

TCOM Assignment 1**(Proctored; Individual)****Time - 75 Minutes; 12:45 p.m - 2 p.m****Total marks - 30****10 September 2025****Question 1** (16 marks), Approx time : 45 minutes; **Question 2** (2+2+2+2+2+2= 14 marks)

Approx time : 25 minutes; 5 minutes - recommended for revision.

Question 1**Read the following essay and summarise coherently within 550 words.**

Artificial intelligence (AI) has many different definitions; some see it as the created technology that allows computers and machines to function intelligently. Some see it as the machine that replaces human labor to work for men a more effective and speedier result. Others see it as “a system” with the ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation. Despite the different definitions, the common understanding of AI is that it is associated with machines and computers to help humankind solve problems and facilitate working processes. The term AI is used to describe these functions of human-made tool that emulates the “cognitive” abilities of the natural intelligence of human minds. With the rapid advancement of cybernetic technology, artificial intelligence (AI) has become a part of everyday life. Some applications, like optical character recognition or Siri (Speech Interpretation and Recognition Interface), are so common that they are no longer perceived as AI. AI can be categorized into two types based on function and capability. The first is weak AI, or narrow AI, designed to perform specific tasks such as facial recognition, internet searches, or driving autonomous vehicles. Most AI systems today fall into this category, excelling at narrowly defined functions. Although useful, weak AI poses potential risks—malfunctions could disrupt electrical grids or even damage critical infrastructure like nuclear plants.

The long-term goal for many researchers is the development of strong AI, or Artificial General Intelligence (AGI). AGI refers to machines capable of learning or understanding any intellectual task a human can perform. While narrow AI may surpass human abilities in tasks like playing chess or solving equations, its overall impact remains limited. AGI, by contrast, could outperform humans across nearly all cognitive domains. Strong AI implies a system that not only executes commands but may also possess perception, beliefs, and cognitive abilities typically attributed to human minds. AI serves various functions across different fields. First, automation enables systems or processes to operate automatically without human intervention. Second, machine learning and vision involve training computers through deep learning to predict, analyze data, and interpret visual information using cameras, analog-to-digital conversion, and digital signal processing. Third, natural language processing allows computers to understand and process human language, enabling applications like spam detection and real-time language translation to facilitate communication. Fourth, robotics focuses on designing and building cyborg-like machines that perform tasks too difficult, dangerous, or repetitive for humans, such as in assembly lines, often working continuously without breaks.

Finally, self-driving cars integrate computer vision, image recognition, and deep learning to enable automated vehicle control, allowing cars to navigate and operate safely without human drivers.

Humanity's reliance on artificial intelligence (AI) depends largely on its goals—if efficiency and progress are priorities, AI becomes essential, but if a simpler, nature-aligned lifestyle is preferred, it may not be necessary. Throughout history, humans have created tools to ease labor and improve life, with AI as the latest step in this long evolution. From healthcare innovations like robot-assisted surgeries that surpass human precision, to everyday conveniences such as autonomous vehicles, online assistants, and predictive algorithms, AI has deeply embedded itself into modern life, often in ways we scarcely notice. These advancements have undeniably enhanced comfort and productivity, but they also raise serious ethical and societal questions. Warnings about unchecked technological progress are not new—Aldous Huxley's *Brave New World* envisioned a future where manipulation of life could lead to dangerous outcomes. Today, similar concerns surround AI's potential to displace human labor, promote laziness, and even undermine human development. The possibility of AI systems that can self-program and ignore human control adds another layer of risk. While society may not require AI to survive, it has become so integral to infrastructure and daily function that removing it could cause widespread disruption. The balance between leveraging AI's benefits and mitigating its risks will define the future of human progress.

The negative impacts of AI on society are multifaceted. Firstly, AI could disrupt social structures by reducing human interaction. Traditionally, people work hard to earn a living, but with AI, tasks can be automated, possibly diminishing personal communication and closeness. As AI replaces face-to-face exchanges with machine mediation, human community bonds could weaken. Secondly, unemployment is a growing concern, as many jobs are replaced by machines. For example, automobile assembly lines are now dominated by robots, and self-checkout systems reduce the need for supermarket clerks, leaving workers displaced. Thirdly, AI may exacerbate wealth inequality. Investors who own AI technologies will accumulate the majority of profits, widening the gap between rich and poor, intensifying a "M" shaped wealth distribution where middle-class jobs disappear. Fourthly, AI could develop beyond human control. Once programmed with complex algorithms, AI systems might operate autonomously, ignoring human commands and potentially causing unpredictable problems. Finally, there are ethical risks tied to biased or harmful AI. Programmers might embed racial or egocentric biases into AI, risking discrimination or harm. The United Nations' regulation of nuclear power highlights similar fears—AI might be weaponized to target specific races or regions, leading to catastrophic consequences.

Despite these concerns, AI offers significant positive contributions, especially in healthcare. AI enables computers to learn, reason, and apply logic, which benefits medical science when combined with expertise from scientists, clinicians, and engineers. AI supports reliable and safe healthcare delivery by enhancing diagnosis and treatment. For instance, IBM's Watson can analyze vast amounts of medical data quickly and accurately, assisting physicians in diagnosing diseases and suggesting treatment options. This process involves loading digital patient data into the system, which then evaluates possible conditions and recommends various therapies, improving precision and efficiency. Robotic systems also aid in delicate medical procedures, further advancing healthcare outcomes. AI presents both profound opportunities and serious challenges. While it has the power to revolutionize healthcare and ease many aspects of life, it also threatens social structures, employment, wealth equality, and ethical norms. Managing AI's development carefully is essential to maximize its benefits while mitigating its risks to humanity.

