ENGLISH LANGUAGE & LOGICAL REASONING

PASSAGE - I

Source: *The Indian Express, "To $5 trillion, and beyond," by Ram Madhav, June 7, 2025 (epaper.indianexpress.com)*

THE INDIAN ECONOMY is on the threshold of crossing another milestone and becoming the fourth-largest in the world. It is a commendable achievement for a country that began its journey as an independent nation in 1947 with a meagre $33-billion economy.

Decades of British exploitation left it significantly weakened and poor. The Jawaharlal Nehru government's Soviet-style central planning, while promoting heavy industries and the public sector, led to low economic growth of 3–4 per cent, pejoratively described as the "Hindu rate of growth". In 40 years, it could only reach the $266 billion mark.

The first major leap came in 1991 when the Narasimha Rao government introduced economic liberalisation and unleashed the potential of Indian entrepreneurs. The opportunity offered by the digital revolution with the introduction of the internet was quickly seized by some of India's brightest tech entrepreneurs. The Indian economy grew manifold in the next two decades on the strength of its services economy, which contributed 60 per cent of the nation's GDP. The economy crossed $2 trillion by the time the Narendra Modi government came to power.

The last 10 years have seen the Modi government giving greater emphasis to faster economic growth through programmes like Stand-Up India, Start-Up India and Make in India. The results are there to see. IMF data from May has projected that the Indian economy will overtake Japan this year, reaching the $4.19 trillion mark. Japan was once a $5.8 trillion economy but has shrunk to $4.18 trillion due to stagnation and slow growth rates since the 1990s.

As India demonstrated promising growth, naysayers rushed forward to raise the hollow bogey of per capita income. Per capita income is determined by factors like the size of the population. India is the world's most populous country. As a result, whatever may be the size of GDP, its per capita figures are bound to remain low. No country's growth can be measured on the criterion of per capita income alone. Although the US is the world's largest economy with a $28 trillion GDP, it ranks seventh in per capita. China, the second-largest economy with $18 trillion, ranks 69. The per capita argument is worthless because even if India becomes the world's largest economy with $30 trillion, it will still be ranked 55th in terms of per capita.

The only merit of this argument is that the country should be able to provide better living standards to all its citizens.

In democracies, the fruits of economic growth percolate to all sections of society. This is reflected in the consumption patterns. Surveys indicate that the monthly per capita expenditure (MPCE) has increased in India by more than 2.5 times in the last 10 years. Interestingly, most of this expenditure was on travel, health and education, indicating healthy growth parameters.

Tourism has seen remarkable growth in the last 10 years. China still occupies the first rank in the number of domestic and international travellers. India lagged in this sector for decades due to a lack of disposable income and tourism infrastructure. But today, with the incomes of the middle class growing substantially, Indians have started travelling more. Data indicates about 2.5 billion domestic tourist visits last year. Figures for 2024 indicate that almost 29 million Indians travelled abroad, marking a 30 per cent growth.

All this indicates healthy economic growth, which has led to the near eradication of baseline poverty and the creation of a strong middle class with disposable income. The Modi government aspires to take the economy to further heights with targets ranging from $5 trillion in 2027 to $10 trillion in 2035. The current impressive growth is a result of corrective measures taken by the government. It removed parallel economy, allowed proper distribution of wealth and encouraged greater consumption.

But the path from here needs to be calibrated carefully. Economies grow on the strength not just of consumption but also trade and technology. Quality, quantity and speed are the main determining factors.

India and China were leading economies until the middle of the 18th century. But when the industrial revolution occurred first in England and later in America, those two countries surged ahead and became leading economic powers by the dawn of the 20th century. When automation and digitisation progressed in the last decades of the last century, China moved ahead of the curve, emerging as the second-largest economy by 2008.

We are now in the post-manufacturing and post-digital era. Growth in frontier technologies will determine a country's economic future. A country of India's size and capability cannot just think perpetually in terms of catching up with the developed West and the rest. It has to, instead, think in terms of moving ahead of the curve.

