MATHEMATICS
SOLUTIONS
PART A

1. Let the worth of the estate be 'x' Rs.
   $\frac{4x}{5} = 42000$
   $x = 42000 \times \frac{5}{4}$
   $x = 10500 \times 5$
   $x =$ Rs 52500/-
   Now,
   $\frac{3}{7}$ of estate worth = $\frac{3}{7}\ x$
   $= \frac{3}{7} \times 52500$
   = Rs 22500/-

2. $\frac{1}{9} = \frac{20}{180}$
   $\frac{5}{12} = \frac{75}{180}$
   $\frac{6}{15} = \frac{72}{180}$
   $\frac{4}{3} = \frac{240}{180}$
   $\frac{11}{9} = \frac{220}{180}$
   Ans: $\frac{1}{9}.\frac{5}{12}.\frac{6}{15}.\frac{4}{3}.\frac{11}{9}$

3. LCM of 16, 12 and 9 is 144

   $$144\overline{)\ 18000\ (125}$$
   $$\underline{18000}$$
   $$\times$$

   18000 is exactly divisible by 144
   ⇒ 18000 is exactly divisible by 16, 12, 9
   But, the numbers we need must be greater than 18,000
   ∴ 18000 + 144
   = 18144
   18144 is the smallest no. divisible by 16, 12 and 9, but greater than 18,000

4. 17+[11 -{8 +3-(9 of 6 +7 - 13 ×4)}]
   =17+[11-{8+3-(54+7-13 ×4)}]
   =17+[11-{8+3-(54+7-52)}]
   =17+[11-{8+3-(61-52)}]
   =17+[11-{8+3-(9)}]
   =17+[11-{11-9}]
   =17+[11-2]
   =17+[9]
   =17 + 9
   =26

5. $a + b + c = 11$
   $a^2 + b^2 + c^2 = 81$
   $ab + bc + ca$ =?
   $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$
   $(11)^2 = 81 + 2(ab + bc + ca)$
   $\frac{121-81}{2} = ab + bc + ca$
   $ab + bc + ca = \frac{40}{2}$
   $ab + bc + ca = 20$

6. Let number be $x,\ x + 1$
   $(x + 1)^2 - x^2 = 31$
   $x^2 + 1^2 + 2x - x^2 = 31$
   $2x = 30$
   $x = 15$
   ∴ The numbers are 15 and 16

7. Rate of 10 oranges = Rs 25/-
   Rate of 1 oranges = $\frac{25}{10}$ = Rs 2.5/-
   So CP of one orange = Rs 2.5/-
   Rate of oranges when 9 oranges = Rs 25/-
   Rate of 1 orange when 9 considered = $\frac{25}{9}$
   = Rs 2.78/-
   So SP of one orange = Rs 2.78/-
   Profit = 2.78 – 2.50
   = Rs 0. 28/-
   So profit % = $\frac{0.28}{2.5} \times 100$
   $= \frac{28}{25} \times \frac{100}{10}$
   $= \frac{28 \times 4}{10}$
   = 11.2

8. Let us factorise area,
   area = $6x^2y + 4y^2x$
   area = $2xy(3x + 2y)$
   area = length × breadth
   ⇒ $2xy(3x + 2y) = l \times 2xy$
   (∵ given in Question width = $2xy$)
   ⇒ $l = \frac{2\,xy(3x+2y)}{2xy}$
   ⇒ $l = 3x + 2y$
   To calculate perimeter,
   Perimeter = $2(l + b)$
   = $2(2xy + 3x + 2y)$
   = $4\,xy + 6\,x + 2y$

9. Let the radius be r
   Radius of smaller ball = $\frac{r}{2}$
   No. of balls = $\frac{\text{volume of big ball}}{\text{volume of small ball}}$
   ⇒ no. of balls = $\frac{\frac{4}{3}\pi r^3}{\frac{4}{3}\pi\left(\frac{r}{2}\right)^3}$
   $= \frac{r^3}{\frac{r^3}{8}}$
   = 8 balls

