

Part I

Comprehension ability (30 marks)

Questions 1 to 6: Read the passage below and answer the questions 1 to 6 in 4-5 sentences.

A natural item (moon) or a spacecraft (artificial satellite) orbiting a larger astronomical entity is known as a satellite. The Earth's Moon is the most well-known natural satellite orbiting the planet. Natural satellites of the planets range in size from less than 10 km in diameter to more than 4000 km. For example, Titan on Saturn and Ganymede on Jupiter have almost 5,000 kilometers in diameters. The composition of the satellites also varies substantially, ranging from totally rocky, like the Moon, to 50% or more ice, like Saturn's Enceladus.

Artificial satellites can be either crewless (robotic) or have a crew. The first artificial satellite to be placed in orbit was the remotely operated Sputnik 1, launched October 4, 1957, by the Soviet Union. Various robotic artificial satellites have also been launched into orbit around Venus, Mars, Jupiter, Saturn, and around the Moon and the asteroid Eros. Spacecraft of this type are used for scientific research and other purposes, such as communication, weather forecasting, navigation and global positioning, Earth resources management, and military intelligence. Examples of satellites with crews include space stations, space shuttle orbiters circling Earth, and Apollo spacecraft orbiting around the Moon or Earth.

Earth's Moon

The Moon has significance and reverence in the culture and life of human civilisation. The waxing and waning of the Moon have been a source of tabulating the days in ancient times leading to lunar calendars. Throughout ancient Egypt, Mesopotamia, Chinese and Indian mythology, the Moon has been worshipped as a deity.

A planet's weight and diameter are almost always at least 10000 times larger than that of its moon or natural satellite. The exception to this rule is the Earth-Moon system, where the Moon is only 0.273 times the diameter of Earth and about 1/80th of its mass. Earth-Moon system has more exceptions with other planet-satellite systems. The Moon orbits are closer to the ecliptic plane rather than the equatorial plane. The Moon plays a significant role in creating tidal effects and eclipses. The former is caused by the gravitational pull the two bodies have for each other. The side closest to the moon experience high tides. The latter occurs when the Moon, the Sun and the Earth align. When the Moon aligns between the Sun and the Earth, it causes a solar eclipse. If the Earth aligns between the Sun and the Moon, it is known as a lunar eclipse.

The Moon goes through four phases – new, first quarter, full, and last quarter. If the Moon places itself between Earth and the Sun, resulting in the side of the Moon that is in shadow to face Earth, it is known as New Moon. If the Moon happens to be on the opposite side of Earth, away from the Sun, resulting in the bright side of the Moon facing Earth, it is known as Full Moon. When the Moon is at right angles to the Sun when viewed from Earth, half of the Moon appears illuminated; it is known as the first and last quarters.

How satellites work

A satellite is a self-contained communications system that can receive signals from Earth and retransmit those signals back using a transponder—an integrated receiver and transmitter of radio signals.

The main components consist of the communications system, including antennas and transponders that receive and retransmit signals; the power system includes solar panels that provide power. Finally, it contains a propulsion system, including the rockets that propel the satellite. A satellite needs its propulsion system to get itself to the right orbital location and to make occasional corrections to that position. Geostationary orbit satellites can deviate up to a degree every year from their site because of the gravitational pull of the Moon and Sun. A satellite has thrusters that are fired occasionally to adjust its position.

Maintaining a satellite's orbital position is called "station keeping," and the corrections made by using the satellite's thrusters are called "attitude control." A satellite's life span is determined by the amount of fuel to power these thrusters. Once the fuel runs out, the satellite eventually drifts into space and out of operation, becoming space debris. A satellite has to withstand the shock of being accelerated during launch up to the orbital velocity of 28,100 km an hour and a hostile space environment where it can be subject to radiation and extreme temperatures for its projected operational life, which can last up to 20 years. In addition, satellites have to be light, as the cost of launching a satellite is quite expensive and based on weight. Meeting these challenges requires satellites to be small and made of lightweight and durable materials. They must operate at very high reliability of more than 99.9 percent in the vacuum of space with no prospect of maintenance or repair.

1. What are the two factors that describe the natural satellite?
2. What is the purpose of artificial satellites?
3. The Earth-Moon system is unique. Elaborate.
4. What is a transponder? What are the components of a satellite?
5. Why do the satellites need to be adjusted once launched?
6. Elaborate on "satellites must be small and made of lightweight and durable materials".

Part II

English Language Proficiency (30 marks)

Questions 1 to 6: Choose the most appropriate Prepositions for the blank.