We missed the first two industrial revolutions as we were a slave nation at that time. We benefitted partially from the third, digital revolution of the 1980s and '90s and became a leader in sectors like IT services. But the Fourth Industrial Revolution, led by Artificial Intelligence (AI), quantum technologies, robotics, space, defence, crypto and bio-engineering, calls for new thinking and new priorities.

The impressive growth of the Indian economy in the last decade was largely due to the unleashing of its basic potential. The trajectory from here should be more strategic, with greater emphasis on deep-tech R&D, an area in which we lag. It is important to create a climate of hassle-free access to investments in these areas. Only then can India aspire to achieve its goal of becoming a $10 trillion economy in the next 10 years.

1. The author cites India's historical "Hindu rate of growth" primarily to illustrate which of the following?

A. The structural inefficiencies embedded in India's pre-liberalisation economic model
B. The political motivations behind the Jawaharlal Nehru government's policy framework
C. The distortions in GDP accounting prior to 1991 economic reforms
D. The cultural prejudices that shaped economic terminology in early academic writings

2. Which of the following best captures the author's reasoning for dismissing per-capita GDP as a meaningful benchmark for India's growth?

A. India's domestic economic structure is fundamentally service-oriented
B. Per-capita metrics inadequately reflect improvements in living standards across large populations
C. Per-capita comparisons unfairly favour countries with small population bases
D. The metric ignores India's progress in technological capability and global competitiveness

3. Which of the following sentences best expresses the central idea of the passage?

A. India must prioritise consumption-led growth to reach a $10 trillion economy.
B. India's rise to the fourth-largest economy stems from liberalisation, but future gains depend on frontier technologies.
C. India's demographic weight ensures high GDP despite structural weaknesses.
D. Tourism growth reflects the most reliable indicator of India's long-term economic potential.

4. The author describes China's economic rise during the last decades of the 20th century primarily to:

A. Demonstrate the impact of automation and digitisation on leapfrogging older economies
B. Suggest that India could replicate China's state-driven industrial model
C. Highlight the structural disadvantages imposed on India by colonial history
D. Critique India's failure to establish comparable export-oriented manufacturing zones

5. Which of the following best describes the tone of the passage?

A. Alarmist and speculative
B. Optimistic but cautionary
C. Detached and purely analytical
D. Skeptical of India's economic potential

6. The passage suggests that measuring India's progress primarily through per-capita income reflects flawed reasoning because:

A. Per-capita income is determined exclusively by population size
B. The metric penalises countries with large populations regardless of actual economic expansion
C. It is inconsistent with global financial reporting standards
D. Per-capita measures cannot be applied to emerging economies

7. Which of the following most logically completes the author's argument regarding India's future trajectory?

A. Therefore, India should increase domestic consumption irrespective of technological development
B. Therefore, India's past growth is irrelevant to its ability to lead the next economic revolution
C. Therefore, India must shift from catching up with others to innovating ahead of them
D. Therefore, India must abandon services and return to manufacturing dominance

8. If it were discovered that India's MPCE had not increased significantly in the last decade, which part of the author's reasoning would be most undermined?

A. His claim that tourism growth demonstrates rising middle-class prosperity
B. His argument that India must embrace frontier technologies
C. His historical account of industrial revolutions
D. His comparison between India and China's GDP trajectories

9. Which of the following statements, if true, would most strengthen the author's claim that India must focus on deep-tech R&D to sustain growth?

A. Countries that failed to invest in frontier technologies stagnated despite strong consumption patterns
B. India's services sector continues to employ a large share of the population
C. Per-capita income has shown only moderate growth in the last decade
D. Automation-led job displacement is rising globally

10. The author's argument about India missing earlier industrial revolutions relies on which implicit assumption?

A. Latecomer nations can never surpass early industrialisers
B. Technological revolutions create long-term, path-dependent advantages
C. Colonial history has no bearing on modern economic outcomes
D. Industrial expansion is more important than services growth

LEGAL REASONING

PASSAGE - I

Doctrine of frustration means those cases where the performance of contract has become impossible to perform due to any unavoidable reason or condition. Under the doctrine of frustration, a promisor is relieved of any liability under a contractual agreement, in the event of a breach of contract, where a party to the agreement is prevented from, or unable to, perform his/her obligations under the agreement, due to some event which occurs, and which was outside of their sphere of control.

