

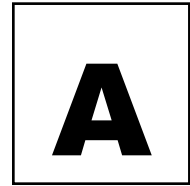
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T.B.C.: FIAS-SFG24-L2T16

Test Booklet Series

Serial No.

TEST BOOKLET
GENERAL STUDIES & CSAT



Time Allowed: ONE HOUR

Maximum Marks: 100

INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOK.
2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series A, B, C or D carefully without any omission or discrepancy at the appropriate places in the OMR Answer Sheet. Any omission/discrepancy will render the Answer Sheet liable for rejection.
3. You have to enter your Name, Email Id and Mobile No. on the test booklet in the Box provided alongside. *DO NOT* write anything else on the Test Booklet.
4. This Test Booklet contains **50** items (questions). Each item is printed in **English**. Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose *ONLY ONE* response for each item.
5. You have to mark all your responses *ONLY* on the separate Answer Sheet provided. See directions in the Answer Sheet.
6. **All** items carry equal marks.
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9. Sheets for rough work are appended in the Test Booklet at the end.
10. **Penalty for wrong answers:**

Name:

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THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.

- (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one-third** of the marks assigned to that question will be deducted as penalty.
- (ii) If a candidate gives more than one answer, it will be treated as **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above to that question.
- (iii) If a question is left blank i.e., no answer is given by the candidate, there will be **no penalty** for that question.

Q.1) Which one of the following countries has its own Satellite Navigation System?

- a) Australia
- b) Canada
- c) Israel
- d) Japan

Q.2) The Giant Metrewave Radio Telescope (GMRT) is essential in understanding the universe. In this context, consider the following statements with regards to GMRT:

- 1. It is located in Maharashtra, India.
- 2. It is the biggest and most sensitive radio interferometer in the world at low frequencies, < 1 GHz.
- 3. It aims to search for and study rapidly rotating pulsars in milky way galaxy.

How many of the statements above are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.3) In the context of computer technology, the term "Cache" refers to:

- a) a malware designed to steal computer data without the user's knowledge.
- b) a web-based network protocol for establishing secure communication.
- c) a temporary storage mechanism facilitating faster access to data.
- d) an error in the source code that causes the program to produce unexpected results.

Q.4) Polar orbit and geostationary orbit are two distinct types of orbits used in satellite systems, each with its own advantages and applications. In this context, consider the following statements:

- 1. Satellites in Polar orbits are usually placed at an altitude of around 3000 km whereas in geostationary orbits they are placed at an altitude of around 22,236 km.
- 2. Unlike the orbit of polar satellites, the orbit of geostationary satellite lies in the plane of Earth's equator.
- 3. Among Indian satellites, Cartosat3 is placed in polar orbit whereas GSAT 17 is placed in Geostationary orbit

How many of the above statements are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.5) With reference to Kanaklata Barua, consider the following statements:

- 1. She was a freedom fighter from the state of Assam.
- 2. She was a part of group named as Mrityu Bahini.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.6) In the context of "Generative AI", consider the following activities:

- 1. Translation of text from one language to another
- 2. Creation of images from the text.
- 3. Medical diagnosis of diseases.
- 4. Creation of brand messaging and logo
- 5. Generation of new sound effects
- 6. Real-time analysis of soil conditions in farmland

With the present state of development 'Generative AI' can perform how many of the above activities?

- a) Only three
- b) Only four
- c) Only five
- d) All six

Q.7) Small Satellite Launch Vehicle (SSLV) is developed by ISRO to cater to the demand of launch of small satellites. In this context consider the following statements:

- 1. It is a three stage Launch Vehicle which uses solid as well as liquid fuels.
- 2. It can launch payloads up to 500 kg in 500 km planar orbit.
- 3. It has high turnaround time, along with heavy launch infrastructure requirements.

How many of the statements given above are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.8) Consider the following statements with reference to the Standard Model of Physics:

1. The model successfully integrates quantum gravity with the other three fundamental forces i.e. electromagnetic and weak & strong nuclear forces.
2. The model does not account for the phenomena of dark matter and dark energy in the universe.
3. The Higgs boson particle is a prediction of the Standard Model, and it imparts mass to other particles through the Higgs mechanism.

How many of the statements given above are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.9) Consider the following pairs:

Objects in space	Description
1. Quasars	Super-bright cores of distant galaxies powered by supermassive black holes.
2. Magnetar	Neutron stars that are formed when massive stars run out of fuel and collapse.
3. Kilonova	Short-lived, powerful explosion from the merger of neutron stars.

How many of the above pairs are correctly matched?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.10) Which among the following best describes the term "Software 2.0"?

