: OPSCSTUDY model answers features

Short answer, easy to remember

∴ Not a short note on particular topic.

Covers Paper 1 & 2 (including statistics)

✓ Selective for OPSC Mains

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90 Days Answers Compilations:

## **RECOMMENDATIONS:**

How to utilize: read the questions carefully > understand the demand of the questions > read the answers (answers are NOT EXACT )>UNDERLINE & HIGHLIGHT THE CRUX of the answers on the pdf > you can deduct and add few things as per your views > repeat the process till you fill confident.

Note: In writing answer, you need to focus:

Following are main dimensions of High Scoring Answer-

- **Context**
- Structuring
- Presentation
- Alntroduction
- Conclusion
- ALanguage Skills
- A Handwriting
- **A**Content

Note: (Normal G.S. Evaluation Pattern)

Excellent Writing: 60-80% mark is given

Good Writing: 50-60% mark is given

Average Writing: 40-50% mark is given

Not Satisfied Writing: Below 40% mark is given

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#### Day 1: Ancient India + Current Affairs (Dynamic)

Q.1: Sixth century B.C. saw emergence of new religious sects in India. Discuss the causes of origin and its impact on Indian society. (10 marks)

#### Ans:

## Introduction:

Part of Religious reform movement

• Some records: as many as 62 sects

Important sects: Jainism and Buddhism

Mostly over Gangetic plains

#### Body:

Causes: Post Vedic times/ Later Vedic Age (1000-600 B.C.):

- Varna system/ Caste system divided the society (rigid and inequality in the society)
- rigid society and filled with dogmas and rituals
- Many gods and goddesses were made to appear in religious belief. (animal sacrifices, numerous ceremonies and meaningless practices.)
- · Superstitions superseded spirituality.
- domination of the priests & Brahminical supremacy
- growth of trade > Vaisyas economic growth> . wanted to enhance their social status against Varna system > extended support to these new religions.

#### Impacts:

- A reaction against such religious and social evils became inevitable.
- spiritual and religious awakening in the Indian society for newness and reform.
- Languages and Literature ( Pali and other local languages in Buddhism)
- Promotion of Arts and Architecture
- Philosophy: The concept of ahimsa
- Promoted the spread of Indian culture to other parts of Asia.
- Making religion simple
- Opposition to Caste System

**Conclusion:** Jainism and Buddhism arose to suit the needs of a changing society, patronized by an emerging class and left an indelible mark on India's culture, architecture, philosophy and way of living. India's society is still has a great impact though these sects.

Q.2: Discuss India's policy on Israel-Palestine conflict. (10 marks)

Intro: The Israeli–Palestinian conflict is one of the world's most enduring conflicts, with the Israeli occupation of the West Bank and the Gaza Strip etc. India's Goal: Striving to maintain balance between India's historic ties with Palestine and its blossoming relations with Israel. India in the recent year has been following a dehyphenation policy between Israel and Palestine.

#### BODY:

Chronology: India's policy on the longest running conflict in the world has gone from being unequivocally pro-Palestine for the first four decades, to a tense balancing act with its three-



decade-old friendly ties with Israel. In recent years, India's position has also been perceived as pro-Israel.

**Hyphenated foreign policy to Dehyphenation of Policy**: In foreign relations, a hyphenated approach is one where our foreign policy with one country is correlated with that of another country, and we have to be extra cautious that while pursuing better relations with one we do not hurt our relations with another. It restricts the diplomatic potential of a country.

Dehyphenation of Policy means India's relationship with Israel would stand on its own merits, independent and separate from India's relationship with the Palestinians.

**India's stand:** The balancing was evident in the pointed condemnation of the "indiscriminate rocket firings from Gaza" on civilian targets in Israel, but not of the Israeli strikes inside Gaza; the customary omission since 2017 of any reference to East Jerusalem as the capital of a Palestinian state; and the hyphenation of "Haram Al Sharif/Temple Mount", equating claims of both Israel and Palestine.

**Conclusion**: India's role in multilateral organisations requires "strenuous efforts in cooperation with all related parties to achieve security and stability in the Middle East and West Asia"

#### Day 2: Geography + Current Affairs (Dynamic)

Q.1: The concept "paradox of plenty" is quite relevant to present scenario of Odisha. Comment (10 marks)

#### Intro:

The "paradox of plenty" refers that many societies with abundant natural resources have worse economic outcomes than those that lack natural resources. It states rich with natural resources experience poor economic growth and an increased likelihood of violent conflict.