Force majeure is present in common law as the doctrine of frustration of contract. This doctrine says that a contract will be frustrated if its fundamental purpose is destroyed. If this happens then the parties to the contract will be discharged from their obligations to perform the contract. Force majeure is some event which is unforeseen and unstoppable and which renders the performance of the contract impossible.

The object of the doctrine of frustration is to find a satisfactory way of allocating the risk of supervening events. The doctrine does not prevent the parties from making their own provision for this purpose.

The sanctity of contract is the foundation of the law of contract and the doctrine of impossibility has not displaced this principle but merely enabled the court to enforce such a contract in an equitable manner. It releases a party from its obligation to perform a contract where performance has become impossible as a result of event out of the control of the party, the impossibility is not on account of some event which the promisor could prevent or anticipate and that the impossibility is not self-induced by the promisor or due to his negligence.

11. Ravi contracted with BlueDome Events to perform at their music festival in Chennai on 25th July. Two days before the event, a cyclone warning was issued and all public gatherings were prohibited by the government. BlueDome demanded compensation for losses from Ravi, claiming he could have flown earlier and performed virtually. Ravi argued frustration due to impossibility.

Who is correct?

A. BlueDome, as Ravi failed to plan contingencies.
B. Both share responsibility.
C. None, as weather cannot frustrate contracts.
D. Ravi, as performance was rendered impossible by supervening government orders.

12. Nisha leased a banquet hall to Arjun for his wedding reception on 10th April. A week prior, an earthquake severely damaged the property, making it unsafe for use. Arjun sought refund and compensation. Nisha refused, arguing that her lease obligations weren't voided by natural calamity.

What is the correct legal outcome?

A. Nisha entitled to full rent as contract stands. **B.** Contract frustrated; both parties discharged from obligations.
C. Nisha liable to rebuild or compensate. **D.** Arjun bound to pay partial rent.

13. A company entered a five-year contract to supply coal from its Jharkhand mines to a thermal plant in Delhi. After three years, the government banned mining in that area citing environmental concerns. The company claimed frustration; the plant demanded alternative supply or damages.

Which principle applies?

A. Frustration applies as government order made performance impossible.
B. Not frustration, since company could supply from other mines.
C. Self-induced impossibility due to business mismanagement.
D. Force majeure clause negates frustration.

14. A hotel hired a French chef, Louis, for one year to run its new Mediterranean restaurant. Six months later, a pandemic forced borders to close, and Louis couldn't return to India. The hotel terminated his contract and hired another chef. Louis sued, alleging breach.

Who is right?

A. Hotel, since performance became impossible due to supervening event.
B. Louis, since termination was premature.
C. Both liable to compensate.
D. Neither, as both discharged under frustration.

15. Meera, a fashion designer, agreed to hold a fashion show in Goa. A few days before, she was diagnosed with a rare infection and hospitalized for two months. The event manager sued her for damages. Meera invoked frustration.

What is the correct position?

A. Illness doesn't excuse non-performance.
B. Contract frustrated; personal incapacity beyond control discharges duty.
C. Meera must find replacement.
D. Partial compensation applies.

16. Vikram agreed to rent his land for a concert, but before the event, the State Pollution Board revoked permission for large gatherings due to ecological hazards. The organizer demanded the landowner's refund plus compensation for marketing losses. Vikram refused, claiming frustration.

Decide.

A. Organizer right since Vikram breached.
B. Vikram discharged as performance impossible.
C. Contract voidable, not void.
D. Both must share loss equally.

17. Aditya contracted to ship machinery from India to Italy. Before dispatch, war broke out in the region, and the sea route was closed indefinitely. The buyer sued Aditya for breach, claiming he could have shipped via alternate routes. Aditya argued frustration.