- a) It is a software system with decentralized control, allowing multiple users to manage and interact with it.
- b) It is the process of connecting physical devices through computer software to enable communication between them.
- c) It is an interactive experience that enhances the real world with computer-generated perceptual information.

- d) It is a method of development and upgradation of software programming using machine learning techniques without human intervention.

Q.11) Consider the following technologies:

1. Closed-circuit Television
2. Radio Frequency Identification
3. Wireless Local Area Network

Which of the above are considered Short-Range devices/technologies?

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

Q.12) With reference to 'Virtual Private Network (VPN)', consider the following statements:

1. It provides protection from all malware attacks.
2. It enables high internet speed.
3. It protects against third-party tracking.
4. It enables work from home.
5. It secures data by coding and hiding browsing history.

How many of the above are advantages of Virtual Private Network (VPN)?

- a) Only two
- b) Only three
- c) Only four
- d) All five

Q.13) With reference to Gaganyaan Mission, consider the following statements:

1. It is India's first mission of its kind to launch a habitable space capsule with crew members at the height of 4000km.
2. In this mission a three-stage rocket with solid-liquid-cryogenic stages will be used.
3. The mission will make India as the third nation in the world to launch a Human Spaceflight.

How many of the statements given above are correct:

- a) Only one
- b) Only two
- c) All three
- d) None

Q.14) With reference to GPS Aided GEO Augmented Navigation (GAGAN) System, consider the following statements:

1. It is a satellite-based augmentation system jointly developed by Indian Space Research Organization and Defense Research & Development Organization.
2. It can provide the seamless navigation service to the areas beyond Indian subcontinent.
3. It is expected to offer better accuracy and integrity of navigation service than with GPS alone.

How many of the statements given above are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.15) With reference to Flex Fuel Vehicles (FFV), consider the following statements:

1. It has an internal combustion engine designed to run on more than one fuel.
2. Electric FFV has dual benefit of higher ethanol use and much higher fuel efficiency.
3. Its cost of ownership is cheaper compared to regular vehicles.

How many of the above statements are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.16) In the context of Study of Universe, Schwarzschild radius is closely associated with:

- a) Heliosphere
- b) Event horizon
- c) Interstellar space
- d) Rings of Saturn

Q.17) In the context of cloud computing and edge computing, consider the following statements:

1. Cloud computing involves data processing in remote data centers, while edge computing processes data closer to the source of the data.

2. Unlike cloud computing, edge computing can operate without access to the internet.
3. Cloud computing facilitates real time data processing with lower latency compared to edge computing.

How many of the statements given above are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.18) Consider the following statements regarding Aditya L1:

1. It provides a smooth Sun-spacecraft velocity change throughout the orbit.
2. It is placed outside of the magnetosphere of Earth, thus suitable for the "in situ" sampling of the solar wind and particles.
3. It allows unobstructed, continuous observation of the Sun.

How many of the above are the reasons for placing "Aditya L1", India's first solar mission in a halo orbit at the Lagrange point (L1) of the Sun-Earth system?

How many of the statements given above are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.19) Consider the following pairs:

Cyber Threat	Description
1. Trojan	Malware that is disguised as legitimate software.
2. Rootkits	Networks of malware infected computers used to perform tasks online without the user's permission.
3. Key logger	Malicious software that logs and captures keystrokes on the system.
4. Botnet	Malware designed to conceal its own presence and activities on a compromised system.

How many of the above pairs are correctly matched?

- a) Only one
- b) Only two
- c) Only three
- d) All four

Q.20) With reference to Radiation Belts, consider the following statements.

1. It is the region of highly charged and energetic particles found within a planet's magnetosphere.
2. The formation of radiation belts is a unique feature restricted to the Earth in our solar system.
3. The radiation belt is more intense over the equator compared to the polar region of the earth.
4. These belts protect the satellites in the Earth's low earth orbit from solar winds.

How many of the above statements are correct?

- a) Only one
- b) Only two
- c) Only three
- d) All four

Q.21) For the measurement/estimation of which of the following are satellite images/remote sensing data used?

1. Chlorophyll content in the vegetation of a specific location
2. Greenhouse gas emissions from rice paddies of a specific location
3. Land surface temperatures of a specific location

Select the correct answer using the code given below.

- a) 1 only
- b) 2 and 3 only
- c) 3 only
- d) 1, 2 and 3

Q.22) With reference to validating blockchain transactions, consider the following statements:

1. For transaction validation, the Proof of Stake system relies on data miner's ability to solve puzzles, while in the Proof of Work system randomly selected validators verify the transactions.
2. Proof of Stake system offers a cleaner and efficient approach, whereas Proof of Work system entails high energy usage and significant carbon emissions.

