions of us from lives of hard agricultural labor. More than a billion people around the world still do not have access to electricity at all. Ensuring that there is abundant energy to power the planet over the coming century promises to unleash the creative potential of billions more. But the basic math of global development and global warming is unforgiving. If we are going to meet the needs of a growing global population while keeping global warming in check, we will need technologies that can produce enormous amounts of energy without emitting carbon.

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Question # 32

Tell me who Provided Funding For The Project?

Answer:-

Funding was provided by private foundations: the William and Flora Hewlett and Alfred P. Sloan foundations, primarily, as well as the Carnegie Endowment for International Peace. Support in kind was also received from Bruce Power and the law firms of Sidley Austin LLP and Foley Hoag LLP. Participating vendors paid for all of their own expenses incurred. No government or industry funding was involved in negotiating the Principles or financing the expenses of Carnegie staff on this project, nor has Carnegie received any contribution from the nuclear industry.

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Question # 33

Tell me how Energy Is Generated In Nuclear Power Plant?

Answer:-

In Nuclear power plant energy is released by nuclear fission. Nuclear fission is the process in which heavy nucleus such as $^{235}_{92}\text{U}$, $^{239}_{94}\text{Pu}$ when bombarded by certain particles (protons, neutrons, X-rays), the heavy nucleus will split into two or more smaller nuclei, ejection of two or more neutrons and liberation of vast amount of energy. Therefore this split of heavy nucleus into two or more smaller nuclei is called fission process.

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Question # 34

The Velocity Of A Body Was Noted To Be Constant During Five Minutes Of Its Motion. Tell Me What Was Acceleration During This Interval Its?

Answer:-

Since velocity of body remains constant during given time period,so diff.of velocity(constant)with respect to time will be ZERO.

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Question # 35

Tell me in Radioactive Dating We Use Half Life To Determine The Age Of A Sample But Not Average Life Why?

Answer:-

It is a quantitative measure in which we compare the quantity of a radioactive substance in the sample to that in the atmosphere/fresh substance.

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Question # 36

Explain about a time when you were particularly effective on prioritizing tasks and completing a project on schedule?

Answer:-

It was my B. Tech final year project. I was working on class of analogue circuits called as the trans-linear circuits and I had to design a filter using these structures. And at that time I was getting no positive results with my work. So it got a little hasty where I had to complete the project in time and I did it when I observed my mistakes and changed my approach.

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Question # 37

Tell us would you feel comfortable working with or under someone who does not have a college education?

Answer:-

It would definitely trouble me, as I would be working with harmful material and would prefer someone with a lot of knowledge and experience. At the same time however, I would hope to help and make sure that the right procedures are being done.

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Question # 38

Explain me what is your greatest weakness as Nuclear scientist? What are you doing to improve it?

**Answer:-**

My greatest weakness is sometimes I get very confused between the ethics and logic. I am improving myself by not to overthink. What is professional has to be professional.

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Question # 39

Tell me are nuclear hazards any different from other hazards we accept every day?

Answer:-

However unlikely, the potential damage that something goes wrong with nuclear power is way out of proportion to the other risks we choose to take as a society. The Chernobyl disaster continues to teach that lesson: the radiation cloud spread over 27 countries; 500,000 people are estimated to have died from radiation exposure over the last two decades; 1,100 square miles surrounding the reactor remain uninhabitable; 5-8 million people continue to live in the contamination zone causing a surge in infant mortality and children born with deformities. The scale, deadliness, and unstoppable of radiation after leakage or an accident at a mine or power plant make nuclear energy unique. Dare we create an energy system where one mistake could turn an entire American region into another Chernobyl?

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Question # 40

Tell me but Isn't Nuclear Energy Also Too Expensive?

Answer:-

Installed nuclear generation in the United States is among the cheapest sources of electricity we have-cheaper even than coal.¹⁶ France, which generates over 80 percent of its electricity with nuclear energy, has some of the cheapest electricity prices in Western Europe.¹⁷ Nuclear plants cost a lot of money to build up front, but they operate for 60 to 80 years, producing massive amounts of energy with virtually no fuel costs. Over the long term, this makes them a bargain.

The Olkiluoto-3 nuclear power plant in Finland-the poster child of expensive nuclear-is \$6.5 billion over budget and six years behind schedule. Even still, recent analysis shows that this beleaguered plant will produce electricity at almost one-fourth the cost of Germany's solar program. These are good technologies to compare, as the Finnish plant is a first-of-a-kind design-an Areva EPR-which is significantly safer, more reliable, and more efficient than existing nuclear power plants. Successive builds, such as the second EPR under construction in France, are expected to be cheaper. But even this extreme case isn't unreasonably expensive when compared to another innovative carbon-free electricity source like solar PV.