10. Let principal = P
    We know that,
    $I = A - P$
    = $4000 - P$

$4000 - P = \frac{P \times 6.25 \times 4}{100}$

$4000 - P = P \times \frac{25}{100}$

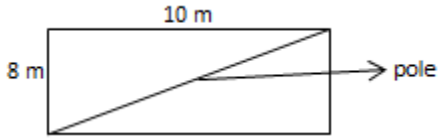
$4000 = \frac{P}{4} + P$

$4000 = \frac{5P}{4}$

$P = 4000 \times \frac{4}{5}$

$P = 3200$

11. The longest pole will be equal to the length of park's diagonal



By Pythagoras' Theorem

$h^2 = p^2 + b^2$

$h^2 = 10^2 + 8^2$

$h = \sqrt{100 + 64}$

$h = \sqrt{164} = \sqrt{41 \times 4} = 2\sqrt{41}m$

12. Let the numbers of rows = x

$\therefore$ each row has 'x' plants

Total no. of plants in garden

= no of rows × no of plants in each row

$\Rightarrow 2025 = x^2$

$\Rightarrow x = \sqrt{2025}$

$\Rightarrow x = 45$

Thus there as 45 rows and each row contains 45 plants

13. Ratio between exterior angle and interior angle = 2 : 7

Let exterior angle = $2x$

Let interior angle = $7x$

$\therefore 2x + 7x = 180°$ (sum of interior and ext angles is 180°)

$\Rightarrow 9x = 180°$

$\Rightarrow x = 20°$

we also know,

no. of sides = 360

$= \frac{360}{\text{ext angle}}$

$= \frac{360°}{2x} = \frac{360°}{40} = 9$

14. $2a - 3b - [4a - 3b - \{a - 2c(a - 2b - c)\}]$

$= 2a - 3b - [4a - 3b - \{a - 2ac + 2bc + 2c^2\}]$

$= 2a - 3b - [4a - 3b - a + 2ac - 2bc - 2c^2]$

$= 2a - 3b - 4a + 3b + a - 2ac + 2bc + 2c^2$

$= -a - 2ac + 2bc + 2c^2$

15. Population of a town = 50,000

$A = P\left(1 + \frac{r}{n}\right)^{nt}$

A = amount

P = Principal

r = rate

n = no. of times compounding occurs per year

t = time in years

$A = \left(1 - \frac{20}{1000}\right)^2$

$A = 50000\left(\frac{98}{100}\right)^2$

$A = 50000 \times \frac{9604}{10000}$

$A = 48020$

$\therefore$ the population will decrease to 48,020 people

16.

$$
\begin{array}{r|l}
 & 2a + 3b - 5c \\
\hline
2a + 3b + 5c & 4a^2 + 12ab + 9b^2 - 25c^2 \\
 & 4a^2 + 6ab \quad + 10ca \\
 & - \quad - \quad - \\
\hline
 & 6ab + 9b^2 - 25c^2 - 10ca \\
 & 6ab + 9b^2 \quad + 15bc \\
 & - \quad - \quad - \\
\hline
 & -10ca - 25c^2 - 15bc \\
 & -10ca - 25c^2 - 15bc \\
 & + \quad + \quad + \\
\hline
 & \times
\end{array}
$$

$\therefore \frac{4a^2 + 12ab + 9b^2 - 25c^2}{2a + 3b + 5c} = 2a + 3b - 5c$

17. Area of original rectangle = $l \times b = lb$

Area of new rectangle = $2l \times 2b = 4lb$

Ratio of original rectangle area to new rectangle area = $\frac{lb}{4\,lb}$

$= \frac{1}{4}$

= 1:4

18. $P = 3750$

$I = 3750 \times \frac{1}{5}$

= 750 Rs

$T = 4$ years

$R = \frac{100\,I}{PT}$

$= \frac{100 \times 750}{3750 \times 4}$

Rate = 5%

Again, P = 3750

Interest of 4 years = Rs 750/-

Interest of 1 year = $\frac{750}{4}$ = Rs 187.5/-

Interest of 15 years 187.5×15

= Rs. 2812.50/-

Amount in 15 years

= Rs. 3750 + Rs. 2812.50

= Rs. 6562.50/-

19. Mean score of 58 in 9 innings

Total score of 9 innings = 58×9

= 522

Let us say he scores x runs in 10th innings

Total score of 10 innings = 522 + x

He wants mean score to be 61 in 10 innings

$\therefore$ Total score in 10 innings = 10×61

= 610

$\therefore 522 + x = 610$

$\Rightarrow x = 610 - 522$

$\Rightarrow x = 88$ Runs

20. Area of $\Delta = \frac{1}{2} \times$ base $\times$ height

$150 \text{ cm}^2 = \frac{1}{2} \times b \times 8$

$b = \frac{150 \times 2}{8}$

$b = \frac{300}{8}$

$b = 37.5$

$\therefore$ base is $37.5\ cm$

PART B

1. CP of article = Rs. 400/-

D = 20%

Profit = 20%

SP= $\frac{(CP+P)}{100} \times CP$

SP = $\frac{120}{100} \times 400$

= Rs 480/-

MP of article = ?

