PHYSICS

BOOKS - CHETAN PHYSICS (TAMIL ENGLISH)

SPACE MISSIONS

Fill In The Blanks And Rewrite The Statement

1. The man made devices that revolve around the earth, like any other planet are

called..... ,.

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2. If height of orbit of a satellite from earth's surface is increased, the tangential velocity of the satellite will..... .

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3. The initial velocity (during launching) of the Mangalyaan must be greater than .....of

the earth.

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4. The presence of..... on the Moon was predicted by the space shuttle..... .

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5. India's first successful inter-planetary mission was..... .

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6. The first man to travel in space through a spacecraft was.....

7. In 1969, the first person who landed on the Moon was..... .

8. The first Indian,..... Travelled around the earth in a Russian spacecraft in 1984.

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9. Due to.....the world has become a golbal village .

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10. In 1957, Russia lauched a satellite named ....

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11. The launching of a satellite is based on Newton's.....law of motion.

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12. The nearest celestial object from the earth is..... .

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13. The Father of Indian space exploration programme is ..... .

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14. The nearest planet to earth is ..... .

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15. In India, ISRO is headquatered at ..... .

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16. The earth takes almost.....hours to rotate about itself.

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17. The first satellite launched by India was named as ..... .

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18. The earth takes almost ..... days to revolve around the Sun.

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19. The planet Jupiter has .....satellites.

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20. .....are the Broadcast satellites of India.

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Find The Odd Man Out

1. Find the odd one out: Yuri Gagarin, Neil Armstrong, Rakesh Sharma, Vikram Sarabhai.

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2. Find the odd one out: Moon, Sputnik, INSAT, Mars

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3. Find the odd one out: INSAT, GSAT, IRS, PSLV

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4. Find the odd one out: H.E.O, L.E.O, M.E.O, GSLV

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Complete The Anaglogy

1. USSR : Yuri Gagarin :: India : .....

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2. PSLV : Polar Satellite Lanuch Vehicle : : GSLV : .....

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3. 2000 km to 35780 km : M.E.O : : 180 km to 2000 km : .....

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4. Moon : Chandrayan -1 : : Mars : .....

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Match The Colums

1. Match the column

Column A	Column B
(1) INSAT	(a) Polar Satellite Launch Vehicle
(2) GSAT	(b) Indian National Satellite
(3) GSLV	(c) Geo synchronous Satellite
(4) PSLV	(d) Geo synchronous Satellite Launch vehicle

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2. Match the columns

Column A	Column B
(1) Weather satellite	(a) Information of the area on protection point
(2) Communication satellite	(b) To decide accurate latitude and longitude
(3) Navigational satellite	(c) Communicate various places through waves
(4) Military satellite	(d) To predict weather forecast

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3. Match the columns

Column A	Column B
(1) Neil Armstrong	(a) The first man in space
(2) Yuri Gagarin	(b) The father of Indian Space Research
(3) Rakesh Sharma	(c) The first man on Moon
(4) Vikram Sarabhai	(d) The first Indian in space

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4. Match the following

Column A		Column B
(1)	Gravitational Constant	(a) 6×10^{24} kg
(2)	Gravitational acceleration	(b) 6.4×10^{6} m
(3)	Mass of the earth	(c) $9.8\ m/s^2$
(4)	Radius of the earth	(d) $6.67 \times 10^{-11}\ Nm^2/kg^2$

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True Or False

1. Is the given statement is TRUE or FALSE: If a spacecraft has to be sent away from the influence of Earth 's gravitational field , its velocity must be less than the escape velocity.

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2. Is the given statement is TRUE or FALSE: INSAT is an educational satellite .

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3. Is the given statement is TRUE or FALSE: The escape velocity on the Moon is less than that on the Earth.

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4. A satellite needs a specific velocity to revolve in a spacific orbit.

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5. Is the given statement is TRUE or FALSE: If the height of the orbit of a satellite increase , its velocity must also increase .

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6. Is the given statement is TRUE or FALSE: If the height of the orbit of a satellite increase , its velocity must also increase .

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7. Is the given statement is TRUE or FALSE: ISS and Hubble revolve in L.E.O.

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Name The Following

1. Name the Indian origin female astronauts who travelled by NASA satellite .

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2. Satellite designed by the students of COEP in Pune .

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3. In 2008, the ISRO lauched space shuttle named___.