## **Body:**

Odisha has a lion's share of the Country's mineral reserves. The chromite, nickel, bauxite, iron ore and coal resources of the state respectively stand at a staggering 83, 92, 55, 38 and 26 percent of India's total reserves. Odisha with the majority of the Indian reserves should be the richest and most developed state. However, the facts related to the state tell us a different story. The state with the largest resource base performs poorly on almost all socio-economic indicators.

Despite such a strong resource base as per recent NITI Aayog report, 'National Multidimensional Poverty Index (MPI) 2021 – Baseline Report', Odisha is ranked eighth from the bottom with 29.35% of the State's population found to be multi-dimensionally poor.

#### Causes:

- ✓ Weak institutional arrangements
- ✓ Lack of skill & entrepreneurship
- Concept of dutch disease(influx of foreign cash into land)
   Impact of colonialism on institutions
- ✓ Resource sector profitable to the state and causes the economy to specialize away from the non-resource sector. Thus, no diversification of economic activities
- ✓ Rent-seeking behaviour of industrialists/politicians/government officials

#### **Conclusion:**

To fully realize their potential of the state. Odisha govt. need to invest in human capital, take up the diversification of their economic activities, and build a natural resource fund

## Q.2: Corona pandemic gave a thrust for the revival of health sector in India. Discuss. (10 marks)

#### Intro:

Corona pandemic & Health sector conditions: The COVID-19 pandemic has massively disrupted our lives. There has been a lot of discussion around the lack of capacity of our health-care system to fight this epidemic. COVID-19 has led to a dramatic reduction in the numbers of patients seeking care like nonurgent problems including procedures and surgeries. circumstantial curb on unwarranted medical practices.

#### **BODY:**

Thrust/health sector reforms

- ✓ Government becoming more responsible for the health care system.
- ✓ Universal Health Coverage
- ✓ The COVID-19 epidemic has centre-staged the need for a robust public health system and increased investment.
- ✓ Private sector dependent to government sector development(as it fails to provide health care to mass) (safeguarding peoples interests from predatory corporate privatization)
- ✓ Weak and unregulated health care system to more responsible system
- ✓ Introduction of mass healthcare system for temporary period
- ✓ Etc.

### **Conclusion:**

Current situation health care in India

## Day 3: Polity + Current Affairs (Dynamic)

## Q.1: The "All India Services" are the connecting node between states and center. Comment (10 marks)

**Intro:** British Raj introduced the process of civil services in India to streamline the process of administration. Later on, the Constitution provides for the creation of All India Services (AIS) common to the Union and the States. Ever since then the central government is run by a human resource mechanism called All India Services. Presently only the IAS, the IPS and the IFS have been constituted as All India Services.

#### Body:

The All-India Services, (AIS) are unique feature of our federal, polity. Policy framing, brainstorming, sector-specific decision, and a lot more is driven by All India Services Officers. The AIS scheme is a part of this general

policy or making the Centre strong in the overall constitutional arrangements. The AIS have proved to be very strong uniting links between the Centre and the states in the day-to-day administration of the country as these services are common between the Centre and the states. They provide uniform standards of administration of the country as these services are common between the Centre and the states. They provide uniform standards of administration from Kashmir to Kanyakumari and from Dwarka to Dibrugarh.

The common exceptional feature of the All India Services is that the candidates selected for these civil services are recruited by the Center (Union Government in federal polity), however, their services are allotted under various State Cadres and they have the accountability to serve both under the State and the Centre. (cooperative federalism)

**Issue**: In January 2022, the Centre proposed an amendment to the Indian Administrative Service (Cadre) Rules, 1954, which would allow the Union government to command the services of an IAS officer in the "central" government overriding consent (as required by current rules) from the state government or the bureaucrat concerned. The amendments, state governments are arguing, fundamentally undermine the federal spirit embedded in the design of the All India Services.

**Conclusion:** For a nation to progress towards development, The centre and state must work in a synergy wherein the demands of deputation must be heard by the state government regardless of any political background(s) and having nation's interest first policy.

