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MAINS ANSWERS FOR TEST-13

30/10/2022



Mains Q& A Test(11)- (30/10/2022)

Approach for the Mains Answer Writing

- **Start Your answer briefly introducing the Topic**
- **Discuss the Key points about the Topic with the Context in the Question**
- **Discuss Pro and Cons of the Topic (if applicable)**
- **Quote the Statistics (if there are any)**
- **Draw the Conclusion (Make Sure your answer doesn't support any particular view and make it look balanced)**



1. What is m-RNA vaccine and discuss differences between other vaccines? (150 Words)

Introduction

Vaccines help to prepare the body to fight against the pathogens such as bacteria or viruses to prevent infection.

Body

M-RNA

M-RNA or Messenger RNA is a new type of vaccine that uses a molecule called messenger RNA. It teaches our cells how to make a protein or a protein that triggers an immune response inside our bodies. That immune response, which produces antibodies, is what protects us from getting infected if the real virus enters our bodies.

The researchers developed indigenous potential mRNA vaccine against SARS-CoV-2. It is based on the Moderna model, but has been built with the information available in the open and indigenous technology and materials.

How it is different from traditional vaccine

Traditional vaccine	M-RNA vaccine
Microbial protein or inactive microbe is placed in a modified version of a different virus (viral vector).	In M-RNA vaccine a molecule called messenger RNA is used rather than part of an actual bacteria or virus.
The production is slower and it is more difficult to produce right type of protein.	The production is faster because it is easier to produce M-RNA molecule.

Conclusion

Researchers have been studying and working with mRNA vaccines for decades. Recently Pfizer-Biotech and the Moderna are using this technology to develop covid-19 vaccine. Beyond vaccines, cancer research has used mRNA to trigger the immune system to target specific cancer cells.

2. What are Discrete powers of the speaker and Explain the process of his/her removal.

Introduction

According to the Constitution of India, a Speaker is vested with immense administrative and discretionary powers.

Body

Discrete Powers of the speaker

Only speaker can disqualify a Member of Parliament from the house on the grounds of defection.

He/she presides over the joint sitting of the two houses of Parliament.

He/she is given the pivotal power to decide whether any bill is a money bill and his/her decision is considered final.

The speaker is ultimate arbiter and interpreter of those provisions which relate to the functioning of the house and his/her decisions are final and binding and ordinarily cannot be questioned, challenged or criticized.

Removal of the Speaker

The term of the speaker is 5 years and the constitution has given the Lower house authority to remove the speaker if needed.

The house can remove the speaker through a resolution passed by an effective majority (more than 50 per of the total strength of the house present and voting) as per the Articles 94 and 96 of the Indian Constitution for Lok Sabha and under Article 179 of the constitution for the state legislative assemblies.

The speaker can also be removed on getting disqualified from being a Lok Sabha member under sections 7 and 8 of the Representation of the People Act, 1951.

3. What is Internet of Things (IoT)? What are its current and potential applications? (150 Words)

Introduction

The internet of things or IoT is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human-to-computer interaction.

Kevin Ashton, co-founder of the Auto-ID center at MIT, first mentioned the internet of things in a presentation he made to protect & Gamble (P&G) in 1999. IoT has evolved from the convergence of wireless technologies, microelectromechanical systems (MEMS), micro services and the internet.

Current Applications

Healthcare: IoT has various applications in healthcare, which are from remote monitoring equipment to advance and smart sensors to equipment integration. Telemedicine is already being used and recently a remote-controlled heart surgery was done by a Gujarat doctor.

Industrial automation: Inter-connecting the different machines and devices in industries such as power generation, oil, gas etc., to smart handlings of resources.

Wearable's: Monitoring the physical activities like the health bands and also the smart watches with almost every possible functions of a mobile phone.

Smart Grid: Extract information on the behaviour of consumers and electricity suppliers in an automated fashion to improve the efficiency, economics, and reliability of electricity distribution.