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4. A satellite is launched into a circular orbit of radius R around the earth. A second satellite is

launched into an orbit of radius 4R. The ratio of their respective periods is

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5. Value of gravitational constant .

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6. Orbit of a satellite between 180 km .to 2000km from Earth's surface .

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7. Energy on which satellites work.

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8. Satellite which appears satationary with respect to Earth, revolving parallel to the equator .

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9. Orbits in which satellites complete one revolution in 2 to 24 hours.

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10. The velocity required for launching a remote sensing satellite.

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11. Indian satellite working for monitoring and management of natural resources and disaster management.

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Answer The Following In One Sentence

1. What is an artificial satellite?

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2. Which planet in our solar system has maximum satellites?

3. What is the name of the first Indian satellite?

4. Who is called the father of Indian Spaces programme ?

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5. भारतीय मूल की महिला अंतरिक्ष यात्री सुनीता विलियम्स की अंतरिक्ष यात्रा का वर्णन कीजिए।

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6. What are the applications of geo-stationary satellite ?

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Write The Full Form Of The Following

1. INSAT : Indian National Satellite

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2. GSAT : Geosynchronous Satellite

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3. IRNSS : Indian Regional Navigation Satellite System .

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4. GSLV : Geosynchronous Satellite Launch Vehicle

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5. PSLV : Polar Satellite Launch Vehicle

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6. ISRO : Indian Space Research Organisation

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7. NASA : National Aeronautics and Space Administration

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Choose And Re Write With The Correct Options

1. Which of the following is the communication satellite of India?

A. INSAT

B. EDUSAT

C. Astrosat

D. Resourcesat-1

Answer: A

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2. The launching of a satellite is based on Newton's.....law of motion.

A. first

B. second

C. third

D. fourth

Answer: C

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3. _____planet has maximum number of satellites.

A. Earth

B. Jupiter

C. Mars

D. Saturn

Answer: D

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4. Which of the following is a satellite launch vehicle?

A. PSLV

B. IRS

C. INSAT

D. GSAT

Answer: A

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5. _____is known as Pioneer of Indian space Programme.

A. Neil Armstrong

B. Yuri Gagarin

C. Rakesh Sharma

D. Vikram Sarabhai

Answer: D

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6. _____ls a High Earth Orbit (HEO) satellite ?

A. Navigational satellite

B. Geosynchronous satellite

C. Intemotional Space Station

D. SPUTNIK

Answer: B

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7. Which of the following is Low Earth Orbit (LEO) statellite ?

A. Navigational satellite

B. Geostationary satellite

C. International Space Station

D. All of the above

Answer: C

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8. To use a satellite for communication or meteorology, what type of orbit will be best suited?

A. Circular orbit

B. Geosynchronous orbit

C. Elliptical orbit

D. Polar orbit

Answer: B

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9. Two satellites revolving in a LEO and geosynchronous orbit have speed x and y respectively. Which of the following relation is correct?

A. $x > y$

B. $x < y$

C. $x \neq y$

D. None of the above

Answer: A

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10. Which is the best suited orbit for a remote sensing satellite?

A. Geosynchronous orbit

B. Elliptical orbit

C. Circular orbit

D. Sun synchronous Polar orbit

Answer: A

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Solve The Following

1. Escape velocity:

$$V_{esc} = \sqrt{\frac{2GM}{R}}$$

for earth : $V_{esc} = 11.2 km/s$

If mass of a planet is eight times the mass of the earth and its radius is twice the radius of the earth , what will be the escape velocity for that planet ?

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2. Orbital velocity

$$V = \sqrt{\frac{GM}{R+h}}$$

Suppose the orbit of a satellite is exactly 35780 km above the earth's surfce. Determine the tangential velocity of the satellite .

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3. Orbital velocity

$$V = \sqrt{\frac{GM}{R+h}}$$

Suppose the orbit of a satellite is exactly

35780 km above the earth's surface , how much time the satellite will take to complete one revolution around the earth ?

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4. How much time a satellite in an orbit at height 35780 km above earth's surface would take , if the mass of the earth would have been four time its original mass ?

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5. How much time a satellite in an orbit at height 35780 km above earth's surface would take , if the mass of the earth would have been four time its original mass ?

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6. If the height of a satellite completing one revolution around the earth in T seconds in h_1 meter, then what would be the height of a satellite taking $2\sqrt{2}$ T. seconds for one revolution ?