SP= $\frac{(100-D)}{100} \times MP$

$480 = \frac{80}{100} \times MP$

$\frac{480 \times 100}{80} = MP$

600 = MP

$\therefore$ Marked Price = Rs 600/-

2. Value of first prize = x

Value of second prize = $\frac{5}{6}x$

Value of third prize = $\frac{4}{5} \times \frac{5}{6}x$

$= \frac{4}{6}x$

Now,

$x + \frac{5}{6}x + \frac{4}{6}x = 450$

$\Rightarrow x\left(\frac{6}{6} + \frac{5}{6} + \frac{4}{6}\right) = 450$

$\Rightarrow x = 450 \times \frac{6}{15}$

$\Rightarrow x = 30 \times 6$

$\Rightarrow x = 180$

$\therefore$ Value of 1st prize is Rs 180/-

Value of 2nd prize is $180 \times \frac{5}{6} = 150$

Value of 3rd prize is $180 \times \frac{4}{6} = 120$

3. Amount after 3 years = Rs 3142/-

Amount after 5 years = Rs 3720/-

Interest of 2 years = 3720 – 3192

= Rs 528/-

Interest of 1 year = $\frac{528}{2}$

= Rs 264/-

Principal sum = Amount at 3 years – 3 (Interest of 1 year)

= 3192 – 3 (264)

= 3192 – 792

= Rs 2400/-

SI = $\frac{PRT}{100}$

$\Rightarrow 792 = \frac{2400 \times R \times 3}{100}$

$\Rightarrow R = \frac{792 \times 100}{2400 \times 3}$

$\Rightarrow R = 11$

$\therefore$ Rate is 11%

4. Distance between P and Q after 25 min

= Distance covered by P in 25 min + Distance covered by Q in 25 min

Speed = distance / time

= speed of P $\times \frac{25}{60}$ + speed of Q $\times \frac{25}{60}$

$= 60 \times \frac{60}{25} + 90 \times \frac{60}{25}$

$= \frac{300+450}{12}$

$= \frac{750}{12}$

$= 62.5$

$\therefore$ Distance between P and Q is 62.5 km

5. a) $x^2 + 2x - 15$

$= x^2 + 5x - 3x - 15$

$= x(x+5) - 3(x+5)$

$= (x-3)(x+5)$

b) $x^6 - 2x^3y^3 + y^6 - x^3 - y^3$

$= (x^3)^2 + (y^3)^2 - 2x^3y^3 - x^3 - y^3$

$= (x^3 - y^3)^2 - x^3 - y^3$

$= (x^3 - y^3)^2 - (x^3 + y^3)$

$= x^6 - 2x^3y^3 + y^6 + x^3 - y^3$

$= (y^3)^2 + (x^3)^2 - 2x^3y^3 + x^3 - y^3$

$= (y^3 - x^3)^2 - (y^3 + x^3)$

$= (y^3 - x^3)^2(y^3 - x^3 - 1)$

6. Volume of cylinder = $\pi r^2 h$

$= \pi(6)^2 \times 15$

$= 540\ \pi \text{ cm}^3$

Volume of cone + volume of hemisphere

$= \frac{1}{3}\pi r^2 h + \frac{2}{3}\pi r^3$

$= \frac{1}{3}\pi(3)^2 h + \frac{2}{3}\pi(3)^3$

$= \frac{9}{3}\pi \times 12 + \frac{2}{3}\pi \times 27$

$= 36\ \pi + 18\ \pi$

$= 54\ \pi \text{ cm}^3$

No. of ice cream cones = $\frac{540\ \pi cm^3}{54\pi cm^3}$

= 10 cones

7. P's one minute work = $\frac{1}{24}$

Q's one minute work = $\frac{1}{32}$

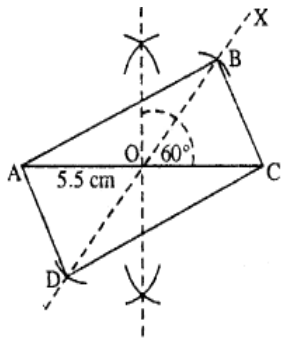
Let the first pipe turn off in x minutes