Smart Home: Connecting the different components like lights, electric devise to remotely control. Also, increasingly IoT is used in e-homes optimizing the power use.

Car: Connected car technology with an extensive network of multiple sensors, antennas, embedded software, and technologies help making decisions with consistency, accuracy and speed.

Potential Applications

Smart farming: Often overlooked today has huge potential which includes smart monitoring of farm inputs, livestock maintenance and so on. Smart Greenhouse is a potential field which enhances the yield of crops by controlling environmental parameters.

Healthcare: Integrated with advanced nanotechnology have potential applications in Nano based drug delivery system, smart pills etc., Also, smart monitoring of patients acting as a bridge between collection and secured sharing, analysis response of health data.

Automobile: Driverless car is a combination of IoT With AI and is a potential future application. Also, Tier Air pressure Detection, smart display of information about different components are some potential applications.

Smart Eye: Google's most ambitious project- The Glass equipped with sensors and connectivity options from Wi-Fi to Bluetooth to provide numerous options and accessibility features right in front of our eye.

Lighting Control: The potential application includes lighting control with mesh networking to develop large scale, reliable, wireless lighting solutions to homes. The sensors embedded can also detect the presence of people and turn off the lights in their absence.

4. Discuss why just providing subsidised food is not suffice to tackle hunger issue in India what else need to be done to end hunger problem in India? (150 words)

Introduction

Despite of rapid economic growth and food being subsidised, many in India remain hungry without access to adequate food and nutrition. Many children stunted are less tall than expected for their age.

Body

State of hunger in India

According to FAO estimates in “The state of Food Security and Nutrition in the World, 2020 report, 189.2 million people are under nourished in India by this measure 14 per cent of the population is undernourished in India. Also 51.4 per cent of women of reproductive age between 15 to 49 years are anaemic. Malnourished children have a higher risk of death from common childhood illnesses such as diarrhea, pneumonia and malaria.

Reasons for hunger persist in India

Poverty: It is estimated 23.6 per cent of Indian population is living below \$1.25 per day on purchasing power parity.

Lack of access to food: In most parts of India lacks the proper transport facilities to the markets and insufficient financial resources contributing the food insecurity of the most vulnerable populations.

Lack of safe drinking water: poor sanitation and dangerous hygiene practices increase vulnerability to infectious and water-borne diseases causes the acute malnutrition.

Climate change: The number of natural disasters like droughts, cyclones floods etc are increasing the number of people suffering from hunger.

Ineffective implementation: Ineffective implementation of the Government schemes like integrated child development care and National health mission etc.

Government policies and gaps to be filled

The government has also taken significant steps to combat under and malnutrition over the past two decades such as through the introduction of mid-day meals at schools, Anganwadi systems to provide rations to pregnant and lactating mothers and subsidised grain for those living below the poverty line through a public distribution system.

The National Food Security Act (NFSA), 2013, aims to ensure food and nutrition security for the most vulnerable through its associated schemes and programmes, making access to food a legal right.

Conclusion

The government should improve policy support for improving agricultural produce of traditional crops in the country.

Storage capacity should be improved to prevent post-harvest losses.

The targeting efficiency of all food safety nets should be improved

Child feeding practices should be improved in the country

Fortification, diversification and supplementation may be used as simultaneous strategies to address micro and macronutrient deficiencies.

5. In the context of unpredicted monsoon which results into floods. Comment(150 words)

Introduction

The Climate of India is described as the 'monsoon' type. In Asia, this type of climate is found mainly in the south and southeast.

Out of a total of 4 seasonal divisions of India, monsoon occupies 2 divisions namely.

The southwest Monsoon season- Rainfall received from the south west monsoon is seasonal is character, which occurs between June and September.

The retreating monsoon season-The months of October and November are known for retreating monsoons.

Reasons

Natural

Higher Rainfall: As per the IMD, monsoon has become frequent and unpredictable.