#### Q.2: What are the consequences of corruption in politics in India. (10 marks)

Political corruption has become a dominant mode of corruption in modern time. Political corruption is the abuse of public power, office, or resources by elected government officials for personal gain, by extortion, soliciting or offering bribes.

Major corruption events that took place in recent years like followings

- Defence deal scam
- Banking scams
- Swachh Vidyalaya Abhiyan
- Indian coal allocation scam
- Commonwealth Games
- Vyapam scam
- Adarsh Housing Society scam

## **Consequences:**

- Misusage of tax money
- Concentration of wealth in politicians
- Tax evasion and black money
- Increase in muscle power
- Crime & instability in the society
- Political pressure on government institutions
- Undermining the Sustainable Development Goals
- Economic loss and inefficiency
- Poverty and inequality
- Public and private sector dysfunctionality
- Failures in infrastructure
- Rigged economic and political systems
- Impunity and partial justice
- Lack of quality in services
- Lack of proper justice
- Chances of Unemployment
- Poor Health and hygiene

- Low growth rate of Economy
- Low Foreign Direct Investment
- Low Development Rate
- Low Standard of Living Steps taken by Indian government
- Demonetization
- Right to Information Act (RTI
- Direct Benefit Transfer
- E-Auctions
- Digitization
- Introduction of self-attestation of certificates
- Lokpal, Lokayukta, CBI & CVC
- Anti-corruption laws in India

Conclusion: Govt. actions towards it and more aspirations

#### Day 4: Economy + Current Affairs (Dynamic)

## Q.1: India's economic growth is largely dependent upon service sector growth. Do you agree? Justify your position. (10 marks)

Yes, at present India's economic growth is largely dependent upon service sector growth.

The services sector is not only the dominant sector in India's GDP, but has also attracted significant foreign investment, has contributed significantly to export and has provided large-scale employment. India's services sector covers a wide variety of activities such as trade, hotel and restaurants, transport, storage and communication, financing, insurance, real estate, business services, community, social and personal services, and services associated with construction.

Share of the services sector accounted for 54% of the total GVA in FY21. India's services sector GVA increased at a CAGR of 11.43% to Rs. 101.47 trillion (US\$ 1,439.48 billion) in FY20, from Rs. 68.81 trillion (US\$ 1,005.30 billion) in FY16.

The growth of the Services Sector in India is a unique example of leap-frogging traditional models of economic growth. Within a short span of 50 years since independence, the contribution of the service sector in India to the country's GDP is a lion's share of over 60%.

By 2025, healthcare industry is expected to reach US\$ 372 billion. India's digital economy is estimated to reach US\$ 1 trillion by 2025. By end of 2023, India's IT and business services sector is expected to reach US\$ 14.3 billion with 8% growth. India's software service industry is expected to reach US\$ 1 trillion by 2030.

However, it still employs only 25% of the labour force(jobless growth). Further, it is found that growth pattern in the service sector has not been uniform across all services in India. Consequently, agriculture (which is stagnant) and manufacturing (which has not yet risen to its full potential) continue to sustain the majority of our employed population. This presents a unique challenge to future economic growth in India and requires out of the box solutions that will help rapidly harness the potential of the service industry in India. Invest India takes a look at the contribution of the services sector in the Indian economy, its successes and also explores potential enablers for future equitable economic growth.

### Q.2: Discuss the role of NPCI in promoting the financial inclusion in India. (10 marks)

"Financial Inclusion" refers to ensuring access to formal financial services like a bank account and instruments of deposits, withdrawal and remittance. In recent years, along with government's initiative NPCI has been playing a greater role in promoting the financial inclusion in India.

National Payments Corporation of India (NPCI), an umbrella organisation for operating retail payments and settlement systems in India, is an initiative of Reserve Bank of India (RBI) and Indian Banks' Association (IBA) under the provisions of the Payment and Settlement Systems Act, 2007, for creating a robust Payment &

Settlement Infrastructure in India. NPCI has made its valuable contribution to the banking sector through its products from time to time.

