ALL QUESTIONS ARE COMPULSORY

Time: 120 minutes

Marks: 100

PART A (Comprehension – 25 Marks)

Direction: Read the following passage carefully and answer the questions No. 1 to5.

This year has been an enormous economic challenge for our country. The Covid pandemic has forced businesses to close and lay off workers in droves, and caused sharp changes in how and where people work – disrupting families and careers. But one of the few silver linings of 2020 has been companies transitioning to remote work end masse, a development so significant it has the power to reshape how tech — the most powerful industry in our economy — operates. Silicon Valley has long been a cradle of tec innovation, and the region's grasp on the industry has only tightened over the past decade. The tech industry is the primary driver of the U.S. economy and the industry is overwhelmingly located in the Bay Area. Of the seven most profitable companies in tech, five of them (Apple, Cisco, Facebook, Google and Intel) are based in Silicon Valley, and the majority of venture capital investments are in companies based in the region.

For decades, tech visionaries thought this concentration of talent was a necessary condition for success, but recently tech firms have come to recognize its downsides. By focusing operations in the Bay Area, the tech sector was not only limiting its talent pool but also driving down the quality of life in the region. These problems escalated during the startup boom of the past 20 years, as people flocked to the Bay Area, making housing increasingly unaffordable and driving up the cost of living. Housing affordability in the Bay Area hit historic lows in the late 2010s. It's no wonder that the biggest companies in Silicon Valley have created outposts in cities not typically associated with tech. This migration out of Silicon Valley has accelerated during the pandemic, as the transition to remote work has made physical proximity increasingly irrelevant. The shift could fundamentally change how the tech industry, the economy, and the country function.

The real estate crunch in Silicon Valley applied to companies, too. Not only did companies pay exorbitant rates for office space, but they had to offer employees increasingly higher salaries to make it affordable for them to move and live in the Bay. It was unsustainable. Remote work can decrease overhead even further. By allowing employees to work from virtually anywhere, tech companies no longer need to pay salaries that are commensurate with living in expensive coastal cities. It's also a good deal for workers who can decrease their cost of living. Workers can now reap the benefits of working in tech without having to live in a prohibitively expensive city. So while their salaries might be less than the average San Francisco tech worker, their overall quality of life is higher. When employees are happy, they're more productive and employee retention increases, resulting in even further benefits for the companies that employ them.

By adopting remote work, tech companies are no longer limited to hiring people in their immediate vicinity. Rather, they can hire the best workers in the country, regardless of geography. This will contribute to a more intellectually diverse workforce. The concentration of tech workers in Silicon Valley facilitates collaboration, but it inhibits diversity of thought. By creating a healthy exchange of ideas, companies avoid echo chambers that reward groupthink and encourage more innovative thinking instead. By expanding their geographic footprints, firms can access new employees with different life experiences and fresh ideas.

(Question No 1 to 5 carries 2.5 marks)

1. Which of the following statements strengthen the argument presented in the above statement?
    I. Apple's second largest office is now in Austin.
    II. The Intel Tower in Indianapolis is the tallest building in the state of Indiana.
    III. Other cities of the US like Salt Lake and Denver are emerging as tech hubs.
        a) Only 2 and 3
        b) Only 1 and 2
        c) Only 1 and 3
        d) All 1, 2 and 3
2. All of the following was a consequence of the concentration of tech companies in the Bay area, EXCEPT:
        a) Limited talent pool was available to the companies
        b) Decline in the quality of life in the region
        c) Companies had to pay high rates for office space.
        d) Employees could not save much as salaries offered were quite low.

3. Based on the information given in the passage, which of the following options represent the benefits of the transition to remote work?

    I. Lower costs for companies and Increased quality of life for workers

    II. A more talented, diverse workforce

    III. A more unified country

        a) Only 1 and 2

        b) Only 2

        c) Only 1 and 3

        d) Only 2 and 3

4. What is the tone of the author of the passage?

        a) Critical

        b) Optimistic

        c) Sceptical

        d) Humorous

5. Which of the following statements is TRUE as per the passage?

        a) The salaries offered by tech companies are not commensurate with the housing prices in the US.

        b) Coastal cities in the US are expensive.

        c) The impact of the transition to remote work will be limited to the tech industry.

        d) Decrease in salaries due to shift to remote work may not go down well with the employees.

Direction: Read the following passage carefully and answer the questions No.6 to 10.

(Question No 6 to 10 carries 2.5 marks)

Artificial intelligence (AI) is intelligence demonstrated by machines, unlike the natural intelligence displayed by humans and animals, which involves consciousness and emotionality. The distinction between the former and the latter categories is often revealed by the acronym chosen. 'Strong' AI is usually labelled as artificial general intelligence (AGI) while attempts to emulate 'natural' intelligence have been called artificial biological intelligence (ABI). Leading AI textbooks define the field as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals. Colloquially, the term "artificial intelligence" is often used to describe machines that mimic_____ functions that humans associate with the human mind, such as "learning" and "problem solving".