Storms surges (for coastal cities): E.g. Cyclone Amphan in 2020 flooded the streets of Kolkata. Within eastern India, the storm killed 98 people and caused \$13.8 billion (2020 USD)

Groundwater levels: In Chennai, the replenished groundwater table across the city after rains becomes a challenge for several buildings with basements.

Anthropogenic:

Encroachment: A large number of wetlands that soaked up the rainwater have encroached. Bangalore had 262 lakes in the 1960s now only 10 of them hold water.

Rapid and unplanned urbanization: In Bengaluru, storm water drains were not directly connected to its water bodies. In some places, the runoff water was flowing into constructed deviation canals. CAG found that this increased the chances of flash floods.

Destruction of mangroves: Mumbai lost about 40% of its mangroves between 1995 and 2005.

Poor civic management of storm water drainage: CAG report pulled up Bengaluru municipality for the poor management.

Lack of data: CAG also found that the Bengaluru municipality did not maintain proper records of the storm water management funds allotted to it under the JNNURM.

Lack of coordination: CAG report also noted the lack of coordination between the Bangalore Development Authority on drainage-related matters.

Steps to mitigate flooding:

Sponge Cities Mission: The idea of a sponge city is to make cities more permeable so as to hold and use the water which falls upon them.

Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

Storm water disposal system: The Brihanmumbai storm water disposal systems or BRIMSTOWAD, the project to overhaul Mumbai city's old storm water drainage system was started after the 2005 deluge.

Water-sensitive urban design (WSUD in Australia): Regards urban storm water runoff, and waste water as a resource rather than a nuisance or liability.

Bioswales or 'Rain Garden' (New York): are landscape features that collect polluted storm water runoff, soak it into the ground, and filter out pollution.

Conclusion:

Therefore, there is a need to include public open spaces within the urban fabric in the form of storm management infrastructure, which could help our cities transform into water-sensitive cities.

6. Micro plastics increase the survival rate of viruses. Comment (150 words)

Introduction

Microplastics are tiny plastic particles that result from commercial product development and the breakdown of larger plastics. They are fragments of any type of plastic less than 5mm (0.20in) in length.

Body

Plastic pollution

Plastic pollution is big evil and can help viruses alive and infectious in fresh water for days. This is very dangerous as sewage water is brimming with disease causing micro-organisms are found to have large volumes of Microplastics despite being treated. They eventually find their way to the ocean.

How Microplastics help viruses

- A layer of microbial cells or biofilm forms on the surface of Microplastics soon after they are released into fresh water, this nutrient-rich coating becomes a hospitable surface for microorganisms that hop onto the floating Microplastics. Viruses on Microplastics remain alive in water for three days or more.
- During this time, wastewater is drained into rivers to reach beaches.
- Virus can also latch onto natural components but plastic pollution last much longer.
- Viruses associated with biofilm-colonized pellets are more stable compared to those remaining in the water.
- The natural composition of the lake water used in each treatment may play a role in virus particle aggregation.
- A combination of factors like high micro plastic abundance in wastewater, intrinsic characteristics of plastics like buoyancy and hydrophobicity and high loading of human viral pathogens into wastewater treatment processing provides significant scope for viruses to become associated with the surfaces of Microplastics.
- The viruses are tested for three days but a longer study period will determine the exact longevity of viruses surviving on the plastic surface.

7.What is a virtual private network (VPN)? Discuss its applications and securities issues associated with it. (150 words)

Introduction

VPN stands for “virtual private network” and describes the opportunity to establish a protected network connection when using public networks.

VPNs encrypt internet traffic and disguise the user’s online identity. This makes it more difficult for third parties to track activities online and steal data. The encryption takes place in real time.

Functioning

A VPN hides the user’s IP address by letting the network redirect it through a specially configured remote server run by a VPN host. This means that if a user is surfing online with a VPN, the VPN server becomes the source of data.

Internet service provider (ISP) and other third parties cannot see which websites the user’s visits or data sent and received online.