In order to meet our climate goals, nuclear will need to get cheaper. A new generation of advanced nuclear designs is presently under development. They will be simpler, safer, and can be constructed modularly and shipped to the site. All of these features give them potential to be significantly cheaper. Nevertheless, these powerful and complicated machines will require federal help to develop and commercialize.

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Question # 41

Tell me doesn't The Spread Of Nuclear Energy Increase The Risk Of Nuclear Proliferation?

Answer:-

There is no relationship between the global expansion of nuclear energy and nuclear proliferation.³⁵ No nation has ever developed a weapon by first developing nuclear energy. To the degree that there has been a progression from one to the other, it has always been the opposite, with nations first developing weapons and then energy.

Some nations claimed to be developing nuclear energy capabilities when they were in fact attempting to develop a weapon,³⁶ but these claims were transparently false to virtually all observers. By international law, nuclear energy facilities must be open to international inspections. The International Atomic Energy Agency has an extensive monitoring and inspection network, and it is not difficult to distinguish a weapons program from an energy program.

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Question # 42

What is Neutrino?

Answer:-

Neutrino is a small, tiny elementary particle which carries no electrical charge which means it is not affected by electro-magnetic forces, and travels almost the speed of light and passes through ordinary matter without making any interaction.

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Question # 43

Explain me about a time you worked effectively under pressure?

Answer:-

It was during my b tech studies. When I had to register for the new semester and at the same time I had to prepare my juniors for the convocation ceremony. And I learned that if you are determined to do something nothing comes in your way.

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Question # 44

Explain me me about a time when you made a mistake. How did you correct the mistake?

Answer:-

The biggest mistake I consider for myself was the time when I was in 3 rd year of my b. Tech course and I was coordinating the music team of IET luck now And I was organizing an event sur sangram but I did not made proper arrangement of the judges of the event. They felt very bad. I apologized to them but from Next time onward I myself checked that they don't face any situation like this again.

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Question # 45

Explain me how Is Energy Transformed In Windmills?



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Answer:-

Essentially what happens is that as the energy from the wind rotates the vanes of the mill, coils of wire rotate inside a permanent magnet (generator) and produce electric voltage/current. This current is then sent onto the grid and used by us as electricity another form of energy. This is a very simple explanation and there is a lot more in the design of the system.

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Question # 46

Tell me what Is Fission And Fusion?

Answer:-

Fission: The breaking down of a Nucleus (not atom) into smaller nuclei. It is usually induced by a neutron.

For example, a Helium nucleus (called alpha particle) is divided into two $4\text{He}(+2) \rightarrow 2\text{H}(+1) + 2\text{H}(+1)$

A lot of energy is released in the process.

Fusion: This happens when two nuclei combines to form a larger nuclei. Huge amount of energy is needed to start this. Because its not easy to bring two positively charged nuclei closer. When they combine, a huge amount of energy is released.

This usually happens in the stars. The enery required to start the fusion comes from the gravitational force between the particles.

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Question # 47

Explain how Has Atomic Energy Of Canada Limited (aecl) Become Candu Energy?

Answer:-

It has been a public policy objective of the Government of Canada for the last several years to transfer the commercial activities from AECL, which is owned by the Government of Canada, to the private sector. On June 29, 2011, the Government of Canada announced the signing an agreement for the sale of AECL's Commercial Operations to Candu Energy Inc., a wholly owned subsidiary of SNC-Lavalin. The targeted closing date for the transaction is September 30, 2011.

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Question # 48

Explain is It Possible That A Nucleus Has Negative Mass Defect?

Answer:-

If the nucleus has had a mass defect it is likely that the strong force and the weak force have sustained a major reduction in equilibrium. This can cause the positive and negative charges to reverse and change energy levels. Such a phenomenon has been describe by Einstein in his paper on the speed of light and time reduction. You can check this with the use of an electron microscope to determine is the color spectrum had changed drastically. If so, then you may have a problem.

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Question # 49

Tell me do we want to switch to nuclear power when there is ZERO room for error?