1. The hills are _____ the left side of the river.

(A) at	(B) on
(C) until	(D) through

2. Let us not stop ____ one of us wins.

(A) at	(B) on
(C) until	(D) through

3. The bribe was collected _____ the table.

(A) at	(B) until
(C) under	(D) between

4. The dragon lives _____ these mountains.

(A) through	(B) down
(C) below	(D) between

5. It is dangerous to enter _____ the enemy's camp.

- (A) in (B) on
(C) by (D) into

6. My friend has invested a lot of money _____ agri-business.

- (A) in (B) for
(C) on (D) into

Questions 7 to 12: Pick up most appropriate word for the blank.

7. Shoot is to Gun as Eat is to _____.

- (A) Hunger (B) Thirst
(C) Dinner (D) Fruit

8. _____ is to Dusk as Summer is to Monsoon.

- (A) Evening (B) Dawn
(C) Night (D) Noon

9. Man : Mammal :: _____ : _____

- (A) Hail : Snow (B) Native : Inhabitant
(C) Offspring : Family (D) Liberty : Literate

10. Food : Stomach :: Fuel : _____

(A) Automobile

(B) Engine

(C) Car

(D) Rail

11. JILK : KLIJ :: MNPQ : _____

(A) QNPM

(B) MPQN

(C) QPNM

(D) PNMQ

12. DUST : BUSY :: JOIN : _____

(A) ROIT

(B) SOON

(C) RIOT

(D) COST

13. *Choose the odd one out.*

(A) Tennis

(B) Volleyball

(C) Football

(D) Cricket

14. *Choose the odd one out.*

(A) Morning Glory

(B) Jasmine

(C) Hibiscus

(D) Rose

15. *Choose the odd one out.*

- (A) AKEW
- (B) PNT0
- (C) IRVD
- (D) HJMX

Questions 16 to 18: Select the word that is Closest in meaning to the given word, from among the choices and write down the answers.

16. Corpulent

- (A) Lean
- (B) Gaunt
- (C) Emaciated
- (D) Obese

17. Intimidate

- (A) Frighten
- (B) To hint
- (C) Bluff
- (D) Harass

18. Debacle

- (A) Decline
- (B) Defeat
- (C) Collapse
- (D) Disgrace

Questions 19 to 21: Select the word that is opposite in meaning to the given word, from among the choices and write down the answers.

19. Antipathy

- | | |
|--------------|--------------|
| (A) Profane | (B) Villainy |
| (C) Affinity | (D) Guild |

20. Forlorn

- | | |
|--------------|--------------|
| (A) Exultant | (B) Frown |
| (C) Lampoon | (D) Moderate |

21. Enormous

- | | |
|----------|-------------|
| (A) Soft | (B) Average |
| (C) Tiny | (D) Weak |

Questions 22 to 25: Each sentence below has one or two blanks, each blank indicating that a word or set of words has been omitted. Beneath the sentence, there are four words or sets of words. Choose the word or set of words that best fits the meaning of the sentence as a whole.

22. Chameleons, since they move quickly and adopt the colour of their surroundings, are so difficult to _____ that even a careful observer can _____ their presence.

- | | |
|-----------------------|----------------------|
| (A) eradicate, notice | (B) detect, overlook |
| (C) ignore, misjudge | (D) miss, deduce |

23. The college president made the _____ statement that no student athlete on academic probation, not even the top-scorer of the varsity team, would be allowed to participate in intercollegiate sports.

- (A) impertinent (B) uncontroversial
(C) opinionated (D) categorical

24. You should _____ this paragraph in order to make your essay more _____.

- (A) enlarge, redundant (B) delete, succinct
(C) remove, discursive (D) revise, abstruse

25. The plot of this story is so _____ that I can predict the outcome.

- (A) intricate (B) theoretical
(C) trite (D) pivotal

Questions 26 to 28: Choose the correct meaning for the given proverb/idiom.

26. To cry wolf

- (A) To listen eagerly (B) To give false alarm
(C) To keep off starvation (D) None of these

27. To pick holes

- (A) To find some reason to quarrel
- (B) To cut some part of an item
- (C) To criticise someone
- (D) None of these

28. A black sheep

- (A) An unlucky person
- (B) A lucky person
- (C) A partner who takes no share of the profits
- (D) None of these

Questions 29 to 30: *There is a sentence of which some parts have been jumbled up. Rearrange these parts which are labelled P, Q, R and S to produce the correct sentence by choosing the proper sequence.*

29. It is easy to excuse

P : but it is hard

Q : in a boy of fourteen

R : the mischief of early childhood

S : to tolerate even unavoidable faults

- (A) RPQS
- (B) RPSQ
- (C) QRPS
- (D) QRSP

30. I enclose

P : and the postage

Q : a postal order

R : the price of books

S : which will cover

(A) RPSQ

(B) QSPR

(C) QSRP

(D) QPSR

Part III

Writing Skills (40 marks)

*Write a note on any **two** topics given below in **not more than three-four paragraphs.***

1. Public Library in the era of Google
2. Women's empowerment
3. Spirituality and Religion