NPCI has made its valuable contribution to the financial inclusion (banking sector) through its products from time to time. The products and their significance are listed below:

- National Financial Switch (NFS)
- Immediate Payment Service (IMPS)
- Aadhaar-enabled Payment Service (AePS)
- Cheque Truncation System (CTS)
- RuPay
- National Automated Clearing House (NACH)
- Aadhaar Payment Bridge (APB)
- \*99#
- Unified Payments Interface (UPI)
- Bharat BillPay
- National Electronic Toll Collection (NETC)
- BHIM
- BharatQR
- BHIM Aadhaar Pay

Through these above initiatives, NPCI enables common mass to join Indian banking system, use a easy medium of transactions, mobile to mobile transactions etc. For example, In FY21, UPI processed more than 38 billion transactions, amounting to Rs 71.59 trillion. Consequently. It accelerates the pace of financial inclusion in India.

#### Day 5: Internal issue+ Current Affairs (Dynamic)

## Q.1: Discuss in brief the regional imbalances in India. (10 marks)

Regional imbalance is a major economic issue in India. Regional imbalances or disparities means wide differences in per capita income, literacy rates, health and education services, levels of industrialization, etc. between different regions. Regions may be either States or regions within a State. In India there are enormous imbalances on various accounts.

## **Key Indicators of Regional Imbalances in India**

- State per capita income
- Inter state disparities in Agricultural & industrial Development
- Population below poverty line: Spatial Distribution of Industries
- Unemployment Rates
- Intra state imbalance
- Literacy Rate

Example, Among the 33 states and UTs in India, Maharashtra contributes about 14% to India's GDP where as Odisha contributes 2.75% only

The following nine main causes of regional imbalances in India. are:

- Historical Factor
- Geographical Factors
- Locational Advantages
- Inadequacy of Economic Overheads
- Failure of Planning Mechanism
- Marginalisation of the Impact of Green Revolution to Certain Regions
- Lack of Growth of Ancillary Industries in Backward States and Others.

- Lack of Motivation on the part of Backward States
- Political Instability

Regional imbalance poses stress & threat to the goal of inclusive growth & reduction of poverty. An important cause of regional tensions, which lead to popular agitation & at times militant activities, is such regional disparities in economic & social development that exists within some of the States.

## Q.2: Discuss the present challenges to India's internal security . (10 marks)

Internal Security refers to upholding national law and maintenance of peace, law and order within a country's territory. Since the advent of independence, India is facing various issues related to internal security and over the years India's internal security problems have multiplied due to linguistic riots, interstate disputes, caste and ethnic tensions etc.

Internal security problems at present scenario: These are

Hinterland Terrorism: Terrorism in the Indian hinterland is the result of a complex set of

**inter-related factors**. Terrorist attacks by Pakistani jihadists and Indian Islamists, in turn, radicalised elements within the Hindu Right and set the stage for their turn towards terrorism in the last few years.

**Militancy in North-East and J&K region:** Militancy is a condition which experiences the use of violence, being combative or predisposed to fight.

Left wing extremism (LWE): Left-wing extremists are also known as Maoists globally and as

Naxalites in India. There are several left-wing extremist organisations in the country operating in many areas.

**Money laundering:** It threatens internal security as it can be used for terror financing, narcotics, human trafficking, corruption etc.

**Organized crime and its nexus with terrorism:** Organized crime is a category of transnational, national, or local groupings of highly centralized enterprises run by criminals to engage in illegal activity, most commonly for profit.

Religious Fundamentalism and Intolerance: India has been witnessing many communal riots since British rule.

**Drug Trafficking:** India's proximity to the largest producers of heroin and hashish- the Golden Triangle and Golden Crescent (Afghanistan-Pakistan-Iran) has made India's border vulnerable to drug trafficking.

Regionalism and inter-state disputes: It pose a threat to India's sovereignty.

**Cyber-crime and cyber security**: In present day situation cyber security poses threat to Internal securities. Cyber security actually protects your personal information by responding, detecting and preventing the attacks.

**Porous borders:** India has porous borders with Bangladesh and Nepal. Porous border aggravates the problems like counterfeit currency infiltration, human and drug trafficking.

Criminalisation of politics: The nexus between Politics and Criminal destabilizes the internal security systems.

Day 6: International Relation+ Current Affairs (Dynamic)

# Q.1: Peace and harmony in the world can be attained through multi-polar international system. Comment (10 marks)

Peace phenomenon connotes absence of fight or war between or among the nations and is the generally accepted notion of peace at the international level same as for the general Indian perspective. Peace and harmony can bring a peaceful and stable order to society, and they are a necessary condition for the survival and development of mankind.