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Define The Following

1. Define Geo-stationary satellite

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2. Define High Earth Orbits

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3. Define Medium Earth Orbits

Watch Video Solution

4. Define Low Earth Orbits

Watch Video Solution

5. Define Polar Orbit

Watch Video Solution

6. Define Critical Velocity (v_c) of a satellite.

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7. What is Satellite Launch vehicle ?

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Write Short Notes

1. Define Space Exploration.

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2. Aritifical Satellite .

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3. What is Lunar expeditions?

Watch Video Solution

4. What is Mars expeditions ?

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Lable The Diagram

1. Orbit of satellites

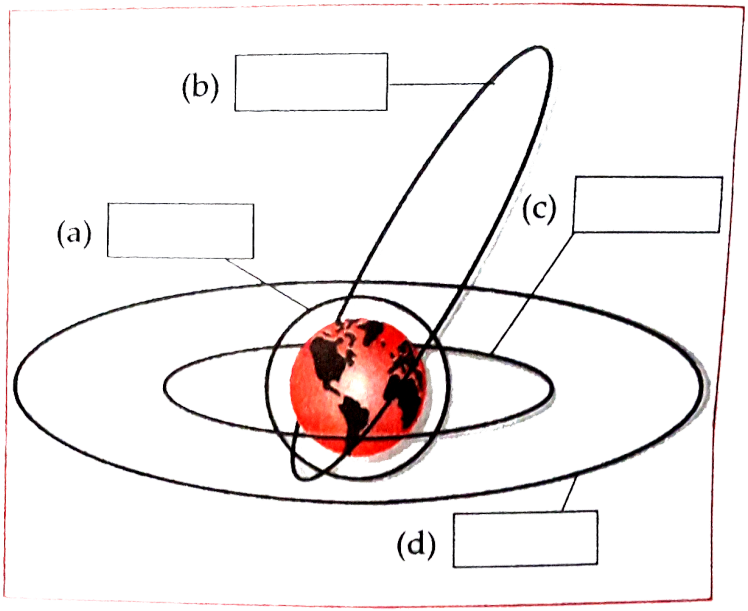

Fig 10.1 : Orbits of Satellites

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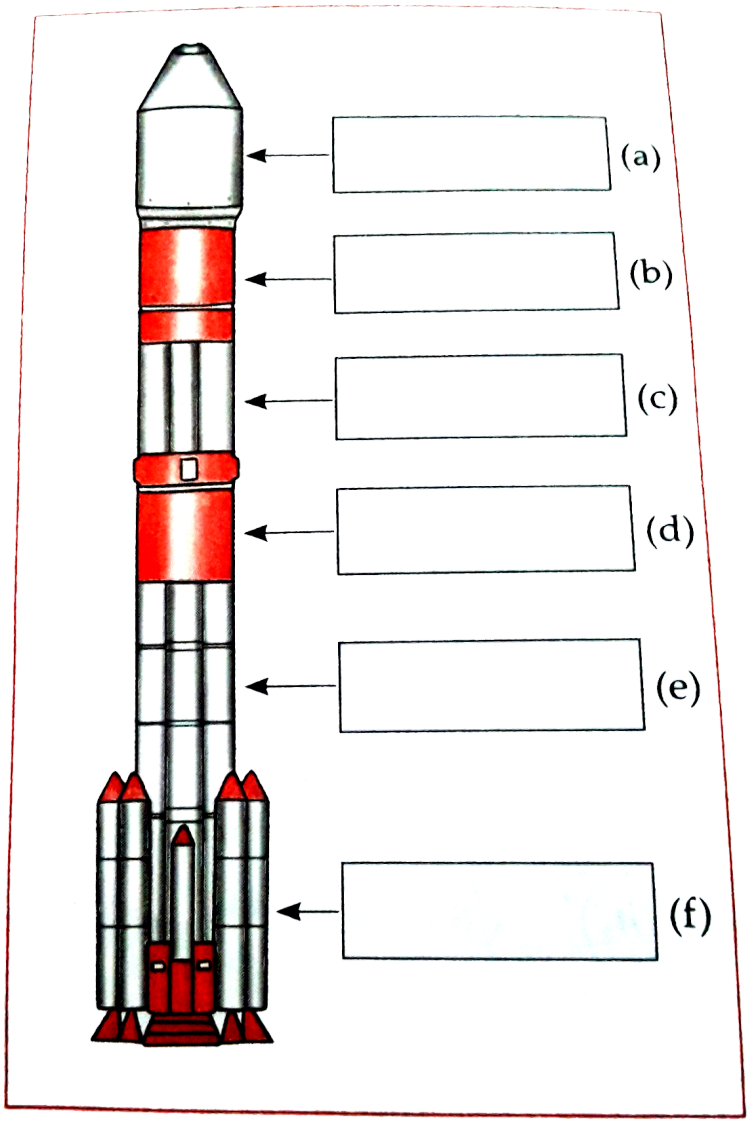
2. Structure of PSLV made by ISRO



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Answer The Following

1. What are the applications of geo-stationary satellite ?

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2. What is space debris ? How this debris is managed ?