Which of the statements given above is/are **incorrect**?

- a) 1 only
- b) 2 only

- c) Both 1 and 2
- d) Neither 1 nor 2

Q.23) Consider the following statements about Gravitational waves:

1. They were predicted by Albert Einstein's in his theory of General Relativity in 1915.
2. They are ripples in the fabric of space-time caused by the acceleration of massive objects.
3. The ripples of gravitational waves move very slowly.

How many of the statements above are correct?

- a) Only one
- b) Only two
- c) Only three
- d) All four

Q.24) With reference to Giant magnetoresistance, consider the following applications:

1. Data storage devices.
2. Biosensors.
3. Anti-lock braking system in automobiles.
4. Detecting abnormalities in materials and structures.
5. Electronic compasses in smartphones.

How many of the above are applications of Giant magneto resistance?

- a) Only two
- b) Only three
- c) Only four
- d) All five

Q.25) Consider the following:

1. should allow free redistribution
2. source code is available to all.
3. possible to create further works based on it.
4. may not require an additional license.

How many of the above are necessary condition in defining open-source software?

- a) Only one
- b) Only two
- c) Only three
- d) All four

Q.26) In the context of 'Quantum dots' consider the following statements:

1. They are nanoscale semiconductor particles.
2. They can be used in display technology due to their ability to emit light in specific wavelengths.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.27) In context of 'Cell Broadcast Alert System' consider the following system:

1. The Cell Broadcast Alert System testing is a collaboration between the Department of Telecommunications (DOT) and the National Disaster Management Authority (NDMA).
2. It is used to disseminate critical and time-sensitive disaster management messages.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.28) In context of Gamma-Ray Bursts (GRBs), consider the following statements:

1. They are the most powerful explosions in the known universe.
2. They can last from a few milliseconds to several hours.
3. They emit only gamma rays and no other forms of electromagnetic radiation like X rays, ultraviolet rays etc.

How many of the above statements are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.29) In the context of End-to-End encryption, consider the following statements:

1. It is a method of secure communication that prevents third parties from accessing data while it is being transferred from one device to another.

2. It uses symmetric key encryption, which requires both the sender and the recipient to have the same secret key.

Which of the given statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.30) The term 'Bhashini' is often mentioned in the news. Which of the following correctly defines the function of 'Bhashini'?

- a) A payments platform introduced by RBI which provides payment interfaces in all Indian languages.
- b) A Government of India initiative for promoting Sanskrit education through means of the online portal e-Pathshala.
- c) A campaign launched to improve digital literacy and language proficiency of rural women and girl child.
- d) An AI-based translation tool designed to break language barriers by providing real-time translation between various Indian languages.

Q.31) If a major solar storm (solar flare) reaches the Earth, which of the following are the possible effects on the Earth?

1. GPS and navigation systems could fail.
2. Tsunamis could occur at equatorial regions.
3. Power grids could be damaged.
4. Intense auroras could occur over much of the Earth.
5. Forest fires could take place over much of the planet.
6. Orbits of the satellites could be disturbed.
7. Shortwave radio communication of the aircraft flying over polar regions could be interrupted.

Select the correct answer using the code given below:

- a) 1, 2, 4 and 5 only
- b) 2, 3, 5, 6 and 7 only
- c) 1, 3, 4, 6 and 7 only
- d) 1, 2, 3, 4, 5, 6 and 7

Q.32) With reference to Satellite Internet, consider the following statements:

1. Satellites providing internet service are placed only in the Lower Earth Orbit (LEO).
2. It exhibits lower latency compared to fiber optic internet.
3. 'Starlink' of SpaceX is an example of Satellite Internet network.

How many of the statements given above are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.33) Which one of the following best describes the concept of "Kessler Syndrome"?

- a) A sudden drift of rotating asteroid causing long term risk to Earth.
- b) The ongoing sequence of events of expansion of universe after big bang explosion.
- c) Collision and merger of several supermassive black holes located within a galaxy.
- d) A chain reaction of exploding space debris eventually increasing the space junk.

Q.34) With reference to "Secure Sockets Layer (SSL)", consider the following statements:

1. It is a networking protocol that creates an encrypted link between a web client and a server.
2. Unlike Hypertext Transfer Protocol (HTTP), SSL uses both public and private key encryption over Internet Protocol network.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.35) 'Raccoon Stealer and Lock Bit, often seen in the news, are associated with which one of the following?

- a) Tools for hacking and penetration into sensitive nuclear installation's security systems.
- b) Software for disrupting digital infrastructures without a financial motive.