Who is correct?

A. Aditya, since war made primary route impossible.
B. Buyer, since alternative routes were available at extra cost.
C. Both partially liable.
D. None, as force majeure invalid.

18. Seema agreed to perform at a cultural festival in Delhi. Days before, the organizers postponed the event for financial reasons, requesting her to perform three months later. Seema refused and sued for breach. The organizers argued frustration due to lack of funds.

Who is correct?

A. Seema, as self-induced impossibility doesn't discharge contract.
B. Organizers, since postponement was unavoidable.
C. Both equally at fault.
D. Contract stands suspended, not frustrated.

19. Rhea rented a seaside villa for vacation in July. Days before, a cyclone warning caused authorities to evacuate the coast. The villa owner refused to refund rent, saying the contract didn't mention such contingencies. Rhea sued for refund citing frustration.

Decide.

A. Owner, since contract silent.
B. Rhea, as unforeseen natural disaster made performance impossible.
C. Partial refund applies.
D. Both discharged equally.

20. A film company hired Priya to shoot a series in Kashmir during October. Before filming began, heavy snowfall blocked the roads and the government suspended all shooting permits indefinitely. The company wanted to move shooting to Himachal, but Priya refused citing exhaustion of schedule. The company sued for breach.

Who is liable?

A. Priya, for refusal to cooperate.
B. No one, as the contract was frustrated due to impossibility of performance at the specified location.
C. Both, since they didn't renegotiate.
D. Court may order compensation under quantum meruit.

Passage-II

Forward contract means a contract between parties to buy or sell something on a certain date on a price fixed on the date of the agreement. Generally speaking, a forward contract involves more risk than a futures contract. Forward contracts are entirely customized between private parties. Essentially both contracts have the same function. Forward contract is settled at a forward price determined at the start trading date. In a forward contract there is no cash flow until delivery.

A forward contract, in case of physical delivery specifies to whom the delivery should be made to. Forward contracts are usually unregulated.

In simple terms, a futures contract is an agreement between two parties to buy or sell on a future date. Future contracts are generally standardized contracts. They take place in an organized exchange. Futures contracts automatically require credit risk mitigation measures. This kind of contract employs a system where profits and losses are exchanged on the day they occur. Due to these payments, a futures contract has market value of zero at the end of the trading day. This removes credit risk to a great extent. Futures contract are settled at the settlement price determined at the last trading date. Buyers benefit from price increase whereas sellers benefit from price decrease.

As such fundamentally the function of both the contracts are similar. The important aspect that is lower credit risk exists in futures rather than in forward contracts. Since futures contracts are regulated and standardised there is lower risk of a party defaulting as against an unregulated forward contract. Futures contracts have clearing houses who regulate the parties and probability of default is considerably lower. Moreover, as futures contracts are daily market to market transactions which means exchanges occur at the end of each trading day making it more viable than a forward contract which has only one settlement date.

On the other hand, because futures contracts are often employed by persons, who follow the direction in which a price of an asset will move and go ahead, they are generally shut out prior to maturity and delivery usually never happens as against forward contracts that want to eliminate the uncertainty of the price of the asset and delivery of the asset or seek settlement that usually takes place.

21. An oil refinery entered into a forward contract with a supplier to buy crude oil at ₹6,000 per barrel, delivery in 6 months. When global oil prices rose to ₹8,500, the supplier defaulted, claiming inability to supply at the lower price. The refinery sued for damages. The supplier argued that the price volatility made the contract commercially impossible.

What is the correct position?

A. The supplier can avoid liability since prices changed unpredictably.
B. The contract is void due to frustration. **C.** The refinery must bear the loss.
D. The supplier is liable, as price fluctuation does not frustrate a forward contract.

22. An investor entered a futures contract for 100 shares of a company on the National Stock Exchange. Each day, the clearinghouse adjusted profits and losses according to price changes. On the final day, the investor closed the position without taking delivery. Later, the investor argued it was a forward contract since no physical delivery occurred.