As machines become increasingly capable, tasks considered to require "intelligence" are often removed from the definition of AI, a phenomenon known as the AI effect. A quip in Tesler's Theorem says "AI is whatever hasn't been done yet." For instance, optical character recognition is frequently excluded from things considered to be AI, having become a routine technology. Modern machine capabilities generally classified as AI include successfully understanding human speech, competing at the highest level in strategic game systems (such as chess and Go), and also imperfect-information games like poker, self-driving cars, intelligent routing in content delivery networks, and military simulations.

Artificial intelligence was founded as an academic discipline in 1955, and in the years since has experienced several waves of optimism, followed by disappointment and the loss of funding (known as an "AI winter"), followed by new approaches, success and renewed funding. After Alpha Go successfully defeated a professional Go player in 2015, artificial intelligence once again attracted widespread global attention. For most of its history, AI research has been divided into sub-fields that often fail to communicate with each other. These sub-fields are based on technical considerations, such as particular goals (e.g. "robotics" or "machine learning"), the use of particular tools ("logic" or artificial neural networks), or deep philosophical differences. Sub-fields have also been based on social factors (particular institutions or the work of particular researchers).

The traditional problems (or goals) of AI research include reasoning, knowledge representation, planning, learning, natural language processing, perception and the ability to move and manipulate objects. AGI is among the field's long-term goals. Approaches include statistical methods, computational intelligence, and traditional symbolic AI. Many tools are used in AI,

including versions of search and mathematical optimization, artificial neural networks, and methods based on statistics, probability and economics. The AI field draws upon computer science, informationengineering, mathematics, psychology, linguistics, philosophy, and many other fields.

The field was founded on the assumption that human intelligence "can be so precisely described that a machine can be made to simulate it". This raises philosophical arguments about the mind and the ethics of creating artificial beings endowed with human-like intelligence. These issues have been explored by myth, fiction and philosophy since antiquity. Some people also consider AI to be a danger to humanity if it progresses unabated. Others believe that AI, unlike previous technological revolutions, will create a risk of mass unemployment.

In the twenty-first century, AI techniques have experienced a resurgence following concurrent advances in computer power, large amounts of data, and theoretical understanding; and AI techniques have become an essential part of the technology industry, helping to solve many challenging problems in computer science, software engineering and operations research.

6. What kind of capabilities of a machine comes under AI according to the passage?
   I.   successfully understanding human speech
   II. perfect-information games like poker
   III. Competing at the lowest level in strategic game systems
      a) Only I
      b) Only III
      c) Both II & III
      d) Both I & II

7. What are the beliefs of people about AI according to the passage?
   I.   AI facilitates decision-making by making the process faster and smarter
   II. AI may peril to humanity if it processed wrongly at any case
   III. AI may bring technology revolutions which will lead to enormous employment
      a) Only I
      b) Only II
      c) Both II & III
      d) Both I & III

8. What are the traditional problems faced by AI according to the passage?
   I.   Natural language processing
   II. Computational intelligence
   III. Knowledge representation
      a) Only I
      b) Only II
      c) Both II & III
      d) Both I & III

9. How is human intelligence described in the passage?
      a) It gives support to all humans
      b) It maximize its chance of achieving its goals
      c) It involves consciousness and emotionality.
      d) A machine can be made to simulate it

10. Which of the following words will fill the blank given in the sentence aptly in the above paragraph?
Colloquially, the term "artificial intelligence" is often used to describe machines that mimic _____ functions that humans associate with the human mind, such as "learning" and "problem solving".
      a) reluctant
      b) Cognitive
      c) Corporal
      d) Tangible

PART – B (Report Writing – 25 Marks)

Prof. "A" a reputed scientist is staying in the guest house for attending a conference. On a Sunday afternoon, he returns after lunch in the dining room and finds that his lap top is missing. He has made complaint to the Director about the loss of his laptop. Unfortunately, there is no CCTV camera installed in the Guest House. Director desires you to investigate and submit a preliminary report.

PART C (Security Regulations, Fire fighting etc- 25 Marks)

1. What is CSR in Police Station and explain briefly?
2. Briefly explain the search warrant procedure under section 94 of Cr. PC.
3. As per Private Security Agencies (Regulation) Act 2015, what is the eligibility norms for engaging a private security guard by a security agency?
4. Explain the different classes of fire?
5. Briefly describe first aid procedure after electric shock?

PART D (General Awareness – 25 Marks)

(Q No 1 to 8 – 1.25 Marks each)

1. Name the India's first female fighter pilot of Rafale aircraft
2. During the Republic Day parade 2023 along with the Indian military contingents, there was contingent from foreign military country marched. Name the country
3. Expand the following CSIR Labs:
    - CSMCRI

4. Name the indigenously developed Mobile Operating System which was in news recently
5. Which article of the Constitution vests the power to President of India to be supreme commander of Defence forces of India?
6. What is Operation Dost?
7. Olympics 2024 will be held in _____
8. Name the founder Director of CLRI.

(Q No 9 to 11 – 5 marks each)

9. What is G-20 and briefly explain?
10. What is Writ and name the writs available in the Indian Constitution to the Citizens of India.
11. What is Affray as defined under Indian Penal Code?

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