Answer:-

BP official Mark Hafle recently told a Coast Guard investigative panel that "all the risks had been addressed" at the Deepwater well. With oil still gushing, he's clearly untethered from reality, but it raises an important question: While we can force BP and other oil companies to improve their safety and environmental damage plans, are there are some technological systems - like nuclear power and deepwater drilling - that are so dangerous that they are unacceptable unless they have zero possibility for error. And who could ever give such a guarantee? If we build the thousands of nuclear plants required to meet growing energy needs, even the smallest mistake puts millions of lives at risk. As a society are we willing to accept the risk - however small - of such a catastrophic disaster?

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Question # 50

Explain me what Was The Process For Drafting The Principles?

Answer:-

Carnegie began this process by convening the leading international experts on various aspects of nuclear power plant exportation as well as key exporting vendors of nuclear power plants. Drafting took place at a series of meetings occurring every 3-4 months.

These meetings brought together Carnegie staff, the participating vendor companies, and a group of international experts on the subjects addressed in each of the Principles, as well as antitrust/competition law counsel. The meetings, which were held over a three-year period, involved discussion of the substance of Principles as well as the crafting of consensus on the text of the Principles themselves.

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Question # 51

Tell me what About The Risk That Terrorists Will Attack A Nuclear Plant?

Answer:-

Nuclear plants are not good targets for terrorists. The plants have high security, extensive perimeters, and are built to withstand the impact of a plane crash or large explosion. Were terrorists somehow able to infiltrate a plant and escape undetected with fuel or waste-a highly improbable scenario-they would still need costly, difficult to obtain equipment and highly sophisticated technical knowledge to turn the material into a weapon. It has taken decades and billions of dollars for nations like India, Pakistan, North Korea, and Iran to build a single bomb. The prospect of non-state actors marshaling the technical and financial resources to do the same is highly unlikely.

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Question # 52

Explain me what is Thermal Conductivity?

Answer:-



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The property of the material that relates to its ability to conduct heat is referred as Thermal Conductivity.

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Question # 53

What is Pascal law?

Answer:-

A Pascal law states that when you apply force at one point on liquid it will transmit equal force from one location to another within the liquid.

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Question # 54

Tell me how do you practice safety on the job?

Answer:-

By following rules strictly.

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Question # 55

Tell me Any Two Elementary Particles Which Have Almost Infinite Life Time?

Answer:-

Electron and proton have almost infinite life time.

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Question # 56

Explain me are nuclear power plants worth the cost?

Answer:-

Nuclear power is expensive - really expensive. After reporting on the true costs of building and running nuclear power plants, Time magazine concluded: "It turns out that new plants would be not just extremely expensive but spectacularly expensive." A report published by the Center for American Progress estimates costs for power from new nuclear plants to be 25 to 30 cents per kilowatt-hour-triple current U.S. electricity rates and 10 times the cost of energy efficiency. Wall street has largely deemed nuclear power a bad financial bet, with credit agencies such as Moody's asking "whether new liquidity is even available to support such capital-intensive projects." As a result Congress has been forced to dole out millions in loan guarantees in order to attract private financing for new nuclear plants. This is despite the fact that the Congressional Budget Office has concluded that the risk of default on a nuclear loan would be "very high - well above 50 percent." Do we want to promote a energy "solution" that is more expensive and financially unstable - and creates fewer jobs - than renewable alternatives?

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Question # 57

What is dyne?

Answer:-

Dyne is a unit of force or also referred as C-G-S (centimetre - gram --second). It means that when a force is applied to mass of 1 gram, it gives acceleration of 1 centimetre per second.

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Question # 58

What is a photon under the photon theory of light?

Answer:-

A discrete bundle of electromagnetic light or energy, which always remains in motion is referred as photon.

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Question # 59

Explain me can nuclear power production be kept safe from natural disasters?

Answer:-

Regardless of our best laid plans, tornadoes, earthquakes, tsunamis and other irrepressible natural forces will inevitably strike some nuclear power sites. Just this month a tornado forced the shutdown of the Fermi2 atomic reactor in Michigan, the site of a 1966 melt-down that nearly irradiated the entire Great Lakes region. We need to ask ourselves, is it possible to manage the risk posed by natural disaster?

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Question # 60

Tell me what Is Half Life And Its Significance?

Answer:-

The half life or half life period is defined as the time required for the radio-activity of an isotope to reduce to half of its original value. Radioactive material is dangerous because of its half life periods. Half life for radio active materials such as uranium, plutonium lasts for thousands of years. When the radio activity is exposed to the environment, the element will exist in the environment for thousands of years before it decays results in making the environment (land, water, habitation) radioactive for thousands of decades.

