TERRITORIAL ARMY COMMISSION

OFFICER ENTRANCE EXAMINATION

PRACTICE TEST PAPER - 6

Max Time : 2 Hours **(Please Read The Instructions Carefully)** **Max Marks : 100**

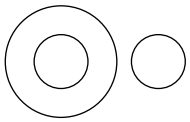
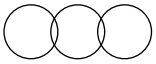
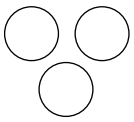
Roll No……..

INSTRUCTIONS

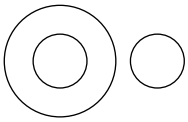
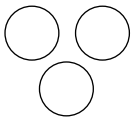
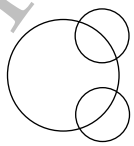
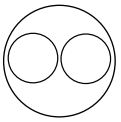
1. Paper–1 has four parts:
   (a) Part I : Reasoning (25 marks)
   (b) Part II: Elementary Mathematics (25 marks)
   (c) Part III: English (25 marks)
   (d) Part IV General Awareness (25 marks)
2. Each section carries 25 objectives type of questions.
3. There will be four possible answers to every question. Candidates are required to mark correct answer.
4. For each correct answer, 1 mark will be granted and 0.33 mark will be deducted for every wrong answer.
5. There will be no penalty for questions left unanswered.

PART–1 : REASONING

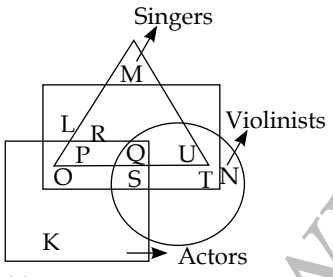
Q1. Which of the following diagrams indicates the best relation between Thief, Criminal and Police?

(a)  (b)  (c)  (d) 

Q2. Which of the following diagrams indicates best relation between Pigeon, Bird and Dog?

(a)  (b)  (c)  (d) 

Q3. In the given figure, which letter represents those Actors who are also Dancers, Singers as well as Violinists?



(a) S (b) Q (c) P (d) U

Q4. In a row of boys, A is fifteenth from the left and B is fourth from the right. There are three boys between A and B. C is just left of A. What is C's position from the right?
(a) 9th (b) 10th (c) 12th (d) 13th

Q5. Forty boys are standing in a row facing the North. Amit is eleventh from the left and Deepak is thirty first from the right end of the row. How far will Shreya, who is third to the right of Amit in the row, be from Deepak?
(a) 2nd (b) 3rd (c) 4th (d) 5th

Q6. Standing on a platform, Amit told Sunits that Aligarh was more than ten kilometres but less than fifteen kilometres from there. Sunita knew that it was more than twelve but less than fourteen kilometres from there. If both of them were correct, which of the following could be the distance of Aligarh from the platform?
(a) 11 km (b) 12 km (c) 13 km (d) 14 km

Q7. An application was received by inward clerk in the afternoon of a week day. Next day he forwarded it to the table of the senior clerk, who was on leave that day. The senior clerk next day evening put up the application to the desk officer. Desk officer studied the application and disposed of the matter on the same day, i.e., Friday. Which day was the application received by the inward clerk?
(a) Monday (b) Tuesday (c) Wednesday (d) Earlier week's Saturday

Q8. If ÷ means ×, × means +, + means – and – means ÷, find the value of 16 × 3 + 5 – 2 ÷ 4.
(a) 9 (b) 10 (c) 19 (d) None of these

Q9. If × means –,+ means ÷, – means × and ÷ means +, then 15 – 2 + 900 + 90 × 100 =?
(a) 190 (b) 180 (c) 90 (d) None of these

Q10. If P denotes 'multiplied by', T denotes 'subtracted from', M denotes 'added to' and B denotes 'divided by', then 28 B 7 P 8 T 6 M 4 = ?
(a) $-\frac{3}{2}$ (b) 30 (c) 32 (d) 34

Q11. Find the missing term.

6	11	25
8	6	16
12	5	?

(a) 18 (b) 16 (c) 12 (d) 10

Q12. Find the missing term.

1	3	7
5	12	14
25	?	28
125	192	56

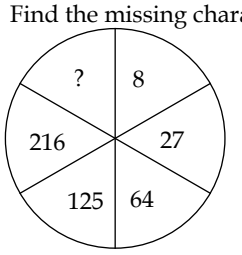
(a) 64 (b) 56 (c) 48 (d) 40

Q13. Find the missing term.