Which is correct?

A. Delivery determines whether it's forward or futures.
B. It remains a futures contract because it's standardized and exchange-traded.
C. Lack of delivery makes it a forward contract.
D. It depends on parties' intentions.

23. Ravi and Neha signed a private agreement to deliver 10 tonnes of wheat after 3 months at ₹2,000 per quintal. No exchange or clearinghouse was involved. Two months later, prices dropped to ₹1,500. Neha refused delivery, citing "futures market collapse." Ravi sued.

What is the likely legal outcome?

A. Neha is bound to perform; this is a private forward contract.
B. Ravi must bear loss as forward contracts are speculative.
C. Both discharged due to market decline.
D. Contract void as unregulated.

24. A steel importer entered a futures contract for iron ore at ₹10,000 per tonne on a commodity exchange. After global market collapse, he wanted to cancel the contract, alleging unfair market speculation. The exchange refused, citing standardized clearing rules.

Decide.

A. Futures contracts are voidable due to volatility.
B. Futures contracts cannot be cancelled unilaterally as they are standardized and regulated.
C. The importer can terminate since losses are excessive.
D. Contract ceases automatically when prices crash.

25. A company entered a forward contract to buy copper at a fixed price for delivery in 5 months. A week before delivery, a sudden export ban by the supplier's government made performance impossible. The supplier invoked frustration.

Who is correct?

A. Company, since market risk assumed.
B. Supplier, as legal impossibility discharges performance.
C. Both must share loss equally.
D. None; government order irrelevant.

26. Two private traders entered a forward contract for sale of sugar at ₹40/kg with settlement on a future date. One trader defaulted after the price rose to ₹60/kg, claiming the contract was void since it wasn't regulated under SEBI norms. The other sued for breach.

Who should succeed?

A. Defendant, as unregulated contracts are void.
B. Plaintiff, since forward contracts between private parties remain valid.
C. None, as prices changed drastically.
D. Court must void it for public policy.

27. Sneha entered into a futures contract to buy silver on a commodities exchange. Midway, she incurred heavy losses and failed to meet margin requirements. The exchange liquidated her position. Sneha sued claiming it was wrongful termination since she intended to settle later.

Who is correct?

A. Exchange, as margin calls and daily settlement are integral to futures contracts.
B. Sneha, as premature termination violated contract.
C. Both equally liable.
D. Court may grant relief based on intent.

28. A foreign oil company entered into a forward contract with an Indian refinery. Delivery was due in 4 months. Midway, the government imposed new sanctions making import licenses unavailable. The refinery sued for breach. The company invoked frustration.

Who prevails?

A. Refinery, as sanctions were foreseeable.
B. Oil company, as legal prohibition made performance impossible.
C. Both discharged.
D. Partial liability applies.

29. Rajiv entered into a futures contract for natural gas at ₹30 per unit. Over the next week, market fluctuations caused large margin losses. Rajiv defaulted, arguing the risk was excessive and unfair. The exchange enforced penalty clauses. Rajiv approached court seeking relief.

What is the likely outcome?

A. Court will grant relief for excessive risk.
B. Exchange is justified; losses arise from contractual obligation.
C. Futures contract frustrated due to market volatility.
D. Court may cancel part of penalty.

30. A jewellery company used a forward contract to lock in gold prices with a supplier. Two weeks before delivery, the supplier offered to cancel claiming "it was speculative" and sought to switch to a futures contract instead. The company refused, insisting on performance. The supplier argued that futures offered better market risk coverage.

How should the dispute be resolved?

A. Supplier correct; futures are safer instruments.
B. Company correct; contractual obligations under forward contract are binding.
C. Both can mutually modify.
D. Court may convert contract to futures.

GENERAL KNOWLEDGE

Passage-I

Launched on 15 July 2015, coinciding with World Youth Skills Day, the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) is India's flagship outcome-based skill training programme, implemented by the National Skill Development Corporation (NSDC) under the Ministry of Skill Development and Entrepreneurship (MSDE). Its main objective is to enable a large number of Indian youth — including school-dropouts, unemployed and informal-sector workers — to take up industry-relevant skill training, become employable, and earn their livelihoods.