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Question # 61

Explain what Is The Essential Difference Between An Electron And A Beta Ray?

Answer:-

The electron of nuclear origin is called a beta-particle. There is otherwise no difference between an electron and a beta-particle.

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Question # 62

Tell me what Is Nucleus?

Answer:-

It is the part of an atom where whole mass of the atom is assume to be concentrated.Or it is the central part of an atom which contain proton and neutron.

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Question # 63

Tell me where do you see the future of nuclear power in the next fifty years?

Answer:-

There is going to an enormous development in this field and in the Indian context also India has to become self reliant in the field of clean energy. And that are new projects coming up for the purpose. But in next 50 years I see that about 25 to 50 percent of the energy distribution in India through nuclear processes only.

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Question # 64

Tell me how do you handle stressful situations as Nuclear scientist?

Answer:-

I sit and think about the scenario in and try to figure out the best way out of the situation.

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Question # 65

Explain me do you believe nuclear fusion will soon be a reliable power source?

Answer:-

It is possible. But first we have to become self reliable in nuclear fission itself. Because nuclear fusion requires a very large amount of energy to fuse the atoms. And this kind of energy can be obtained by fission itself. There is no other way in present days to achieve such amount of energy except for nuclear fission.

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Question # 66

Tell me why is it so important to follow the details so precisely in nuclear energy?

Answer:-

Nuclear engineering is a dangerous technology. And technically if we see the anatomy of the reactions we can conclude that a very vast amount of energy is released in a very short time through a chain reaction and here we are only going to control that chain reaction . If we are not precise in our approach... It will lead to destruction. Nuclear plant will become an atom bomb.

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Question # 67

Do you know history Of Nuclear Reaction?

Answer:-

Bigger nucleus broken to from two lighter nucleus and two or three neutrons is called nuclear fission used for making atom bomb two lighter nucleus joined to form bigger nucleus is called nuclear fusion used for making hydrogen bomb.

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Question # 68

Do you know what Other Industries Have Adopted Similar Codes Of Conduct?

Answer:-

The process that produced the Principles of Conduct, as well as the Principles themselves, reflects a recent trend in the management of global challenges. Leading national and transnational industries [business sectors], such as the oil and gas, apparel and pharmaceutical industries, have come to recognize that their reputations as socially responsible actors are key to their long-term business success. Some industries with similar codes of conduct include:

- * Manufacturing (The Fair Labor Association, Worldwide Responsible Apparel Production)
- * Extractive (Voluntary Principles on Security and Human Rights, Extractive Industries Transparency Initiative, International Council on Mining and Metals)
- * Financial (Equator Principles, UN Principles for Responsible Investment)
- * Electronics (Electronic Industry Code of Conduct)

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Question # 69

Tell me doesn't Cheap Natural Gas Make Nuclear Uncompetitive?

Answer:-

Cheap gas is making coal, nuclear, renewables, and virtually all other energy technologies less competitive. But that didn't happen by accident. The shale gas



revolution, which dramatically lowered the price of gas in the United States, was made possible thanks to three decades of public investment in better drilling technologies. This is why investing in next generation nuclear technologies right now is so important. so that we have a new generation of cheap nuclear technologies that can replace fossil energy in the coming decades.

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Question # 70

Tell us what is the unit to measure the heat resistance?

Answer:-

Ohm is the unit to measure the heat resistance.

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Question # 71

Tell me can't We Become More Energy Efficient Instead Of Using More Energy?

Answer:-

We are vastly more energy efficient than we were just a few decades ago, much less a few centuries ago. Yet, even as we've become more efficient, we've also continued to use more energy. That's because energy efficiency makes energy cheaper, and the result is that we find more ways to use it. Just a few years ago, nobody had heard of the cloud, and two decades ago nobody had heard of the Internet. Today, more of us than ever are able fly around the world. We fill our homes with 50-inch televisions and all manner of networked devices. We transform billboards and skyscrapers into gigantic LED video screens. Efficiency is good and we should strive for more, but it won't eliminate the need to develop enormous quantities of cheap and zero carbon energy to meet the demands of the growing global economy.

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Question # 72

Tell me what is Quantum entanglement?

Answer:-

Quantum entanglement is one of the central principle of quantum physics, which means multiple particles are linked together in a way that the measurement of one particle quantum state determines the possible quantum of the other particles

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Question # 73

Explain what Is Chain Reaction And How It Is Controlled In Nuclear Reactor?