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3. Explain escape velocity . Write the value of escape velocity of earth ?

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4. Why are geo - stationary satellites not useful for studies of polar regions ?

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5. Which types of telescope are obiting around the earth ? Why it is necessary to put them in space ?

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6. How are satellites launcher . The satellite in an orbit ?

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7. Complete the following table :

Sr. No.	Face Value	Type	Market Value
(i)	₹ 100	Premium ₹ 25	
(ii)		At par	₹ 175
(iii)	₹ 100	Discount ₹ 40	

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8. What is difference between space and sky ?

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9. What are different components of solar System ?

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10. What is meant by Satellite ?

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11. How many natural satellites does the earth have ?

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12. Where does the signal in your cell phone come from ?

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13. Where from do moblie towers receive the singals ?

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14. Where does the signals to your TV set come form ?

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15. You many have seen photograph showing the position of monsoon clouds over the country , in the newspaper . How are these images obtained ?

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16. The broadcast signals that originate from a radio station are sent to an articifical satellite for redistrubution to other locations. Name the orbit where such satellite should be placed and the lanuch vehicle used.

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17. What is the range from the Earth' s surface , where an artificial satellite to detect a precise latitude and longitude of a place, should revolve ?

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18. An artificial satellite is at a height of 35780 km from the Earth's surface .What is the period of revolution of this satellite ?

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19. Satellite need a specific velocity to revolve in specific orbit. Justify whether true or false .

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Answer The Following

1. Calculate the minimum velocity required by spacecraft to escape the earth's gravitational forces.

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2. Derive the formula for critical velcoity (V_c).

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3. Why is meant by satellite launch vehicles

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4. Why is it beneficial to use Satellite Launch Vehicles made of more than one stage ?

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Answer In Detail

1. What are Satellite Launch Vehicles ? Explain a Satellite Lanuch Vehile developed by ISRO with the help of schematic diagram .

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Assignment 10 Answer The Following Questions

1. The nearest planet to earth is ..... .

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2. Find the odd one out .

INSAT, GSAT, IRS, PSLV.

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3. Complete the analogy:

2000 km to 35780 km : M.E.O : : 180 km to 2000 km : ..... .

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4. (I) The Brownian motion is explained by Albert Einstein based on Newton's law of cooling.

(II) Brownian Motion proves the reality of atoms and molecules.

Which one is correct statement?

A. first

B. second

C. third

D. fourth

Answer:

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5. ..... .is know as Pioneer of Indian Space Programme.

A. Neil Armstrong

B. Yuri Gagain

C. Rakesh Sharma

D. Vikram Sarabhai

Answer:

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Assignement 10 Answer The Following Any 2

1. Write a short note on Antimicrobials.

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2. What is the difference between a sol and a gel?

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3. Define (a) High Earth orbits (b) Low Earth orbits .

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4. How are satellites classified based on their functions ?

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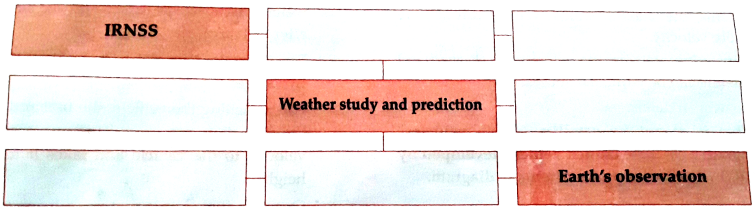
5. Complete the following tables .



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6. A geostationary satellite is orbiting the earth at a height of 5R above the surface of the earth, R being the radius of the earth. Find the time period of another satellite at a height of 2R from the surface of the earth.

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Assignement 10 Answer The Following Any 1

1. Write down the formula for Maximum height.

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2. What are Satellite Launch Vehicles ? Explain a Satellite Lanuch Vehile developed by ISRO with the help of schematic diagram .

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