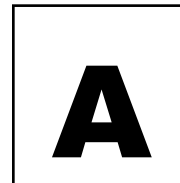


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**T.B.C.: FIAS-SFG24-L1T40** **Test Booklet Series**  
**Serial No.**

**TEST BOOKLET**  
**GENERAL STUDIES**



**Time Allowed: ONE HOUR**

**Maximum Marks: 100**

**I N S T R U C T I O N S**

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.
7. Before you proceed to mark in the Answer Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions sent to you with your Admission Certificate.
8. After you have completed filling in all your responses on the Answer Sheet and the examination has concluded, you should hand over to the Invigilator *only* the *Answer Sheet*. You are permitted to take away with you the Test Booklet.
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)** Microsatellite DNA' is used in the case of which one of the following?

- a) Studying evolutionary relationships among various species of fauna.
- b) Stimulating stem cells transform into diverse functional tissues.
- c) Promoting clonal propagation of horticultural plant.
- d) Assessing the efficacy of drugs by conducting series of drug trials in a population.

**Q.2)** Which one of the following is **incorrect** regarding the difference between ballistic missiles and cruise missiles?

- a) Ballistic Missiles leave the earth's atmosphere and re-enter it while the Cruise Missiles' flight path is within the earth's atmosphere.
- b) While Cruise missiles can be launched from aircraft, ships, and submarines, ballistic missiles can be launched only from aircraft.
- c) Compared to ballistic missiles, the payload capacity is much limited in case of Cruise missiles.
- d) While Brahmos missile is a type of cruise missile, Agni II is a type of ballistic missile.

**Q.3)** Consider the following statements regarding 'Quantum dots':

- 1. They are nanometer sized semiconducting crystals having properties of quantum size effects.
- 2. They have the same structure and atomic composition as conventional semiconductor materials.
- 3. They are free from any kind of harmful heavy metals, making them more environmentally sustainable.

How many of the statements given above are correct?

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

**Q.4)** Which one of the following is correct regarding the astronomical phenomenon "Pulsars"?

- a) They are rapidly rotating stars that emit beams of electromagnetic radiation.
- b) They are remnants of massive stars that have merged to form black holes.
- c) They are luminous and hot celestial bodies, larger than typical stars.
- d) They are stars with less than five solar masses and have low luminosity.

**Q.5)** Consider the following statements regarding the 'Recombinant DNA technology':

- 1. It involves the artificial manipulation of DNA by combining genetic material from different species.
- 2. It can be used to treat diseases in humans without causing any adverse immune reactions.
- 3. It cannot be used to create genetically identical organisms.

How many of the statements given above are correct?

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

**Q.6)** The concept of Swarm drone operation envisages integrating and flying a large number of Unmanned Aerial Vehicles (UAVs) to achieve a specific goal. In this context, consider the following statements regarding 'Swarm drones':

- 1. In this system, the failure of individual drones leads to the collapse of the whole system.
- 2. In this system, drones distribute and coordinate tasks among themselves with little to no human intervention.
- 3. This system is immune from hacking threats as drones operate collectively.

How many of the statements given above are correct?

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

**Q.7)** Planet X orbits its Star. Interestingly, one side of the planet perpetually faces the scorching heat of its star, while the other side remains shrouded in eternal darkness. Scientists attribute this unique situation to the gravitational influence of the star on the planet.

Which of the following phenomena is referred to in the above passage?

- a) Gravitational slingshot
- b) Axial tilt
- c) Tidal locking
- d) Orbital Eccentricity

**Q.8)** Consider the following about the 'Scramjet engines':

- 1. They use atmospheric oxygen for fuel combustion.
- 2. They offer higher specific impulse and fuel efficiency compared to traditional rocket engines.
- 3. They operate efficiently at hypersonic speed.

How many of the above statements are correct?