- c) Trojan horses that affect windows operating systems and open a backdoor in the computer.
- d) Malware used in cyber-attacks for data theft and ransom demands.

Q.36) Consider the following pairs:

Space Mission	Objectives
1. Artemis	To determine the rate of Martian tectonic activity and meteorite impacts.
2. Insight	To explore Saturn's rings and understand the processes of the Saturnian system.
3. Europa clipper	To study the nature of the ice shell and ocean of Jupiter's moon Europa.
4. Dawn Mission	To study two large bodies in the asteroid belt and test ion thrusters.
5. Cassini	Aims to land the first woman and the next man on the Moon by 2024

How many of the above pairs are correctly matched?

- a) Only two
- b) Only three
- c) Only four
- d) All five

Q.37) With reference to Free-Space Optical communication (FSO), consider the following statements:

1. It uses laser technology to transmit data through the air.
2. It provides a higher level of security compared to contemporary Radio Frequency (RF) systems.
3. It uses line-of-sight technology to establish the communication between the transmitter and receiver.

How many of the statements given above are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.38) Which of the following best describes the term Einstein ring, often seen in news?

- a) It is a type of orbit followed by comets around the Sun.
- b) It is a ring-shaped structure of gases and dust particles formed by the collision of galaxies.
- c) It is a gravitational lensing phenomenon where light is bent into a complete circle.
- d) It is a circle of natural lights display formed over North and South Pole due to interaction between solar particles and earth's magnetic field.

Q.39) With reference to 'e-Sign', consider the following statements:

- 1. An e-Sign user can digitally sign documents without the need of a physical digital signature dongle.
- 2. It does not provide the same authenticity as the signature done by physical handwriting.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.40) The term "Native Over The Air" often mentioned in the news, is seen in the context of:

- a) automatic updates and improvements to mobile software for BharOS.
- b) advancements in ISRO's low earth orbit satellite communication technology.
- c) development of short-range cruise missiles to cover India's territorial waters.
- d) innovations in wireless charging technologies for 5G devices manufactured in India.

Q.41) In India, under cyber insurance for individuals, which of the following benefits are generally covered, in addition to payment for the loss of funds and other benefits?

- 1. Cost of restoration of the computer system in case of malware disrupting access to one's computer.
- 2. Cost of a new computer if some miscreant wilfully damages it, if proved so.

- 3. Cost of hiring a specialized consultant to minimize the loss in case of cyber extortion.
- 4. Cost of defence in the Court of Law if any third-party files a suit.

Select the correct answer using the code given below:

- a) 1, 2 and 4 only
- b) 1, 3 and 4 only
- c) 2 and 3 only
- d) 1, 2, 3 and 4

Q.42) With reference to 'Neutrinos', consider the following statements:

- 1. They are electrically neutral.
- 2. They do not interact with matter.
- 3. They are produced in nuclear reactions.

How many of the statements given above are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.43) With reference to Information and Communication Technology (ICT), which of the following describes the concept of 'Dark Patterns'?

- a) Patterns used to represent dark-themed interfaces.
- b) A technique used to access dark web.
- c) Techniques intentionally designed to manipulate and deceive users.
- d) Money laundering pattern by international criminals using ICT.

Q.44) Scramjet engines have been in the frontiers of engineering for many years. In this context, consider the following statements with regards to Scramjet engine:

- 1. It compresses the incoming air using the vehicle's high speed instead of mechanical compressors.
- 2. The combustion process in a scramjet occurs at subsonic speeds in the combustor.
- 3. Brahmos missile uses scramjet engine in the cruise phase to increase its speed.

How many of the above statements are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Q.45) Consider the following pairs:

1. Wasting Low height for age
2. Stunting Low weight for height
3. Underweight Low weight for age

How many of the above pairs is/are correctly matched?

- a) Only one
- b) Only two
- c) All three
- d) None

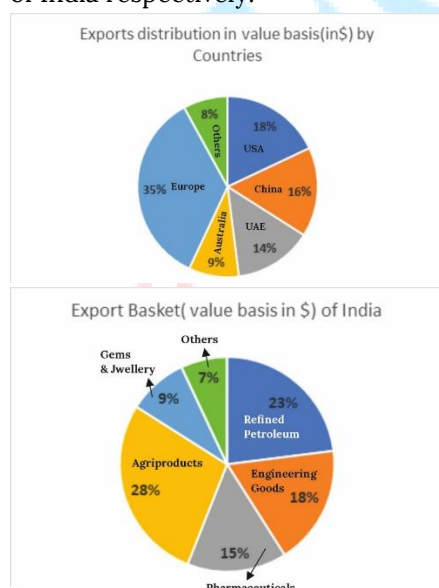
Q.46) How many pairs of letters are there in the word 'MONUMENT' which have as many letters between them as in English alphabet? Consider counting both ways from Left to right and Right to left.