With the end of the Cold War and the collapse and dissolution of the USSR(1989), the bipolar international system transformed in unipolarity and the US emerged as the only superpower. A lonely superpower "able to impose its will on another countries" and, in some cases such as the 2003 war to Iraq waged without the United Nations (UN) Security Council consensus, to act outside the laws of the international community. This shows US hegemony in the world through political, economical, cultural means.

The current US economic crisis and the rise of new regional power pose threat to unipolarity. In this situation, multi-polar world is only way out to peace and harmony.

While the multi-polar international system characterized by the pursuit of the balance of power among great powers, in a way that none of them was strong enough to predominate over others, transformed in bipolarity.

#### Steps towards peace:

- Balance of power among great powers
- Independent foreign policy
- Opportunity for weaker states to exercise their strategic
- Autonomy (multialign/isolation/neutrality etc.)

The current distribution of power allows not only great powers but also middle, small powers and non-state actors to have military capabilities that could threaten the global security. With nuclear weapons. Some scholars argue that nuclear deterrence "could reduce the war-proneness of the coming multipolar system". Many scholars argue that presence of nuclear weapons as a source of instability. The availability of the nuclear weapons will indeed represent another potential source of instability. Middle powers, small powers and non-state actors with nuclear capabilities could become a serious threat for the global security. But this is the reality, for the first time in history, the stability of the future world will therefore depend not only on the unpredictable effects of the rivalry among great powers, but also on the dangerous potential of middle and small powers and non-state actors armed with nuclear weapons.

## Q.2: Discuss the impact of Russia -Ukraine war on India. (10 marks)

Russia invaded Ukraine on 24 February 2022 resulting world war-III fear all over the world. The Russia-Ukrainian War is an ongoing war between Russia (together with pro-Russian separatist forces) and Ukraine. Russia -Ukraine war have impacted the political and economic sphere of world negatively.

### Impact of Russia -Ukraine war on India:

#### **Economic impact:**

- **1. Inflation:** The price of oil will go up on the global market- Inflation and food prices have been soaring for some time- and with state elections over, the government is expected to begin raising oil prices again- and the overall domestic economy will be hit by consumer sentiment.
- **2. Rupee crashed**: Amidst the uncertainties, the Rupee has crashed to its lowest ever more than 77 Rs to the dollar, and this is going to make imports more expensive. However, India's non-weapon non-oil Trade with Russia is miniscule, and that will not be affected.

**World War scenario**: Any conflict- where the U.S. and its European allies are ranged against Russia will impact the whole world- economically and in terms of security, and India, as a partner to both Moscow and Washington will either have to take sides, or be prepared to deal with unhappiness from both sides.

**S-400 delivery and US waiver**: The crisis comes precisely as India's purchase of the Russian S-400 missile system is under way- and New Delhi hopes for a waiver of U.S. sanctions on this. Conflict will complicate both the delivery of the system, and the possibility of a presidential waiver.

**Moves focus from China:** Just as U.S. and Europe had grown more focussed on their IndoPacific strategy that puts India centre-stage, and India grapples with Chinese aggression and land-grab at the Line of Actual Control, and 100,000 troops along the boundary on both sides, the world's attention is diverted from China to Russia.

**Brings Russia China closer**- the Crisis will make Moscow more dependent on friends like China, and build a regional bloc of sorts that India is not a part of.

**Energy crisis:** In any conflict- Europe worries Russia will turn down gas and oil supplies driving energy prices up. Already tensions have pushed oil prices up 14% in a month past \$90 and analyst say they could hit \$125 a barrel if the situation is not resolved.

**Indians in Ukraine:** As India's UN envoy pointed out in his speech- India has more than 20,000 nationals in Ukraine, mostly medical students, as well as business professionals in the field of pharma, IT and engineering and the government is concerned about their safety in the event of a crisis, although MEA says it is not at present evacuating citizens.

#### Day 7: Social Issues+ Current Affairs (Dynamic)

#### Q.1: Justify the unity in diversity in the Indian Society. (10 marks)

The term 'diversity' emphasizes differences rather than inequalities. It means collective differences, that is, differences which mark off one group of people from another. Unity means integration. Unity in diversity essentially means "unity without uniformity" and "diversity without fragmentation". It is based on the notion that diversity enriches human interaction.