Answer:-

In fission reaction during every stage two or more daughter nuclei is released, two or more neutrons and vast energy is released. Each neutron produced further participate in fission reaction and results in release of more neutrons, this reaction continues results in nuclear explosion. However in nuclear reactor the excess neutrons produced will be absorbed using moderator and control rods allowing only one neutron per fission to carryout further chain reaction.

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Question # 74

Tell me what Does Held Nucleons Together In A Nucleus?

Answer:-

Nuclear force. It is the nuclear force which binds the nucleons together and is responsible for the stability of nucleus.

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Question # 75

Tell me what Is Meant By The Rest Mass Energy Of An Electron?

Answer:-

According to the Einstein's Theory of Relativity, the mass of a body (say a particle) depends on the energy and on the momentum (say the velocity) with which the particle moves.

So, we have a problem: is there a mass value that every observers can relate to? Yes: is the rest mass, that is the mass you could measure in a frame of reference co-moving with the particle (in which the particle is still), that is the center-of-mass frame and that coincide with the minimum value measurable for every observers.

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Question # 76

Tell me why is nuclear power a great energy source? In your opinion?

Answer:-

We are getting too much dependent on fossil fuels. The oil prices are already high and also it is not convenient for the environment. Our major economy is dependent of coal but according to statistics it would require a million times less uranium than the coak to produce same amount of energy every year and that too without green house emissions so nuclear technology is indeed a great source of energy.

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Question # 77

Tell me why are typical cooling towers curved inward?

Answer:-

Cooling tower are meant to absorb the heat dissipated by the system using cooling fluids. A curved nature maximizes the area which comes in the contact with the heat. And so heat transfer rate is higher.



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Question # 78

Basic Nuclear Scientist Job Interview Questions:

Answer:-

- * How important are the following: safety, rules, and procedures when dealing with nuclear energy?
- * Why are typical cooling towers curved inward?
- * What is your greatest weakness? What are you doing to improve it?
- * How do you practice safety on the job?
- * What are your career goals?
- * If hired, how do you intend on making a difference with our company?
- * Would you feel comfortable working with or under someone who does not have a college education?
- * Tell me about a time you worked effectively under pressure.
- * Can you program in Java?
- * How do you handle stressful situations?
- * Are you efficient with your time?
- * Do you work well on a team?
- * What is your greatest strength?
- * Why did you choose to apply with us?
- * Why a career in nuclear power?
- * Why is nuclear power a great energy source? In your opinion.
- * Have you ever been involved in an emergency setting? What actions did you and your team take?
- * Tell me about a time when you made a mistake. How did you correct the mistake?
- * Where do you see the future of nuclear power in the next fifty years?
- * Do you believe nuclear fusion will soon be a reliable power source?
- * Tell us about a time when you were particularly effective on prioritizing tasks and completing a project on schedule.
- * Why is it so important to follow the details so precisely in nuclear energy?
- * What do you know about our company?
- * Why are you the best candidate for us?
- * Do you manage your time well?

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Question # 79

Explain me can't We Solve Global Warming With Renewables?

Answer:-

We've made a lot of progress with renewables, but they are still costly, intermittent, and difficult to scale. Without utility scale energy storage technologies, which remain unviable, you simply can't run a modern society on wind and solar alone. Some places, like Germany and Denmark, have achieved higher levels of wind and solar, but they have done so through heavy, historically unprecedented deployment subsidies, that can't be sustained. Furthermore, these societies remain overwhelmingly dependent upon fossil energy: Germany got 70 percent of its electricity from fossil fuels in 2012 versus 5 percent from solar and 7 percent from wind.

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Question # 80

Tell me how Was Participation In The Process Determined?

Answer:-

The Carnegie Endowment began this initiative in early 2008 by contacting each company that it knew to be exporting nuclear power plants at the time. The list was expanded subsequently in response to market developments. If, in the future, additional companies seek to export nuclear power plants, they will be invited to subscribe to the Principles and participate in their future review and implementation.

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Question # 81

Explain me what Are The Particles Used In Nuclear Fission?

Answer:-

High energy alpha particles, protons, deuterons, X-rays as well as neutrons can be used for the fission process. However neutrons are chosen because neutrons are electrically neutral in nature and thus they do not require high kinetic energy to overcome electrical repulsion from the positively charged nuclei and can participate in fission reaction.

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Question # 82

Tell me can extraction be made safe?