P's x minutes work + Q's 16 minute = 1

$\Rightarrow \frac{1}{24} \times x + \frac{1}{32} \times 16 = 1$

$\Rightarrow \frac{x}{24} + \frac{1}{2} = 1$
$\Rightarrow \frac{x}{24} = \frac{1}{2}$
$\Rightarrow x = 12$
$\therefore$ after 12 minutes pipe P will be turned off

8. 1) Draw AC = 5.5 cm
2) Bisect A at O.
3) At O, draw $\angle XOC = 60°$
And produce XO to Y
4) Cut OB = OA and OD = OA
(half the diagonal and AC)
5) Join AB, BC, AD and CD
6) ABCD is required rectangle



9. Factorise dividend first,
$x^2 + 10x + 21$
$= x^2 + 7x + 3x + 21$
$= x(x + 7) + 3(x + 7)$
$= (x + 3)(x + 7)$
Divide by $(x + 7)$
$\frac{(x+3)(x+7)}{(x+7)}$
$= (x + 3)$

10. Let $x = 2a,\ y = 3a$ and $z = 4a$
$\because$ angles on a straight line add up to 180°,
$x + y + z = 180°$
$2a + 3a + 4a = 180°$
$9a = 180°$
$a = 20°$
Now to find $\angle z$
$\angle z = 4a$
$\angle z = 4 \times 20°$
$\angle z = 80°$

ENGLISH

SECTION A

1. a)
   i. The reputation of the famous tennis player was ruined as she backed out of a match with her rival at the last moment.
   ii. Games reveal a person's character by the traits that a player shows.
   iii. The ideal player plays for the fun of the game.
   iv. The disinterested player should keep out of the game because he in an annoyance.
   v. Fairness, honor, self control, willingness to abide by the rules, tempered by restraint & ability to win or lose with good spirit are the qualities for the game & are same as those for a decent living.

   b)
   i. Strong
   ii. Qualities
   iii. Control
   iv. Awareness
   v. Showing interest

2.
   a) The blind boy will never enjoy the light, the blessings of sight, the bright sun and the difference between day and night.
   b) He describes the warmth of the sunshine he has never seen.
   c) This means that the poet does not want what he can never make him unhappy.
   d) The blind boy bears his loss with patience.
   e) Blind persons are assisted by technology like braille and sensor driven aids to help them lead a productive life.

SECTION B

3.

a) Good fences make good neighbours.

Keywords: Fences, neighbours, boundaries, privacy, personal space, mutual understanding, safe living environment, harmonious living, security.

Key ideas:
Fences help to establish personal space and privacy.
Promote mutual respect. Establishing a physical boundary can prevent disputes and misunderstandings. Fences encourage communication. By setting up a clear boundary, neighbours can establish an understanding Fences can help to create a sense of security. Fences provide a physical barrier that can prevent unwanted intrusions
Promote peace of mind and create a more comfortable living environment.

The proverb "Good fences make good neighbours" means that having a clear boundary between two properties is essential for maintaining a good relationship between neighbours. This proverb highlights the importance of respecting each other's privacy and personal space.

In a world where people are constantly moving and cities are getting denser, neighbours are living closer together than ever before. As a result, it has become increasingly important to establish boundaries and respect each other's space. A fence not only defines the boundary of a property but also serves as a physical barrier that can prevent unwanted trespassing or intrusion. It provides a sense of security and privacy to homeowners, allowing them to feel more comfortable in their own homes.

Moreover, a fence can also prevent disputes between neighbours. Without a clear boundary, it can be challenging to determine who is responsible for the maintenance of certain areas. For example, if a tree is located on the border of two properties, it may be unclear who should be responsible for its care and upkeep.

The proverb "Good fences make good neighbours" is widely popular, and it is evident in many cultures worldwide. For example, in Japan, fences are used to create boundaries that define individual space, which is respected by all members of the community.