- a) 2
- b) 3
- c) 4
- d) 1

Q.47) Dividing 2226 and 2529 by a certain three-digit number leaves the same remainder X in each case. Find the value of X.

- a) 9
- b) 6
- c) 5
- d) 4

Q.48) The following pie charts exhibit the distribution of the exports (value basis) from India. The two charts shows the export distribution by country and the export basket of India respectively.



India exports total goods worth of \$500 billion.
Europe imports only refined petroleum,

engineering good, agricultural products and pharmaceutical products from India. Europe's imports from India accounts for 40% of India's total agricultural products, 40% of India's total refined petroleum exports, 40 % of India's Pharmaceutical exports. How much worth of engineering goods is imported by Europe from India?

- a) \$48 billion
- b) \$43 billion
- c) \$58 billion
- d) \$53 billion

Directions for the following 2 (two) items:

Read the following **two** passages and answer the items that follow the passages. Your answers to these items should be based on the passages only.

Passage-I

In considering the question, 'Can machines think?' We must first define 'machine' and 'think.' The machines we refer to are digital computers, designed to execute any operations that could be carried out by a human computer. The digital computer can be envisaged as a universal machine, capable of simulating any other machine through a process of programming. This universal capacity suggests that the question of machine intelligence, whether a machine can think, hinges not on the machine's specific form but on its functionality and the programming it receives. Alan Turing proposes an 'imitation game' as a criterion for determining a machine's capacity for thought, a test to see if a machine can exhibit intelligent behavior indistinguishable from that of a human. This test later became known as the Turing Test. The essence of this proposition lies in whether there exist conceivable digital computers whose behaviors in the game could not be differentiated from a human by an impartial judge. Turing argues that focusing on the common usage of the words 'machine' and 'think' leads to an impasse; instead, the question should be approached through the lens of practical imitation of human behavior by a computer.

Q.49) All of the following statements, if true, would weaken Turing's proposition about the capacity for machines to think as humans do, EXCEPT:

- a) Advanced AI (Artificial Intelligence) has demonstrated proficiency in specialized tasks but shows significant limitations in understanding and replicating the breadth of human cognition.
- b) Psychological research indicates that humans can reliably identify interactions with machines, pointing to an inherent difference in the quality of machine-generated versus human thought.
- c) Philosophical arguments suggest that consciousness and emotional depth are critical to human thought, elements that machines are fundamentally incapable of replicating.
- d) In several instances, AI systems have shown the ability to learn and adapt to new challenges in ways that were not directly programmed, reflecting a form of problem-solving and creativity

Passage-II

As the United States government now considers the banning of TikTok, the questions have come to the fore again – what is it about TikTok that seems to trouble so many people so profoundly? The usual arguments about the brokenness of the internet – misinformation, manipulative algorithms, immersive frivolous content that shapes political decisions, rampant hate and violence, radicalization of young people on ideological grounds, exploitation of users by selling their data, targeted messaging that makes people vulnerable through AI analytics, and polarisation of societies intensified by filter bubbles – do not work. What then, can we say about the attacks, bans, and demonization of TikTok beyond the obvious geopolitics of its origins in China? Is there something more to be discussed if we accept that while the internet might seem to be a post-sovereign technology, the bordered nationalities continue to replay and reshape the digital in significant ways? The one thing that the global discourse on TikTok has to offer is perhaps the changing relationship between nations and digital platforms. For the longest time,

especially driven by the neo-liberal economic rhetoric, technological platforms were presented to us as independent market entities that negotiate with different governments and authorities in their localization. What TikTok signals for us is that the platforms are not just something that governments regulate. They are ways by which governments are platformed. The extraordinarily expansive nature of digital platforms makes them more than just mediums or tools. They are, in fact, ways by which governments are being shaped and consumed on a global scale

Q.50) Based on the above passage, the following assumptions have been made:

- 1. The unique controversies surrounding TikTok are primarily due to its Chinese origins and the geopolitics involved.
- 2. The criticism of digital platforms often overlooks their role in reflecting and shaping the relationship between nations and digital space.
- 3. The banning of TikTok could be seen as an attempt by governments to assert control over digital spaces that challenge traditional notions of sovereignty.
- 4. The primary concern with digital platforms like TikTok is their content and the potential for misinformation and data exploitation.

How many of the above assumptions are correct as per the passage:

- a) Only one
- b) Only two
- c) Only three
- d) All four