The scheme is structured into three major components: Short-Term Training (STT), Recognition of Prior Learning (RPL) and Special Projects. Under STT, youth are trained in NSQF-aligned courses for periods ranging from a few weeks to several months, with certification and stipend/incentive payments. RPL is designed to assess and certify existing skills of workers so as to formalise their competence. Special Projects cater to marginalised groups, remote regions, and emerging sectors.

In the period 2016-20 (PMKVY 2.0), the scheme was scaled up with a budgetary allocation of about ₹ 12,000 crore and a target of one crore youth to be trained. According to data released in July 2025, over 1.63 crore candidates have been trained since the inception of PMKVY. The scheme has also expanded its sectoral scope, including emerging fields such as Artificial Intelligence (AI), Internet of Things (IoT), robotics and green technologies to align with Industry 4.0 demands.

A notable feature is its emphasis on quality, certification and placement outcome. For example, under PMKVY 3.0, initiative such as the Skill Hub Initiative and trainings for COVID-warriors were incorporated. The scheme also promotes gender and social inclusion — roughly 45 % of candidates have been women and sizeable numbers belong to SC/ST and OBC categories.

Despite these achievements, challenges remain. A recent media report indicates that although more than 1.6 crore youth were trained under PMKVY, only about 24 lakh secured job placements — giving a placement rate under 15 %. This underlines the persistent gap between training and actual employment outcomes.

In February 2025 the "Skill India Programme" was re-structured for 2022-23 to 2025-26, merging PMKVY-4.0, PM-NAPS and JSS-schemes into a single central-sector skill scheme.

In sum, PMKVY remains the bedrock of India's skilling ecosystem, playing a vital role in leveraging the youth demographic dividend, building an industry-ready workforce and contributing to economic growth and competitiveness.

31. With reference to PMKVY, consider the following statements:

1. It is an outcome-based skill training scheme.
2. National Skill Development Corporation (NSDC) is its implementing agency.
3. It provides only classroom-based training.

How many of the above statements are correct?

A. Only one B. Only two C. All three D. None

32. Which of the following statements regarding PMKVY 3.0 is correct?

1. It introduced the Skill Hub Initiative.
2. It added training programmes for COVID warriors.
3. It removed RPL as a component.

Select the correct answer:

A. 1 only B. 1 and 2 only C. 2 and 3 only D. 1, 2 and 3

33. Which of the following is *NOT* a sector included under PMKVY's emerging technology training?

A. Artificial Intelligence B. Robotics C. Internet of Things D. Petrochemical Engineering

34. Consider the following statements about PMKVY's funding structure:

1. It is a Centrally Sponsored Scheme shared 60:40 with states.
2. STT and RPL are fully funded by the Central Government.

Which of the above is/are correct?
A. 1 only B. 2 only C. Both 1 and 2 D. Neither 1 nor 2

35. Which of the following is a correct description of PMKVY's training alignment?
A. Training is aligned to National Skills Qualifications Framework (NSQF).
B. Training is aligned to University Grants Commission (UGC) norms only.
C. Training is aligned to school education curriculum only.
D. No standardised framework is used.

36. Which of the following institutions is responsible for *setting* the National Skills Qualification Framework (NSQF)?
A. Ministry of Labour B. National Skill Development Agency (NSDA)
C. NITI Aayog D. Ministry of Education

37. Which PMKVY component integrates trainees with industry through on-the-job learning under the broader Skill India ecosystem?
A. PM-NAPS B. Special Projects C. RPL D. Kaushal Kendra Scheme

38. Which of the following global frameworks is closest in purpose to PMKVY?
A. UNESCO TVET framework B. Kyoto Protocol C. Basel Convention D. Montreal Protocol

39. Sector Skill Councils (SSCs) under PMKVY primarily perform which of the following tasks?
1. Developing National Occupational Standards
2. Monitoring training centres
3. Conducting written exams for UPSC aspirants