In conclusion, the proverb "Good fences make good neighbours" emphasizes the importance of respecting each other's space

and privacy. A clear boundary can help prevent disputes between neighbours and provide a sense of security and privacy to homeowners.

b) In the era of globalisation and social media physical boundaries shoulde be done away with between the countries.

Keywords: physical boundaries, interconnectedness, exchange of goods, service, people, global community, blurring of boundaries, borderless societies, common challanges.

key ideas:
Globalization and social media have made the world more interconnected.

Physical boundaries between countries are becoming less significant. The free movement of people and goods across borders is essential for growth and development. Social media has revolutionized communication and made the world a smaller place.

Doing away with physical boundaries can create a global community that is united in addressing common challenges. Increased collaboration can lead to economic growth and job creation. The world is becoming borderless and more connected.

In the modern era of globalisation and social media, physical boundaries between countries should be done away with. With the advancement of technology and the rise of social media platforms, people have become more connected than ever before. This connectivity has broken down many of the barriers that once divided us and has made the world a smaller place.

One of the main reasons why physical boundaries should be done away with is that it would lead to the free movement of people, goods and services across borders. This would help to promote economic growth and development. It would also create new opportunities for people to travel, work, and study in different countries, leading to greater cultural exchange and understanding.

Another important reason to remove physical boundaries between countries is that it would help to create a more united global community. The world is facing many common challenges, such as climate change, poverty, and conflict, which require a united effort to address. By breaking down physical barriers, people from different countries can come together to work on solutions that benefit everyone.

Social media has played a critical role in connecting people from different countries and cultures. Social media platforms such as Facebook, Twitter, and Instagram have made it easier than ever before to connect with people from all around the world. By removing physical boundaries, social media can be used to promote greater cultural exchange and understanding, leading to greater empathy and collaboration between people from different backgrounds.

In conclusion, the era of globalisation and social media has made it clear that physical boundaries should be done away with between countries. This would lead to greater economic growth and development, a more united global community, and greater cultural exchange and understanding. While there are challenges to be addressed, the benefits of breaking down physical barriers are clear, and we must work together to make this a reality.

c) Importance of sports in school life.

Keywords: Physical fitness, mental well being, teamwork, leadership skills, healthy competition, sportsmanship, character building.

Key ideas:
Physical fitness, sports help students maintain a healthy lifestyle by improving their physical fitness and reducing the risk of obesity and other health problems.

Mental well-being enhances mental well-being by reducing stress. Teamwork sports offer opportunities for students to work collaboratively as a team.

Character building teaches students important values such as discipline, determination, perseverance, and sportsmanship.

Academic performance helps students develop time-management skills, improves concentration, and boosts confidence, leading to better academic results.

Sports are a crucial aspect of school life, and their importance cannot be overstated.

Sports offer several benefits to students, both physical and mental, which help in their overall development. One of the most important benefits of sports in school life is physical fitness. Regular participation in sports ensures that students maintain a healthy lifestyle and stay physically fit. It helps prevent obesity and other health problems that can arise from a sedentary lifestyle.

Sports also contribute to the mental well-being of students. Participation in sports helps reduce stress, anxiety, and depression among students. It provides a healthy outlet for them to release their pent-up emotions and frustrations. Students who participate in sports are also more likely to have a positive attitude towards life and exhibit better self-esteem.

Teamwork is another important value that sports teach us. Sports offer opportunities for students to work collaboratively as a team, developing their teamwork skills and learning how to communicate effectively with others. This is a valuable skill that they can apply in other areas of their lives, including their academic and professional pursuits.

Sports also promote character-building and teach students essential values such as discipline, determination, perseverance, and sportsmanship. These values help students develop into responsible, confident and well-rounded individuals. They learn to accept defeat gracefully and strive to improve themselves with every game.

In conclusion, sports play a vital role in the overall development of students in school. Through sports, students learn valuable life skills that help them succeed in all areas of their lives. Therefore, it is essential to encourage and promote sports activities in schools to help students develop their physical, mental and social well-being.

4. Shubam Badoni_____not more than 150 words

Key ideas:
Shubham badoniis an active member of the young wing of the Society for the Prevention of Cruelty to Animals

He witnessed an incident of animal cruelty where a group of children were throwing stones at a helpless dog

He believes that animals deserve to be treated with respect and kindness. Education and awareness are crucial in preventing animal cruelty

He urges readers to report any instances of animal cruelty to the authorities and work towards creating a kind and compassionate society towards the animals.