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

**Q.9)** Consider the following:

- 1. Higher yield
- 2. Higher nutritional value
- 3. Lesser vulnerability to pests
- 4. Exhibiting higher drought resistance
- 5. Promoting genetic diversity

How many of the above are the likely advantages of Genetically Modified (GM) Crops over traditional crops?

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

**Q.10)** With reference to the Nuclear Power Reactors and their locations in India, consider the following pairs:

Nuclear Power Reactor	Location
1. Kakrapar	Karnataka

- 2. Kaiga Rajasthan
- 3. Narora Gujarat
- 4. Tarapur Maharashtra

How many of the above pairs are correctly matched?

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

**Q.11)** With reference to communication technologies, what is/are the difference/differences between LTE (Long-Term Evolution) and VoLTE (Voice over Long-Term Evolution)?

- 1. LTE is commonly marketed as 3G, and VoLTE is commonly marketed as advanced 3G.
- 2. LTE is data-only technology and VoLTE is voice-only technology.

Select the correct answer using the code given below:

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

**Q.12)** With reference to the Impact of the Coronal Mass Ejection (CME) on earth and its surroundings, consider the following statements:

- 1. It may impact navigation service providers like Google Maps.
- 2. It may impact earth-orbiting satellites in geosynchronous orbits.
- 3. It may cause widespread blackouts due to the surge in electrical currents at power grids.
- 4. Astronauts can be exposed to lethal doses of radiation emitted during the CME.

How many of the above statements are correct?

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

**Q.13)** With reference to the Chimeric Antigen Receptor (CAR) T-cell therapy, consider the following statements:

1. A patient's own cells cannot be used in the CAR T-cell therapy.
2. This therapy can be used to treat patients suffering from leukemia or lymphomas.

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.14)** In the context of cyber security threats, which of the following best denotes the term 'Smishing'?

- a) Installing the malware in the host's mobile to steal confidential information through email.
- b) Installing the malware in the host's mobile to steal confidential information through the local Wi-Fi network.
- c) Installing the malware in the host's mobile devices to steal confidential information through Bluetooth.
- d) Installing the malware in the host's mobile device to steal confidential information through SMS.

**Q.15)** With reference to polyethylene terephthalate, the use of which is so widespread in our daily lives, consider the following statements:

1. Its fibers can be blended with wool and cotton fibers to reinforce their properties.
2. Containers made of it can be used to store any alcoholic beverage.
3. Bottles made of it can be recycled into other products.
4. Articles made of it can be easily disposed of by incineration without causing greenhouse gas emissions.

Which of the statements given above are correct?

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

**Q.16)** 'Bletchley Declaration' is, sometimes, talked about with reference to which one of the following?

- a) A declaration aimed at fostering collaboration among nations in formulating laws on Intellectual property.
- b) A declaration seeking to align and facilitate worldwide collaboration on the safety of artificial intelligence (AI).
- c) A declaration fostering collaboration among nations to reduce illegal uses of cryptocurrency.
- d) A declaration fostering cooperation and collaboration among nations to address the issues of space debris.

**Q.17)** With reference to the RNA interference (RNAi) technology, consider the following statements:

1. The technology silences genes by triggering the destruction of targeted mRNA via double-stranded RNA-guided machinery.
2. The technology can protect the roots of tobacco plants from the attack of nematode *Meloidogyne incognita*.

Which of the above statements is/are correct?

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

**Q.18)** With reference to the Aditya-L1, a space mission of India, which of the following statements is **incorrect**?

- a) This mission is aimed at studying the Solar upper atmospheric (chromosphere and corona) dynamics.
- b) This mission involved the use of GSLV-Mark III rocket to travel directly towards sun.
- c) The satellite is positioned in a halo orbit around the L1 Lagrange point to provide an unobstructed view of the Sun without any eclipses.
- d) This mission represents ISRO's second astronomy observatory-class mission, following AstroSat in 2015.

**Q.19)** Mr. A, B, C, and D are collaborating on a project that requires real-time document sharing, simultaneous editing, and secure data storage. Now, Mr. A, B, C, and D propose how they can strategically utilize Web 3.0 technologies to enhance their collaboration. Thus, whose recommendation would be the best and would align with the principles of Web 3.0?