Answer:-

Millions of tons of toxic waste is created at the start of the "nuclear chain" with uranium extraction producing radioactive rock, dust and water - resulting in contaminated water supplies and skyrocketing cancer, kidney and other deadly diseases in communities near uranium mines. The extraction jobs are some of the most dangerous anywhere, with workers regularly overexposed to radiation. Is the human and environmental cost of uranium extraction being properly included on the cost side of nuclear power?

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Question # 83

Tell me what Is Fertile Material And Fissile Material?

**Answer:-**

Not all the Uranium extracted from the ore can be used as fuel for plant for carrying out the fission reaction. Natural uranium consists of 99.3% of ^{238}U and only 0.7% of ^{235}U . Out of these isotopes, ^{235}U is used in fission reaction. Materials such as ^{233}U , ^{235}U , and ^{239}Pu are called fissile material or fissionable materials. This material is required to carry out the fission reaction. Materials such as ^{238}U and ^{232}Th which occur in nature are called fertile materials. Fissile materials (^{233}U , ^{239}Pu) can also be artificially be produced using fertile materials.

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Question # 84

Tell me are you efficient with your time as Nuclear scientist?

Answer:-

I need to understand things properly without a proper understanding I prefer not to proceed further and understanding something needs time.

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Question # 85

Explain why Is Heavy Water Used As A Moderator?

Answer:-

Heavy water is water highly enriched in the hydrogen isotope deuterium. We can compare the neutron interactions with billiard ball collision, where neutron collides with nucleus of other atoms & lose energy. If the colliding nucleus size is small like hydrogen nucleus it will lose maximum energy. If nucleus is heavy the neutron hits the nucleus just changes its direction but not that much change in the energy of neutron. So we use heavy water as moderator to slow down neutrons.

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Question # 86

Tell me what is Parallax and Distance Measurement?

Answer:-

To measure the distance to nearby stars, astronomers use an effect called Parallax. Parallax is the apparent displacement of an object because of a change in observer's point of view, for instance, when we look at object with one eye shut and then doing the same with other eye, there is a difference in the position of the object this is known as Parallax.

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Question # 87

Tell me what Is The Difference Between Cathode Ray And Beta Ray?

Answer:-

Actually normal on the wave front called RAY, in the beta radiation there is wave packet and hence no wave front. In cathode ray there is electromagnetic radiation and we can use word ray but in the case of beta particle we use word beta radiation instead of beta ray.

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Question # 88

Explain me what are your career goals as Nuclear scientist?

Answer:-

Research in leading field of science was my primary goal since childhood. But would also like to associate myself with a profession that leads to a direct development of the society and common people.

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Question # 89

Tell me do We Really Need Nuclear In Order To Deal With Global Warming?

Answer:-

Preventing dangerous warming of the planet due to human emissions of greenhouse gases will require that we cut our emissions by 80 percent over the next 40 years at the same time that global energy demand is expected to double or triple. Doing so will require that we produce vast amounts of zero carbon energy. At present, the only way we know how to do that is with nuclear energy.

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Question # 90

What is Uncertainty principle?

Answer:-

Uncertainty principle tells that the momentum and position of a particle cannot be measured precisely.

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Question # 91

Do you know what is shearing stress?

Answer:-

Shearing stress is the ratio of the tangential force F to the area of the face $BCGH$ over which it is applied. The ratio shearing stress is divided by shearing strain is the shear modulus or coefficient of rigidity, n

$$\text{Shearing stress} = \text{const}$$



Shearing strain

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Question # 92

Tell me why did you choose to apply with us?

Answer:-

Actually I got information of this program through BARC. I want to pursue carrier in nuclear science and when I got to know that I could have masters in this field then I considered it a brightest opportunity to look after this program.

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Question # 93

Explain what is Quantum Physics?

Answer:-

The understanding of behavior of matter and energy at the molecular, nuclear, atomic and even microscopic levels is referred as Quantum physics

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Question # 94

What is Wave-Particle duality?

Answer:-

When matter and light exhibits properties of both waves and particles, it is referred as Wave-Particle duality. For instance, Light can behave like wave when it shines through narrow slits while, when exposed to some metal surface it will spray electrons acting as a particle. So under different conditions it will act.

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Question # 95

What is dark matter?

Answer:-

Dark matter is an invisible matter in the space that can hold the stars into the galaxy. They have no effect of electromagnetic force on it, which means it does absorb, reflect or emit light that makes them practically invisible.

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