To:
The Editor,
Times of India,
New Delhi,
PIN – 123456.

Dear Editor,

I am writing to express my concern regarding the increasing cases of cruelty towards animals. I am an active member of the young wing of the Society for the Prevention of Cruelty to Animals and I am deeply disturbed by the recent incident that I witnessed.

As you can see in the picture I have enclosed, a group of children is seen throwing stones at a helpless dog. This is a blatant act of cruelty and must be condemned. Animals are living beings and they deserve to be treated with respect and kindness.

It is our responsibility to ensure the safety and well-being of all animals. This can only be achieved through awareness and education. We must educate our children on the importance of treating animals with kindness and compassion.

I urge all readers to report any instances of animal cruelty to the authorities forthwith. We must take a stand against such inhumane acts and work towards creating a society that is kind and compassionate towards animals.

Yours sincerely,

(Sign)
Shubham Badoni,
(Address)

5. Write a notice in about 50 words informing the students of your school that a speech competition on the topic "If I ever was to become a president" is going to be held on 15th December at 11:00 am in the assembly hall.

Keyideas:
The notice is informing the students of a school

about a speech competition on the topic "If I ever was to become a president" that will be held on 15th December at 11 am in the assembly hall. The notice also requests interested students to register their names with the undersigned by 10th December and mentions that participants will be judged on their content, delivery, and overall presentation.

NOTICE

All students of our school are hereby informed that a speech competition on the topic "If I ever was to become a president" is going to be held on 15th December at 11 am in the assembly hall. Interested students are requested to register their names with the undersigned by 10th December. Participants will be judged on their content, delivery, and overall presentation. Don't miss out on this opportunity to showcase your oratory skills!

Date: [Date of Notice]

Principal,
(School Name)

SECTION C (GRAMMAR)

1. a) Has your mother got a map of the town?
   b) I was stung on the arm by a bee.
   c) It is unknown that by whom was the wheel invented.
   d) There is a threat to close down the school next year.
   e) Here are some dry clothes that you can change into.
   f) I am giving you an application form to fill in.
   g) People often (adverb of time) don't tell you the complete truth.
   h) It is not as sunny today as it was yesterday.
   i) Is Ajay listening to a concert?
   j) Act now or you will miss your chance.
2. a) Ananya is so punctual that she cannot be late.
   b) Sheetal is intelligent but her sister is not so intelligent.
   c) It is a beautiful ring that was given to me by my husband.
   d) Nupur looks after the children so she must be honest & sincere.
   e) Aman tried hard to pass the test but he failed.
3. a) i. Happiness
   b) ii. Legal
   c) ii. Clear
   d) ii. Fallible
   e) ii. Yielding
4. a) iii. Important
   b) iii. Overjoyed
   c) i. Welcoming
   d) iv. Hostile
   e) i. Snare
5. a) can
   b) stops
   c) awakens
   d) being
   e) have
   f) have
   g) treat
   h) observed
   i) slept
   j) found
6. a) by
   b) into
   c) with
   d) for
   e) from
   f) that
   g) after
   h) to
   i) off
   j) away
7. a) The food was cooked by us and sent to the orphanage.
   b) It was felt that the police was corrupt.
   c) A pen was given to me by Pratik.
   d) English is taught to us by Miss Sahani.
   e) Should I have been interrupted while speaking?
8. a) iv. Gradually declining
   b) ii. Have some big bad news
   c) iv. Full force
   d) i. Runoff
   e) iii. The complete surprise
9. a) Cluster
   b) Troupe
   c) Aeronautics
   d) Entomology
   e) Chronology
10. a) The teacher enquired from the students, why they were making a noise.
    b) Shanti said that Sita had a fine picture.

c) He requested his friend to lend him his book.
d) Ruby remarked that the baby ran very fast.
e) He suggested that we stop talking to her as she is a miser.
f) The clerk asked the visitor if he should ask the people to wait for him.
g) He suggested that we should have some tea.
h) The teacher ordered the three boys to go out of the class room.
i) He exclaimed that today was a fine day.
j) Amit asked his friend to sit besides him.

11. a) Fisherman
    b) Readers
    c) Potter
12. a) I do not like liars.
    b) She was taught music by Miss Sharma.
    c) Have you brought the apples?
    d) She appeared to be very confident.
    e) We should be sincere in our work.
    f) Pranjali spoke to me for a week everyday.
    g) She thanked me for what I did.