- a) Mr. A can recommend creating a document that remains centrally stored on a traditional server.
- b) Mr. B can propose the use of decentralized storage solutions to avoid the need for encryption.
- c) Mr. C can suggest implementing smart contracts enabling automated execution of predefined activities.
- d) Mr. D can recommend making all payments online using Unified Payment Interface (UPI) portals.

**Q.20)** Consider the following statements regarding 'monoclonal antibodies':

- 1. These are produced by an organism's immune system in response to an attack by a pathogen.
- 2. These are designed for a specific antigen.
- 3. These can help in curing both infectious as well as non-infectious diseases.

How many of the above statements are correct?

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

**Q.21)** With reference to "Software as a Service (SaaS)", consider the following statements:

- 1. SaaS buyers can customise the user interface and can change data fields.
- 2. SaaS users can access their data through their mobile devices.
- 3. Outlook, Hotmail and Yahoo! Mail are forms of SaaS.

Which of the statements given above are correct?

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

d) 1, 2 and 3

**Q.22)** Ailments in the human body can be categorized as hereditary or acquired. In this context, consider the following diseases/ailments:

- 1. Sickle-cell disease
- 2. Leukemia
- 3. Hemophilia
- 4. Cystic fibrosis

Gene therapy has shown feasibility in curing how many of the above listed ailments?

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

**Q.23)** Which of the following statements is **incorrect** regarding the indigenously developed 'Nirbhay Missile'?

- a) It has been designed and developed by the Defense Research and Development Organization (DRDO).
- b) It is capable of hitting targets at a distance of more than 5000 kms.
- c) It is a subsonic cruise missile that helps in providing stealth capability.
- d) It can be launched from multiple platforms, including land, air and sea.

**Q.24)** In the context of celestial bodies in solar system, consider the following statements regarding the asteroids and a comets:

- 1. Asteroids are rocky objects found mainly between Mars and Jupiter, while comets are icy bodies that originate from the outer regions of the solar system.
- 2. Asteroids essentially revolve around the Sun, while a comet does not necessarily revolve around the Sun.
- 3. Unlike comets, asteroids pose a threat of collision to the Earth.

How many of the above statements are correct?

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



**Q.25)** Satellite internet is a wireless internet service that uses satellites to transmit data. In this context, consider the following statements regarding the 'satellite internet':

1. At present it can offer high download speed at par with 5G.
2. It can provide better online gaming experiences to users than the cable and fiber internet.
3. Starlink is a satellite internet constellation that uses low Earth orbit to provide broadband internet.

How many of the above statements are correct?

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

**Q.26)** Consider the following statements regarding the 'Polymerase Chain Reaction (PCR)' technology:

1. It can detect diseases even when the concentrations of pathogens in an individual are very low.
2. In PCR, replication is an in-vivo process that copies the entire genome at once.
3. It can also be used in the detection of genetic disorders.

How many of the above statements are correct?

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

**Q.27)** While solid fuels are used in the first stage of the rocket, liquid fuel is used in higher stages. In that context, which of the following statements is **incorrect** about the solid and liquid fuels used in the rockets?

- a) Liquid fuel used in rockets allows more precise control of thrust than solid fuel.
- b) Liquid fuel used in the rocket has a lower specific impulse than solid fuel.
- c) Liquid fuel is cleaner than solid fuel used in rocket engines, producing lesser residue or carbon emissions.

- d) Liquid fuel used in rocket engines requires separate storage for the fuel and oxidizer, while solid fuel does not.

**Q.28)** Which one of the following statements is correct regarding the process of Nuclear Fusion and Nuclear Fission?

- a) Nuclear fission releases energy by combining light nuclei, while nuclear fusion releases energy by breaking apart heavy nuclei.
- b) Nuclear fission produces long-lived radioactive nuclear waste, while nuclear fusion does not create any long-lived radioactive nuclear waste.
- c) Unlike Nuclear fusion, it is difficult to sustain Nuclear fission for longer period of time as it requires extreme conditions.
- d) Nuclear fission reaction powers the sun while Nuclear fusion reaction powers the traditional nuclear power reactors.