Applications:

VPN is used to hide location as well as encrypt information being transferred between the sender and receiver. This can be the data of an enterprise sent over a cloud network and strong, or two individuals exchanging files. On the one hand, this service is extremely useful for users accessing the Internet over public Wi-Fi systems.

VPN also helps companies, government’s agencies, and individuals encrypt data transmitted over the internet. It prevents any snooping and information tapping by external sources while the data is in transit.

Security issues:

The big worry for security agencies across the world is that VPNs allow criminals to transmit data without the fear of getting their IP address traced. For example, law enforcement agencies in Europe banned a VPN service provider last year after it was discovered that cybercriminals were using the platform.

This also has commercial ramifications for businesses like Netflix and other content providers that have geographical restrictions. For example, a user in India can use VPN and pretend to be a Netflix subscriber in the US to watch content that may restrict in this country.

Last year the parliamentary standing committee on Home Affairs had even suggested banning VPN in India to counter cyber threats and other nefarious activities.

8. Explain the reasons for the climate change and how it impacts the Agricultural sector in India. (150 words)

Introduction

Climate Change is a periodic modification of Earth's climate brought about due to the changes in the atmosphere as well as the interactions between the atmosphere and various other geological, chemical, biological and geographical factors within the Earth's system.

Body

Reasons for the climate change

Natural factors

There are several factors that cause the Earth's climate to change. They are Continental Drift, Variation of the Earth's orbit, plate tectonics, volcanic Activity, Ocean Currents. This affects the climate over a period of thousands to millions of years.

Anthropogenic Factors

The Greenhouse Gases, water vapor, carbon dioxide, Chlorofluorocarbons, Methane and Nitrous oxide.

Impact on the Indian Agriculture sector

- Agriculture sector in India is vulnerable to climate change.
- Higher temperatures tend to reduce crop yields and favour weed and pest proliferation.
- Climate change can have negative effects on irrigated crops yields across agro-ecological regions both due to temperature rise and changes in water availability.
- Rainfed agriculture will be primarily impacted due to rainfall variability and reduction in number of rainy days.
- Analysis of impact of climate change under National innovations in Climate Resilient Agriculture (NICRA) Project has found that climate change is expected to affect yields, particularly in crops like rice, wheat and maize.

9. The air pollution problem is not merely a technological issue but also a social concern. Discuss (150 Words)

Introduction:

Air pollution is a silent killer in India, especially in the country's northern belt. 18% of the world's population lives in India, but the country bears 26% of the global diseases burden due to air pollution. According to estimates of the India state-level Disease Burden initiative-published last year in Lancet planetary health-over half the 12.4 lakh deaths in India

attributed to air pollution in 2017 were of individuals under the age of 70. The average life expectancy in the country could be 1.7 years higher, if air pollution is contained at a level at which human health is not harmed.

AQI measures how safe the air around you is for breathing. Organizations that report AQI measure the density of various pollutants in the air (such as PM_{2.5}, PM₁₀, nitrogen dioxide, ozone, etc) at different monitoring stations.

Pollutants Covered: Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂), Particulate Matter (size less than 10 µm) or PM 10, Particulate Matter (size less than 2.5 µm) or PM_{2.5}, Ozone (O₃), Carbon Monoxide (CO), Ammonia (NH₃)

(Air Pollutants that most of us NEVER heard of-): Lead, Benzene (C₆H₆), Benzo(a)Pyrene (BaP), Arsenic(As), Nickel (Ni)