GENERAL KNOWLEDGE

1. a) Mumbai
   Explanation: It is the industrial hub of western India and has a population of 17,159000 approximately.
2. d) Narendra Modi
   Explanation: In 2015 he became the first Indian PM to address the British Parliament.
3. c) Nilgiri
   Explanation: This was established in 1986 and is located in the Western Ghats in the state of Tamil Nadu.
4. a) Onam
   Explanation: It is celebrated in kerala harvest festival celebrated to people of kerala.
5. c) Sarojini Naidu
   Explanation: She governed the State form 15th August 1947 to 2 March 1949.
6. b) 132
   Explanation: The HDI ranks countries on major factors of development and is a major ranking used to monitor Development. India's score is a remarkable improvement compared to the South Asian region's average valur of 0.508 and is closed to the world average of 0.465.
7. c) Chlorophyll
   Explanation: It absorbs light and aids photosynthesis.
8. d) Cell
   Explanation: It can exist on its own and is therefore called the building block of life.
9. a) Liver
   Explanation: It is also the largest organ.
10. a) Defence against infection
    Explanation: This is the main function of White Blood cells in the human body.
11. d) Golgi apparatus
    Explanation: It is located in the cytoplasm of an eukaryotic cell. It has many folds stacked upon each other.
12. a) Stem
    Explanation: It is a modified stem that is at times mistaken for a root.
13. c) Pancreas
    Explanation: Insulin balances the sugar in the body and a malfunction of the Pancreas often lead to illness like diabetes.
14. a) Exosphere
    Explanation: The outermost layer it extends from top of the thermosphere to 10,000 km above the earth. It is followed by vacuum into space.
15. d) Oceanic Trench
    Explanation: It is located in the Western Pacific ocean and measures about 2550 km in length. It is the deepest location on Earth.
16. c) Bangalore
    Explanation: It is the national space agency of India founded in 1969, to develop an independent space program.
17. b) Annie Besant
    Explanation: It was a movement for home rule or a dominion states for India and was carried out though by Home rule leagues.
18. c) Badminton
    Explanation: It is an international badminton Competition and was founded by Sir George Thomas in 1949.
19. c) Damascus
    Explanation: It is one of the oldest inhabited cites in Syria.
20. d) Shooting
    Explanation: He is an Indian Olympic Gold medalist in shooting. He has also won the Arjuna Award for shooting.
21. d) Google
22. d) Sardar Vallabhbhai Patel
    Explanation: He led the Kheda and Bardoli Satyagraha and was one of the leading lights of the Indian National Movement.
23. d) President
    Explanation: Emergency is declared under articles 352-360. The country under emergency is ruled under an altered constitution.
24. d) Portugal
    Explanation: He is a Portuguese and the captain of the National team. He also plays for the Saudi Professional League Club.
25. d) Madhya Pradesh
    Explanation: It is closely followed by Arunachal Pradesh as the second in forest cover. MP has a cover of 80.9 million hectares.
26. c) President
27. d) Electroscope
    Explanation: It was discovered in 1600 by Gilbert.
28. b) Lord Mountbatten
    Explanation: He was the last British Viceroy and oversaw the partition of Indian in 1947.
29. d) Madhya Pradesh
    Explanation: These are Spectacular Buddhist caves located in Aurangabad and were built by the Vakataka rulers.
30. c) Sardar Vallabhbhai Patel
    Explanation: He is known so because of the role that he played in bringing India into its

present boundaries through the Integration of Princely States into India.