**Q.29)** Which one of the following statements correctly describes the term 'eDNA' or 'Environmental DNA'?

- a) It is a cloud server, which is used to store data about the level of pollution in various cities across the world.
- b) It is a genetic material extracted from human cells in a laboratory setting.
- c) It is a virtually simulated ecosystem to access the loss and damage to biodiversity.
- d) It is a DNA sequence of organisms extracted from environmental samples like water, soil, or air.

**Q.30)** Consider the following:

1. Higher energy density.
2. Lower self-discharge rate.
3. Lower manufacturing cost
4. Longer lifespan.

How many of the above given are the advantages of Lithium-ion batteries over conventional batteries?

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

**Q.31)** Consider the following actions:

1. Detection of car crash/collision which results in the deployment of airbags almost instantaneously.
2. Detection of accidental free fall of a laptop towards the ground which results in the immediate turning off of the hard drive.
3. Detection of the tilt of the smart- phone which results in the rotation of display between portrait and landscape mode.

In how many of the above actions is the function of accelerometer required?

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

**Q.32)** With reference to Genetic Engineering Appraisal Committee (GEAC) of India, consider the following statements:

1. It is an autonomous body under the Ministry of Consumer Affairs, Food and Public Distribution.
2. Clearance of GEAC is mandatory for the environmental release of Genetically Modified (GM) crops.

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.33)** In the context of internet domain, the term 'cookies' refers to:

- a) advanced encryption algorithms used for securing databases from malware.
- b) small pieces of software used by businesses that track one's browsing activity for targeted advertising.
- c) text files containing website preferences and login information stored on one's device.
- d) secret codes used by hackers to access one's personal information.

**Q.34)** Consider the following statements :

**Statement I:** DNA vaccines have a lower immunogenicity (immune response) and efficacy than RNA vaccines.

**Statement II:** DNA vaccines are more stable compared to RNA vaccines and can be stored at room temperature.

Which one of the following is correct in respect of the above statements?

- a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.
- b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- c) Statement-I is correct but Statement-II is incorrect.
- d) Statement-I is incorrect but Statement-II is correct.

**Q.35)** With reference to 'Open-source software', consider the following statements:

1. It is a software publicly available for anyone to view, modify, and enhance.
2. It is comparatively less vulnerable to malicious attacks than proprietary software.
3. Android, Linux and Selenium are some of the examples of Open-source software.

How many of the above statements are correct?

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

**Q.36)** Consider the following statements regarding Pressurized Heavy Water Reactors (PHWRs):

1. All operational nuclear reactors in India are PHWRs.
2. Only fissile material can be used as fuel in PHWRs.
3. It generates no nuclear waste as it uses heavy water as coolant.

How many of the statements given above are correct?

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

**Q.37)** “Kessler syndrome”, often seen in news, is a-

- computer security protocol for preventing data breaches.
- theory in environmental science explaining the impact of climate change on migratory patterns of birds.
- certain critical mass of space debris around the earth after which the total amount of space debris keeps on increasing.
- geophysical phenomenon in which the Earth’s magnetic field reverses its polarity.

**Q.38)** With reference to potential application of transgenic animals, consider the following statements:

- They help in understanding how genes contribute to the development of disease.
- They can be used to create biological products to cure diseases.
- They can be used for testing the safety of vaccines before they are used on humans.

How many statements given above are correct?

- Only one
- Only two
- All three
- None

**Q.39)** In the context of using satellite for navigation services, consider the following statements regarding ‘Navigation with Indian Constellation (NavIC)’, developed by Indian Space Research Organization (ISRO):

- It is a constellation of seven satellites in which three are placed in geostationary orbit.
- It provides Standard Position Service (SPS) for civilian users and Restricted Service (RS) for strategic users.
- Its coverage area extends to regions lying outside the Indian borders.