Select the correct answer:
A. 1 only B. 1 and 2 only C. 2 and 3 only D. 1, 2 and 3

40. Which state has the highest number of PMKVY training centres as per recent Skill India Digital data?
A. Uttar Pradesh B. Kerala C. Sikkim D. Goa

Passage - II

India's pursuit of technological self-reliance has entered a transformative phase with research institutions conceptualising the country's first indigenous quantum computing chip, developed under the experimental framework of the National Quantum Mission (NQM). Although still in the research and prototype-simulation stage and not yet deployed for commercial or operational use, the conceptual chip represents a strategic milestone in India's long-term quantum roadmap. The proposed chip attempts to integrate superconducting qubit design with photonic control pathways, enabling scalable and energy-efficient quantum operations. The initiative is led by a consortium of national laboratories, academic institutions, and deep-tech start-ups engaged in next-generation quantum materials.

At the core of this conceptual device lies a new hybrid design referred to by researchers as nexCAT-19 (Next-Generation Coherent Adaptive Topology – Version 19). nexCAT-19 is not a product but a research architecture, representing the 19th iteration of a quantum-silicon hybrid framework being simulated in advanced Indian research labs. The architecture aims to address three fundamental challenges of early-stage quantum chip design: decoherence, qubit stability, and error-correction overhead. Instead of relying solely on superconducting circuits, nexCAT-19 proposes a multi-layer integration of topological stabilisation channels, enhancing the qubit lifetime without significantly increasing cryogenic load.

Another distinctive feature of nexCAT-19 is the introduction of a Coherent Adaptive Tunnelling Layer (CAT-Layer), designed to facilitate low-noise interactions between qubits and control electronics. This conceptual mechanism seeks to reduce gate operation errors by dynamically adjusting to electromagnetic fluctuations. If successful in physical prototypes, such features could significantly improve India's ability to build quantum processors with practical utility, particularly for applications in cryptography, optimisation, and high-precision modelling relevant to national security and scientific research.

The quantum chip initiative also emphasises indigenous development of the supporting ecosystem, including fabrication methodologies, cryogenic engineering, qubit-material synthesis, and quantum-control software stacks. While India currently depends on foreign fabrication facilities for producing ultra-pure materials and nanometre-scale etching, several pilot facilities are being prepared for future small-scale quantum device testing. This conceptual project aligns with India's strategic objective to move from quantum algorithm research to hardware-level capability.

The development process also highlights the broader challenge of creating a skilled workforce capable of working across physics, material science, computer engineering, and advanced mathematics. As the quantum initiative evolves, knowledge clusters across IITs, IISc, and national laboratories are expected to contribute to long-term human-resource development.

Although still in theoretical and simulation stages, the conceptualisation of India's first quantum computing chip, together with the nexCAT-19 architecture, reflects the country's growing ambition to participate meaningfully in the global quantum-technology race. The success of these experimental frameworks will depend on sustained investment, strategic collaborations, and the ability to transition from academic models to scalable prototypes.

41. Consider the following statements about nexCAT-19:

1. It is the 19th iteration of a conceptual quantum-silicon hybrid architecture.
2. It proposes stabilisation channels to enhance qubit lifetime.
3. It has already been deployed in commercial quantum computers in India.

How many of the above statements are correct?
A. Only one B. Only two C. All three D. None

42. Which of the following correctly identifies the development stage of India's conceptual quantum chip?
A. Fully operational and commercially available
B. In early theoretical planning only
C. In research, prototype-simulation and conceptual testing
D. Already deployed in defence communication networks

43. Which of the following is NOT mentioned as part of the quantum computing ecosystem needed in India?
A. Cryogenic engineering B. Quantum-control software stacks
C. Qubit-material synthesis D. Mass-production automobile robotics

44. Which of the following statements about the challenges of quantum chip development is/are correct?

1. Qubit-decoherence remains a major obstacle.
2. Error-correction requires significant computational overhead.
3. Gate-operation stability remains sensitive to electromagnetic noise.