31. b) 1764
    Explanation: This Battle was fought by Nawab Siraj-ud-Daulah the French and a group of rulers in Eastern India to regain control over Bengal. It was fought against the British. It was won by the British.
32. b) 1885
    Explanation: It was a party of professionals who came together for nationalist cause of India under British Rule.
33. b) Civil disobedience movement
    Explanation: It was a part of the movement started by Gandhiji in 1930 and was armed at willful disobedience of British law.
34. d) J.C. Bose
35. b) Buddhism
    Explanation: It is located in the Sanchi town in Madhya Pradesh. Originally Commissioned by Ashoka in 3rd century BC, it is one of the oldest stone structures in India and contains the relics of the Buddha.
36. c) Seoul
37. c) Chhattisgarh
    Explanation: It is a coal based power plant commissioned in 1983.
38. b) October 24, 1945
    Explanation: The UN came into existence to preserve world peace and avoid another war.
39. d) West bengal
    Explanation: It is followed by Uttar Pradesh and Punjab. The wet conditions of Bengal are ideal for Rice production.
40. c) Somnath Temple
    Explanation: In 1024 he invaded Gujarat and took away the wealth of the Somnath temple. He also raided Mathura and looted its wealth.
41. b) Vitamin D
    Explanation: It causes skeletal deformities such as knock knees, thickened wrists and ankles.
42. b) Gopal Krishna Gokhale
    Explanation: In 1912 Gokhle had visited South Africa and was a guide and mentor to Gandhiji.
43. d) Manila
    Explanation: It is a regional development Bank established in 1966, and is modeled closely on the World Bank.
44. a) Zamindari System
45. a) Kabir and Ravidas
46. b) Mohammed Iqbal
    Explanation: He was an Islamic Poet and philosopher under is largely considered the originator of the idea of Pakistan.
47. c) MS Swaminathan
    Explanation: He was instrumental in introducing high productivity crops in India. In the 1960's this led to self sufficiency in food in India.
48. d) Mendel
    Explanation: Mendel experimented on Pea plants and those studies led to the discovery of Genetics in 1863.
49. c) Sericulture
    Explanation: It is an important industry in India and employs 9.76 million people in rural and semi Urban areas.
50. d) Vitamin D
    Explanation: Sunlight helps to absorb and process Vitamin D. This is why exposure to morning rays of the Sun is beneficial for health.
51. b) Bharat Vibajan
52. a) Rusting of iron
    Explanation: A chemical change is reversible. Thus rusting is a chemical charge.
53. a) Desalination
    Explanation: It is the procedure of heating and condensing sea water for human use.
54. b) Nagaland
    Explanation: It has been built for 357 Army and Assam Rifles Personal killed in insurgery.
55. d) One horned Rahino
    Explanation: The one horned Rhino in on the Venerable list of IUCN. This list is known as the Red list which lists the endangered species of the Earth.
56. b) Titan
    Explanation: Titan submersible sub was destroyed in a likely implosion. All five tourists confirmed dead.
57. d) Lake Superior
    Explanation: It is the largest by area and is located in North America. It is spread over 82,100 km^2.
58. d) All of the above
59. d) Food vacuole
    Explanation: It traps the food in the food vacuole and gets digested by digestive juices.
60. a) Hydrochloric acid
61. b) Cutting of wood
    Explanation: A physical change is one in which the basic structure of the substance does not change.
62. c) Iron

Explanation: It creates a barrier between iron and oxygen by applying a protective zinc coating, thus preventing rusting.

63. b) DRDO
    Explanation: It is missile propulsion system and is important for the propulsion in future of long range air to air missiles.
64. c) Radiation
    Explanation: The rays of the Sun are transferred to Earth through a medium in the form of electromagnetic radiations.
65. a) 2013
    Explanation: MOM was launched in November 2013, by ISRO. It is India's first interplanetary Spacecraft.
66. a) Length
    Explanation: If the length of the string of a pendulum is increased, its time period increases.
67. b) Compact fluorescent lamp
    Explanation: Compact fluorescent lamp - It is an energy saving bulb and is made up of a glass tube and 2 electrodes.
68. b) Ammonia
    Explanation: Humans excrete nitrogenous waste in the form of Urea. Sea animals excrete Ammonia.
69. b)Speaker of the Lok Sabha
    Explanation: These sessions are called by the President.
70. a) Freedom of speech and expression
71. d) America
    Explanation: It is inspired by the American Bill of Rights.
72. c) Lal Bahadur Shastri
    Explanation: He was the Prime Minister of India from 1946 to 1966.
73. a) Calcutta High Court
    Explanation: It was established on 2 July 1862. It also has jurisdiction over the UT of Andaman and Nicobar airport from West Bengal.
74. c) E.V Ramaswamy
    Explanation: He formed the Dravida Kazhagam or the party of Dravidians. He was against caste inequality and gender discrimination.
75. a) Kautila
    Explanation: Chanakya also known as Kautilya was an ancient Indian thinker who is known for being realist end very strategic in his political thought.