#### Various forms of diversity in India:

- Religious diversity
- Linguistic diversity
- Racial diversity
- Caste diversity
- Cultural diversity
- Geographical diversity

## **Factors Leading to Unity Amidst Diversity in India**

- Constitutional Identity
- Religious co-existence
- Inter-State mobility
- Economic integration
- Institution of pilgrimage and religious practices:
- Fairs and festivals
- Climatic integration via monsoon:
- Sports and Cinema

India is a plural society both in letter and spirit. A grand synthesis of cultures, religions and languages of the people belonging to different castes and communities. It is this synthesis which has made India a unique mosque of cultures. Thus, India present seemingly multicultural situation within in the framework of a single integrated cultural whole.

## Q.2: Discuss the role of social media spreading fake news in the society. (10 marks)

Fake news is false or misleading information presented as news. Fake news often has the aim of damaging the reputation of a person or entity, or making money through advertising revenue. Sharing of fake news on social media platforms is a global concern.

Spreading fake news requires three factors social networks, motivation, and tools and services to be present to be successful. Nowadays these IT cells seem to have all the factors social networks being WhatsApp, Instagram, Twitter, Youtube. Motivation as mentioned above money is the main motivation and

the workers in the cells get paid very high salaries and tools and services being numbers of different accounts on these social media platforms all accounts working and spreading fake news every day.

On social media, there is norms to be followed like traditional media. Users are likely to share information without fact-checking, especially when it contains controversial or emotionally charged content. The emotional reactions of users contribute to the speed at which information spreads, and the sheer volume of information that people are now subjected to makes it very difficult to assess truthfulness.

The consequences of fake news on social media came to the forefront during the 2016 United States presidential election and the 2016 United Kingdom European Union membership referendum ("Brexit"). In India, various riots has been witnessed on the basis of fake news on social media.

Addressing these problems can be very challenging. There is no consensus regarding a formal definition of fake news. The following steps can be taken

- Firstly, malicious bots should be identified and blocked.
- Secondly, social media users should be educated and empowered to check facts.
- Finally, more responsibility also needs to be placed on social media platforms like Facebook or Twitter.

## Day 8: Legal & Environmental issue + Current Affairs (Dynamic)

#### Q.1: Justice delayed is justice denied. Explain it with Indian context. (10 marks)

The phrase "Justice delayed is justice denied" implies that if justice is not carried out right away timely, then even if it is carried out later it is not really justice because there was a period of time when there was a lack of justice.

As per current scenario of India, it will take 300 years to clear the backlog of cases in Indian Courts, it proof our criminal justice system is sick stagnant and in urgent need of complete overhaul.

The recent examples of justice delayed;

- Nirbhaya case took 7 years for final judgement
- Ayodhya verdict took 27 years for final judgement

## Causes of justice delay

- The number of Judges are not sufficient as per populace of our nation. (total approx. 18000 judges in India/judge population ratio)
- Lawyers takes many adjournments on the basis of unnecessary grounds for adjournments
- Lawyers from criminal/violator side delays because of fear of judgements against him/her.
- There is no such act or code in our system which laid down the time period for disposal of case.
- Corruption in judiciary
- Complexed Judicial System
- Lack of Manpower
- Frivolous litigation
- Nexus among politician and judges
- In today's generation lawyers are no more interested to ensure justice they simply involved themselves in the business of law and easily dazzle their customers by enjoying oral contentions.

#### Remedies:

- Spread awareness about law
- Increase in judge to population ratio
- Additional Dispute Resolutions /Lok Adalat takes some burden of cases
- Removal of unnecessary grounds for adjournments

- Frivolous litigation should be discouraged
- Natural Law of justice is promoted for instant justice on natural basis.

## Q.2: Solid waste management is the key to clean city. Discuss. (10 marks)

India is the third-largest producer of solid waste, after only China and the United States. City solid waste includes commercial and domestic wastes generated in municipal or notified areas in either solid or semi-solid form excluding industrial hazardous wastes but including treated bio-medical wastes. we can group all these types of waste into wet waste (Biodegradable) and dry waste (Non Biodegradable). In India, the volume of waste generation has been increasing rapidly over the last few years. As per one government report, urban India will generate 4,50,132 tonnes per day (TPD) of waste by 2031; and 11,95,000 TPD by 2050. The per capita waste generation is 450 grams per day, and has increased at a rate of 1.3 percent per annum. Thus, it is important to act proactively to make the city clean.