4C	2B	3A
28A	?	45B
7C	5A	15B

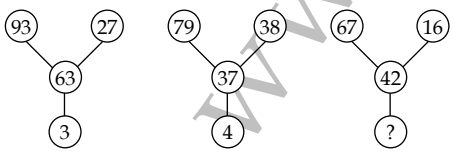
(a) 10C (b) 12C (c) 13C (d) 7C

Q14. Find the missing character in the following figure.



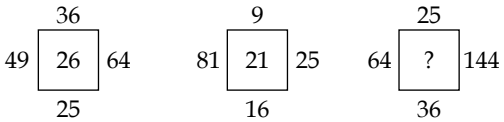
(a) 4 (b) 305 (c) 343 (d) 729

Q15. Find the missing character in the following figure.



(a) 5 (b) 6 (c) 8 (d) 9

Q16. Find the missing character in the following figure.



(a) 19 (b) 23 (c) 25 (d) 31

Direction Consider the given statements to be true and decide which of the given conclusion/assumptions can definitely be drawn from the given statement

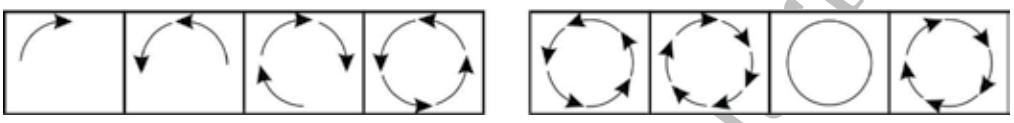
Q17. Statements All pens are roads. All roads are houses.
Conclusions: I All houses are pens.
II. Some houses are pens.
(a) if only conclusion I follows; (b) if only conclusion II follows;
(c) if neither conclusion I nor II follows; (d) if both conclusions I and II follow.

Q18. Statements All good athletes win. All good athletes eat well.
Conclusions : I. All those who eat well are good athletes.
II. All those who win eat well.
(a) if only conclusion I follows; (b) if only conclusion II follows;
(c) if neither conclusion I nor II follows; (d) if both conclusions I and II follow.

Q19. Statements: All birds are tall. Some tall are hens.
Conclusion : I. Some birds are hens.
II. Some hens are tall.
(a) if only conclusion I follows; (b) if only conclusion II follows;
(c) if neither conclusion I nor II follows; (d) if both conclusions I and II follow.

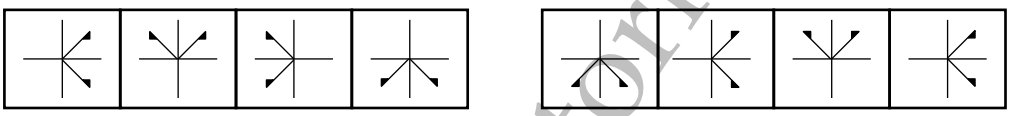
Direction Each of the problems, contains four figures marked as (A), (B), (C), (D) and answer figures marked as (a), (b), (c) and (d). Select a figure from amongst the answer figures which will continue in the same series as given in the problem figure.

Q20. Find out the next figure



(A) (B) (C) (D) (a) (b) (c) (d)

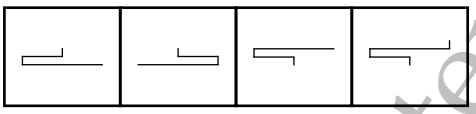
Q21. Find out the next figure



(A) (B) (C) (D) (a) (b) (c) (d)

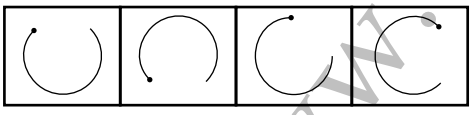
Direction Each of the following problems, contains 4 figures marked (a), (b), (c), (d). Find the odd figure.

Q22.



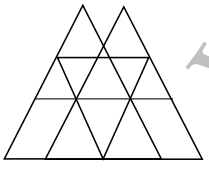
(a) (b) (c) (d)

Q23.



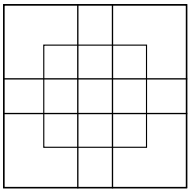
(a) (b) (c) (d)

Q24. How many triangles are there puzzles .



(a) 16 (b) 18 (c) 14 (d) 15

Q25. How many maximum squares are in the following figure?