A. 1 and 2 only B. 1 and 3 only C. 2 and 3 only D. 1, 2 and 3

45. Which among the following is one of the targeted application areas of future Indian quantum processors?
A. Food-processing automation
B. Cryptography and optimisation
C. Internet meme generation
D. Digital advertising

46. Under India's National Quantum Mission (NQM), which of the following is a defined high-priority research area?
A. Quantum sensing and metrology B. Carbon-capture technology
C. Li-ion battery chemistry D. Satellite meteorology

47. Which of the following qubit technologies is globally considered the most mature for near-term quantum processors?
A. Topological qubits B. Photonic cluster qubits
C. Superconducting qubits D. Spintronic qubits

48. Consider the following statements about topological qubits:

1. They are inherently more resistant to decoherence.
2. They have been operationally deployed in commercial quantum systems worldwide.

Which of the above is/are correct?
A. 1 only B. 2 only C. Both 1 and 2 D. Neither

49. Which country is currently regarded as the global leader in quantum-computing R&D?
A. India B. United States C. South Africa D. Mexico

50. Which component is essential for operating superconducting qubits?
A. High-temperature ceramic heaters B. Cryogenic refrigeration (millikelvin range)
C. Solar-thermal cooling D. Vacuum-tube based amplifiers

Quantitative Technique

Passage-I

Study the following information and answer the given question:
During a sale on amazon from 10th to 13th April, mobile phones of only two companies i.e. Redmi and Nokia were ordered Total number of mobile phones ordered on 10th April is 1000. Ratio of number of Redmi phones ordered on 10th and 11th April is 4:5 respectively. Total number of Nokia mobile phones ordered on 11th of April is 140% of number of Redmi mobile phones ordered on the same day. Ratio of number of Nokia phones ordered on 11th and 10th April is 11:8 respectively. Total number of Nokia phones ordered on 12th April is 40% less than average number of total mobile phones ordered on 10th and 11th April together. Number of Redmi mobile phones ordered on 12th April is 40% more than the same on 11th April. Ratio of number of mobile phones ordered on 11th and 13th April is 11:12. On 13thapril the number Redmi phone ordered is 200% to the Nokia phone ordered on the same day.

51. Number of Nokia phones on 13th April is how much percent less/more than the number of Redmi phones ordered on the same day.
(A)25%more (B)30%less (C)10%more (D)100% less

52. What is the ratio of number of Redmi to the number of Nokia phones ordered on 11th April?
(A)5:8 (B)7:5 (C)5:7 (D)4:5

53. What is the average number of Redmi phones ordered per day from 10th to 13th April?
(A)1200 (B)700 (C)2400 (D)1850

54. What is the difference between number of Nokia phones ordered on 13th and 11th April ?
(A)290 (B)240 (C)100 (D)120

55. Find the average of total mobile phones sold from 10th to 13th April
(A)1250 (B)1199 (C)220 (D)1306

Passage-II

Direction : study the given information and answer the following question:
In a class certain number of marble (3 colors) are distributed among student. It is formed that number of Student who got red colors marble is 37.5% of the total student. Number of Student who got all the three colors of marble is 1/20th of the total number of Student. 52.5% of total student got black marble and 57.5% got green color marble. Numbers of student who got both red and black marble but not green are double the number of Student who got all three colors and half of the number of Student who got black and green but not red marbles. Number of Student who got all three colors of marble is 10.

56. How many Student got red and green marbles but not black?
(A)20 (B)25 (C)35 (D)15

57. Number of students who got only one color of marbles?
(A)114 (B)115 (C)120 (D)145

58. Number of students who got at least two colors of marbles is?
(A)100 (B)95 (C)85 (D)72

59. What is the ratio of number of students who got only red to number of students who got only green marbles?
(A)4:5 (B)3:5 (C)8:9 (D)4:9

60. What % of total student got exactly one color of marbles?
(A)78% (B)56.5% (C)52.5% (D)57.5%