Pollution problem is not merely a technological issue but also a social concern

1. Like all inequality, the weakest and the most disenfranchised suffer the worst health effects of toxic air first.
2. It is caused by human behaviors and because it not only has a negative effect on the planet but also on people and society.
3. Poverty exposes people to various stressors, such as polluted air, that increase pollution susceptibility.
4. Some political parties have painted air pollution as an elite problem. It's the opposite. The rich have easy access to masks, purifiers and filters to protect themselves.
5. The increasing use of gadgets like air purifiers by a certain section of people becomes problematic. These devices require constant maintenance and constitute a lopsided and expensive answer to the air pollution problem.
6. It is the poor, homeless, those working outdoors who are most affected. They include rag pickers, safai karamcharis, auto-rickshaw drivers, traffic policemen, and small farmers, daily-wage labourers (especially in the construction and the mining sectors).
7. The improvement in the quality of lives of the rich and middle classes should not be at the cost of poor. This perspective now informs the air pollution management programmes of several countries
8. Some states of the US, Singapore and China for instance, have come out with citizen-friendly remedies that emphasis dust management, soil conservation and ecological restoration.
9. Air pollution is not a local issue that can be resolved by using household gadgets or placing devices at a few places.

10. It is a nationwide concern that requires systematic measures, long-term planning, stringent action against those violating emission laws and standards.

Conclusion

India requires inter-departmental coordination, continuous monitoring, appropriate warning systems and adequate protocols for assessment of air quality. There is a need for auditors who can enforce these standards. Long term solutions to address air pollution require political will. The private sector should also start looking at social investments beyond statutory requirements.

10. What are the supply chain constraints of India's food processing sector? What steps have should be taken to remove these constraints(150 words)

Introduction

A supply chain is the network of all the individuals, organisations, resources, activities and technology involved in the creation and sale of a product.

Body

India with its young, up skilled and affordable workforce along with supporting industrial system represents a conducive environment for overseas investors with access to its vast demographically charged and active market.

According to a recently released report by World Economic Forum entitled "Shifting Global Value Chains: The India Opportunity", India has the potential to reshape supply chains and become a global manufacturing hub.

Supply Chain constraints

Material Scarcity

Insufficient inputs have been a concern since the pandemic began, due to an abrupt rise in consumer demand like never before.

Increasing freight prices

Contrary to initial expectations, the need for container shipping has increased considerably throughout the pandemic. With worldwide lockdown measures inciting a surge in ecommerce sales, the response has been a great import demand for raw materials and manufactured consumer goods.

Demand forecasting

Demand forecasting in the middle of a global pandemic has added a new layer of complexity to many companies' supply chain management.

Port congestion

Port congestion caused by the pandemic remains one of the top challenges for the Indian supply chains, seeing as port owners, carriers, and shippers are collectively still scrambling for a viable solution to this problem.

Consumer attitudes

Consumer attitudes and behaviors have changed in some big ways during the pandemic, as well like lowering the threshold for delivery times and raising the requirements for a positive customer experience.

Digital transformation

When it comes to supply chain operations, digital transformation and IoT can be mixed blessings.

Inflation

There is a strong chance 2022 will be remembered as the year of inflation.

While much has been said about inflation in India, the reality is that quite a few countries around the world are now dealing with the highest inflation in decades.

Overcoming supply chain constrains

Keep liquidity

Protect your business with flexible access to capital. After all, having cash on hand is often the difference between meeting demand and going out of stock.

Diversify sourcing

Broaden your range of sourcing, perhaps geographically, to increase choice and abundance within your supply chain.

Identify alternative shipping ports

Hedge your bets by seeking out alternative ports to meet your fulfillment needs and stay on schedule regardless of unforeseen events or a sudden spike in customer orders.

Improve demand forecasting

The best way to improve forecasting is by using automation to calculate these metrics on your behalf.

With automated inventory alerts, forecasting tools and cash on hand merchants can stock up with confidence based on predicted product or historical sales.

Stay resilient

Retailers who stay resilient in the face of supply chain challenges have the best chance for success. This might mean coming up with better solutions to complex problems with inventory, technology, marketing and more.

Conclusion

To attract those firms wanting to relocate, India will have to compete with countries such as Vietnam and Malaysia and offer competitive investment incentives, improve policy and regulatory stability.

Diversification and building some redundancy in supply chains is a focus for many companies given the risks revealed by the covid-19 pandemic.