Solid Waste Management may be defined as the discipline associated with the control of generation, collection, storage, transfer and transport, processing and disposal of solid wastes in a manner that is in accord with the best principles of public health, economics, engineering, conservation, aesthetics and other environmental considerations (methods: dumping on land, dumping in water, ploughing into the soil and incineration etc.).

Across India, existing systems for the collection, transportation and disposal of solid waste are mired in chaos. The problem is more acute in the urban areas, where rapidly growing populations generate increasingly larger quantities of solid waste that urban local bodies (ULBs) are unable to manage effectively. Improper management of solid waste poses risks to the environment and public health. According to the 12th Schedule of the 74th Constitution Amendment Act of 1992, ULBs are responsible for keeping cities and towns clean.

## Various initiative by Indian govt. to make the city clean:

- Swachh Bharat Mission (Urban)
- Star Rating of Garbage-Free Cities
- Swachhata Hi Sewa Campaign
- GOBAR-dhan (Galvanizing Organic Bio-Agro Resources) Scheme.
- Waste to Energy.

## Day 9: S&T+ Current Affairs (Dynamic)

#### Q.1: What is CRISPR-Cas 9 technology? Discuss its applications and importance. (10 marks)

CRISPR-Cas9 is a genome editing tool that is creating a buzz in the science world. It is faster, cheaper and more accurate than previous techniques of editing DNA and has a wide range of potential applications.

The CRISPR-Cas9 system consists of two key molecules that introduce a change (mutation) into the DNA. These are:

- An enzyme called Cas9. This acts as a pair of 'molecular scissors' that can cut the two strands of DNA
  at a specific location in the genome so that bits of DNA can then be added or removed.
- A piece of RNA called guide RNA (gRNA). This consists of a small piece of pre-designed RNA sequence (about 20 bases long) located within a longer RNA scaffold. The scaffold part binds to DNA and the pre-designed sequence 'guides' Cas9 to the right part of the genome. This makes sure that the Cas9 enzyme cuts at the right point in the genome.

## **Applications and implications:**

• CRISPR-Cas9 has a lot of potential as a tool for treating a range of medical conditions that have a genetic component, including cancer, hepatitis B or even high cholesterol.

- Many of the proposed applications involve editing the genomes of somatic (non-reproductive) cells but there has been a lot of interest in and debate about the potential to edit germline (reproductive) cells.
- Because any changes made in germline cells will be passed on from generation to generation it has important ethical implications.
- Carrying out gene editing in germline cells is currently illegal in the UK and most other countries. By
  contrast, the use of CRISPR-Cas9 and other gene editing technologies in somatic cells is
  uncontroversial. Indeed they have already been used to treat human disease on a small number of
  exceptional and/or life-threatening cases.

It is likely to be many years before CRISPR-Cas9 is used routinely in humans. Much research is still focusing on its use in animal models or isolated human cells, with the aim to eventually use the technology to routinely treat diseases in humans. There is a lot of work focusing on eliminating 'off-target' effects, where the CRISPR-Cas9 system cuts at a different gene to the one that was intended to be edited.

## Q.2: Differentiate between supercomputer and quantum computer. Enumerate the applications of quantum computer in healthcare. (10 marks)

Supercomputer	Quantum computer
Supercomputer is a system that operates at a high	Quantum computer is a computer aimed at
compute to input to output ratio and delivers a very large	utilizing new quantum algorithms to accelerate
number of effective computing cycles per second.	digital computation.
A supercomputer is a computer that can do calculations	Quantum computers use qubits(quantum-
extraordinary fast, which is achieved by connecting	mechanical phenomena such as superposition
thousands and thousands of processors.( integrated	and entanglement to perform computation.),
circuits enabled faster computing,)	which is in contrast with the bits (1 and 0) we
	are familiar with in normal computers.
Common applications of supercomputing are simulation	Quantum computing is still in its relative
and modeling of physical phenomena such as climate	infancy, but this advanced technology already
change, explosions, etc.	promises to solve real-world problems.
The three examples of supercomputers in India are	Google has been building its Sycamore
PARAM Siddhi-Al, Pratyush, and Mihir.	quantum computer

Healthcare organizations are expected to reap considerable business and scientific benefits in the era of quantum computing.