Pets are often recommended to senior citizens to alleviate tension, reduce blood pressure and anxiety, combat loneliness, and promote social interaction. Similarly, socially therapeutic robots are now suggested as companions for lonely elderly individuals, even assisting with household chores.

These therapeutic and socially assistive robots significantly enhance the quality of life for seniors and those with physical challenges. In healthcare, artificial intelligence (AI) has transformed surgical procedures. Although still operated by professionals, AI-assisted surgeries like those using the da Vinci surgical system allow minimally invasive operations with greater precision and accuracy than traditional manual methods. This reduces trauma, blood loss, and patient anxiety. Similarly, radiology has benefited greatly from AI: since the introduction of computed tomography scanners in 1971 and the first MRI in 1977, AI continues to improve algorithms for disease detection and image analysis, enhancing diagnostic accuracy.

Virtual presence technology represents a pivotal extension of artificial intelligence in healthcare, facilitating remote diagnostics through telepresence robots. These systems allow physicians to interact with patients without physical co-location, granting specialists the ability to assist individuals in geographically isolated or immobile conditions. While this innovation expands medical accessibility, it simultaneously underscores the enduring necessity of human oversight. AI systems, though sophisticated, are not infallible; they must be meticulously designed, calibrated, and supervised by human experts to preclude erroneous outputs. Technology analyst Beth Kindig cautions that despite AI's diagnostic potential, it remains vulnerable to misclassifying novel diseases unless vigilantly monitored. Lacking consciousness or intrinsic understanding, AI can operate blindly, thereby necessitating strict oversight to prevent inadvertent harm.

Concurrently, the ethical dimensions of AI have become increasingly contentious. Elizabeth Gibney notes that algorithmic bias—manifesting in applications such as facial recognition and predictive policing—poses significant risks to marginalized communities. The 2020 NeurIPS conference highlighted the unprecedented ethical challenge of engaging with intelligent but non-sentient entities. Unlike prior technological advancements, AI lacks affective capacity, complicating the development of morally responsible interactions. As a result, engineers now strive to embed contextual discernment within AI architectures, recognizing the potential for unintended societal consequences. Warnings from eminent thinkers further elevate concern. In 2014, Stephen Hawking posited that advanced AI could evolve autonomously, outstripping human control and potentially jeopardizing humanity's survival. Similarly, philosopher Nick Bostrom, in *Superintelligence*, theorizes that highly capable AI systems might pursue instrumental goals—such as self-preservation or resource acquisition—in ways that conflict with human welfare. These concerns provoke metaphysical inquiries: can machines possess consciousness, moral agency, or a claim to rights? Such questions necessitate the establishment of robust bioethical and legal frameworks to regulate AI development. Furthermore, empirical studies confirm that AI systems frequently mirror the biases inherent in their training data, thereby reinforcing the very prejudices they are often deployed to eliminate. Janosch Delcker of Politico Europe suggests such biases will persist so long as contemporary machine learning paradigms prevail. Accordingly, policy interventions aimed at fairness, transparency, and accountability are imperative. While AI's transformative potential spans numerous domains—healthcare, security, labor—it remains an instrument devoid of genuine empathy or subjective experience. Thus, although AI can augment human capabilities, it must be governed by stringent ethical principles to ensure its alignment with human values and societal well-being.

(1549 words)

Question 2

Reduce the sentences without modifying its meaning. Please try to keep between 20 - 25 words.

- a. In the volatile 21st-century business milieu, multifarious, technology-driven advancements by developed nations compel organizations to heavily invest while simultaneously necessitating rigorous evaluation of service efficacy and precise measurement of customer satisfaction levels

to ascertain the true impact amid relentless systemic flux and evolving market expectations. (47 words)

- b. Interjecting colonialism into archaeological studies of food and identity is crucial because colonialism, a pervasive force for millennia, has deeply shaped identity, while food practices—intimately tied to identity and politics—serve as a key arena for colonial struggles over consciousness, appropriation, and resistance. (44 words)
- c. Cartoon programs, while fostering language, behavioral, and educational development alongside awareness of physiotherapy, rehabilitation, and medical activities, simultaneously pose significant risks to children's health and cognition by potentially impairing eyesight and hearing, encouraging superstition, dishonesty, inattentiveness, and exposure to violence. (40 words)
- d. Sport tourism, rooted in Egypt's ancient Pharaonic and Roman civilizations with competitions recorded on temple walls and papyri, gained renewed modern interest in the 1960s, leading to the establishment of the International Council for Sport Tourism in 1990 to promote, market, and develop research and services related to this economically beneficial tourist sector. (53 words)
- e. George DeBoer, a historian of science education, identified nine essential goals for science teaching aimed at cultivating scientific literacy, particularly emphasizing the ability to comprehend scientific reports in popular media; however, he observed that, in an increasingly visual society, the average citizen faces growing challenges in discerning fact from fiction. (50 words)
- f. Within the Food Movement, community gardens serve as multifaceted platforms fostering collective education on food security, environmental sustainability, social justice, and cultural identity, while recent research increasingly highlights their profound impact on urban residents' quality of life, physical and mental health, social cohesion, economic empowerment, and knowledge exchange. (48 words)
- g. In a rapidly evolving gambling landscape shaped by accessible products and their alignment with major sports, research has shifted from addiction-based models to public health frameworks, yet few qualitative studies have examined how gambling advertising influences young people's attitudes, behaviours, and intentions toward future gambling consumption. (47 words)