How many of the above statements are correct?

- Only one
- Only two
- All three
- None

**Q.40)** With reference to the White Hydrogen, consider the following statements:

- It is produced through the electrolysis of water.
- It causes no CO<sub>2</sub> emissions when used as a fuel.

Which of the statements given above is/are correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

**Q.41)** With reference to street-lighting, how do sodium lamps differ from led lamps?

- Sodium lamps produce light in 360 degrees, but it is not so in the case of LED lamps.
- As street-lights, sodium lamps have longer life span than LED lamps.
- The spectrum of visible light from sodium lamps is almost monochromatic while LED lamps offer significant colour advantages in street-lighting.

Select the correct answer using the code given below:

- 3 only
- 2 only
- 1 and 3 only
- 1, 2 and 3

**Q.42)** Project Kusha, which has been in the news recently, is related to:

- usage of Artificial Intelligence to detect scams in the Banking sector in India.
- enhancing nutritional values of the staple crops of India.
- National Waterways of India.
- Air Missile defence system of India.

**Q.43)** Consider the following options:

- Intra Uterine Devices (IUDs).
- In Vitro Fertilisation.
- Artificial Insemination (AI)
- Gamete Intra Fallopian Transfer (GIFT)
- Zygote Intra Fallopian Transfer (ZIFT)

How many of the above are types of Assisted Reproductive Technology (ART)?

- Only two
- Only three
- Only four
- All five



**Q.44)** Consider the following statements in the context of satellites and different Earth orbits:

1. Low Earth Orbit satellite always orbits along the Earth's equator.
2. Polar orbiting satellite senses only the polar regions of Earth.
3. All Geostationary orbits are Geosynchronous, while the vice versa is not true.
4. Satellites in the Lower Earth Orbit have a lower orbital velocity than the ones in higher orbits.

How many of the statements given above are correct?

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

**Q.45)** In the context of digital technologies for entertainment, consider the following statements:

1. In Augmented Reality (AR), a simulated environment is created, and the physical world is completely shut out.
2. In Virtual Reality (VR), images generated from a computer are projected onto real-life objects or surroundings.
3. AR allows individuals to be present in the world and improves the experience using the camera of smart-phone or PC.
4. VR closes the world, and transposes an individual, providing complete immersion experience.

Which of the statements given above is/are correct?

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

**Q.46)** Scientists and legal professionals across the world increasingly utilize DNA fingerprinting technology for diverse purposes. In this context, consider the following

1. To identify the parent of a child
2. To successfully transplant human organs.
3. To transfer genes from animals to plants.
4. To diagnose genetic diseases.

The DNA fingerprinting technology can be effectively utilized in how many of the above cases?

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

**Q.47)** Consider the following activities:

1. Tracking the location of goods
2. Analyzing the distribution of mineral resources
3. Used by insurance companies for risk-based assessments.
4. Utilized in agriculture to analyze soil data.
5. Used for tracking geographical spread of diseases.

At the present level of technology available, how many of the above activities can be successfully carried out by using Geo-Spatial technology?

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

**Q.48)** In which of the following signature a physical mark is made by the person on the object which is to be signed?

- a) Click wrap signature
- b) Electronic signature
- c) Digital signature
- d) Wet mark signature

**Q.49)** With reference to 'Natural language Processing (NLP)', consider the following statements:

1. It deals with the interaction between computers and humans using the natural language.
2. It uses algorithms to identify and extract the natural language rules and convert into a form that computers can understand.
3. It can be used to analyze the sentiments and moods of the customer.

How many of the above statements are **incorrect**?

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

**Q.50)** Consider the following statements with reference to the term “Micro-LED”:

1. Only organic materials are used for the manufacturing of Micro-LEDs.
2. They have brighter and better color reproduction than OLED display technology.

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