- Diagnostic assistance
- Precision medicine
- Optimize pricing is risk analysis. (insurance premiums)
- Complex calculations in chemistry, machine learning/artificial intelligence (AI), optimization, or simulation tasks.

Also can help in the following grounds;

- 1. Insurance Claims
- 2. Customer relationship management
- 3. Electronic Health Records
- 4. Imaging
- 5. Lab values
- 6. Internet of medical things

- 7. Social determinants
- 8. Wearables
- 9. Clinical research

## Day 10 : Statistical Analysis, Graphs & Diagrams + Current Affairs (Dynamic)

Q.1: A bag contains 4 red, 6 green and 4 blue balls. Four balls are drawn at random. What is the probability that none of the balls drawn is blue? (5 marks)

Total number of balls = (4 + 6 + 4) = 14

Let S be the sample space.

Then, n(S) = Number of ways of drawing 4 balls out of 14

$$= 14C4 = \frac{14!}{4!*10!} = \frac{11 \times 11 \times 13 \times 14}{4 \times 3 \times 2} = 1001$$

[nc = n! - Formula

Let E = Event of drawing 4 balls, none of which is blue.

 $\therefore$ n(E)= Number of ways of drawing 4 balls out of 10 (4 + 6) balls.

= 10 C 4 = 
$$\frac{10!}{6! \times 4!}$$
 =  $\frac{7 * 8 * 9 * 10}{4 * 3 * 2}$  = 210

$$\therefore P(E) = \frac{n(E)}{n(S)} = 210/1001 = 0.2097$$

## Q.2: Three unbiased coins are tossed. What is the probability of getting at most two heads?. (5 marks)

Total no of probabilities=  $2^3$  =8

for 2/1/0 heads probability is =7(only 1 left HHH)

: there is no head or one head or two heads)

So we cannot include HHH, because it contains 3 heads.

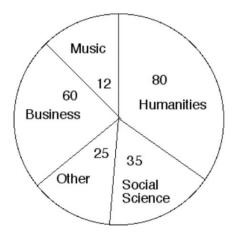
Here S = {TTT, TTH, THT, HTT, THH, HTH, HHT, HHH}

Let E = event of getting at most two heads.

Then E = {TTT, TTH, THT, HTT, THH, HTH, HHT}.

$$P(E) = n(E)/n(S) = 7/8$$

Q:3: The graph below shows the distribution according to academic major of a group of students. None of them have double majors.



Approximately what percent are majoring in something other than music?

Total academic majors= 12 +80+35+25+60= 212

Other than music majors = 200

212=100 %

=>1 =100/212

 $=>200 = 100/212 \ x \ 200 = 94.339$ 

Q:4: The table below gives an accurate portrayal of the distribution of humans according to IQ.

IQ	Percentile 99		
135			
119	90		
115	84		
104	60		
100	50		
92	30		
87	20		
80	10		
76	4		

1. What percent of humans have IQs greater than or equal to119?

A. 90 B. 99 C. 9 D. 10

Percentile rank: The percentile rank of a value in a distribution tells the percent of score sthat were less than the given value.

IQ of 119 has percentile rank of 90 table tells us 90% of human has IQ less than 119.

It means that the other 10% of human has IQ greater or equal to 199.

Thus, 100% -90% = 10%

2. Approximately what percent of humans have IQs between 92 and 104?

A. 30 B. 50 C. 20 D. 10

IQ of 92 has percentile of 30, 30% of human has IQ less than 92.likewise table tells

60% of human IQ less than 104.

Now we can subtract 60% -30% = 30%	
Thus, 30% of human have IQ level between 92 to 104.	
3. What percent of humans have IQs less than 87?	
A. 24 B. 20 C. 14 D. 10	
Since IQ of 87 has percentile of 20, the table tells that 20% of human has IQ less than 87.	
>>>>>	
Continues	



Name		Subject
Time	Total Marks_	
		Comments by Evaluator
Question No:	Marks Allotted	Remarks
		Positive (Continue these traits):  Negative (Improvement needed):

# Measurement Tools /Feedback:

Tools	Below	Average	Good	Excellent
Handwriting				
Presentation	Ĵ			
Structure				
Context				
Content				
Language skills				
Introduction				
Body			31 To	
Conclusion	Î		A B	