(a) 18 (b) 19 (c) 25 (d) 27

PART–II : ELEMENTARY MATHEMATICS

Q1. An aeroplane leaves an airport and flies due north at a speed of 1000 km per hour. At the same time another aeroplane leaves the same airport and flies due went at a speed of 1200 km per hour. How far apart will be the two planes after $1\frac{1}{2}$ hours.
(a) 300km (b) 410km (c) $300\sqrt{61}$ km (d) 500km

Q2. Find the values of y for which the distance between the points P (2, –3) and Q (10, y) is 10 units.
(a) (0, 2) (b) (2, 3) (c) (4, 6) (d) (3,–9)

Q3. If the points A (6,1) B (8,2), C (9,4) and D (p,3) are the vertices of a parallelogram taken in order, find the value of p.
(a) 5 (b) 6 (c) 7 (d) 8

Q4. In a right ΔABC right angled at B if tan A = 1 value of 2 sin A cos A
(a) 0 (b) 1 (c) –1 (d) 2

Q5. The angle of elevation of the top of a tower from two points at a distance of 4m and 9m from the base of power and in the same straight line with it are complementary. Height of tower is
(a) 8m. (b) 10m. (c) 6m. (d) None of these

Q6. A tangent PQ at a point P of a circle of radius 5cm meets a line through the centre O at a point Q so that OQ = 12cm. length PQ is
(a) 12cm. (b) 13cm. (c) 8.5cm. (d) $\sqrt{119}$ cm.

Q7. The wheels of a car are of diameter 80cm. each. How many complete revolutions does each wheel make in 10 minutes when the car is travelling at a speed of 66km/h.?
(a) 4375 (b) 4300 (c) 4200. (d) 4500

Q8. If the perimeter and the area of a circle arc numerically equal, then the radius of the circle is
(a) 2units (b) π units (c) 4units (d) 7units

Q9. A chord of a circle of radius 15 cm subtends deals an angle 60° at the centre find the area of corresponding minor segment of the circle. (use $\pi = 3.14$ and $\sqrt{3} = 1.73$)
(a) $20cm^2$ (b) $15cm^2$ (c) $24.44cm^2$ (d) $30cm^2$

Q10. A metallic sphere of radius 4.2cm. is melted and recast into the shape of a cylinder of radius 6cm. Find the height of the cylinder.
(a) 2.5cm. (b) 2.6cm. (c) 2.744cm. (d) 2.8cm.

Q11. A hemipherical tank full of water is emptied by a pipe at the rate of 3 liters. per second. How many time will it take to empty half the tank if it is 3m in diameter?(Take $\pi = \frac{22}{7}$)
(a) 16.5min. (b) 16min. (c) 17min. (d) 18min.

Q12. A drinking glass is in the shape of a frustum of cone of height 14cm. The diameters of its two circular ends are 4cm and 2cm. Find the capacity of the glass.
(a) $300cm^3$ (b) $200cm^3$ (c) $308cm^3$ (d) $400cm^3$

Q13. A die is thrown once. Find the probability of getting a prime number.
(a) $\frac{1}{2}$ (b) 0 (c) 1 (d) 2

Q14. The diagonal of a square A is (a + b). The diagonal of a square whose area is twice the area of square A.
(a) 2(a + b) (b) $2(a + b)^2$ (c) $\sqrt{2}(a + b)$ (d) $\sqrt{2}(a – b)$

Q15. A man spends 40% of his monthly on food and one third of the remaining on transport. If he saves ₹4500 per month, which is half money after spending an food and transport, his monthly salary is
(a) ₹11250 (b) ₹22500 (c) ₹25000 (d) ₹45000

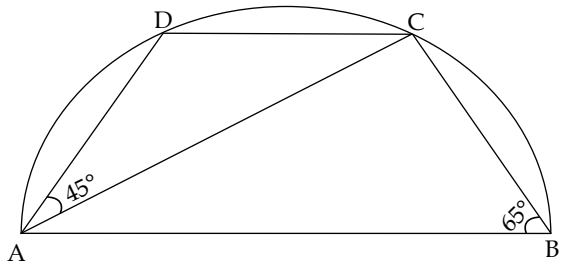
Q16. The selling price of 12 articles is equal to the cost price of 15 articles. The gain percent is
(a) 25% (b) 80% (c) $6\frac{2}{3}\%$ (d) 20%

Q17. In 45 litre of phenol water the ratio of phenol to water is 2:23. The amount of water that should be added to it to make the ratio 3:37 is
(a) 5L. (b) 2L. (c) 4L. (d) 3L.

Q18. ABCD is a trapezium such that AB = CD, AD || BC AD = 7cm and BC = 11cm. If area of trapezium ABCD is 54sq.cm. then value of CD is
(a) $\sqrt{29}$cm. (b) $2\sqrt{10}$cm. (c) $\sqrt{21}$cm. (d) None of these

Q19. If $P = \frac{4xy}{x + y}$ then find the value of $\frac{P + 2x}{P - 2x} + \frac{P + 2y}{P + 2y}$
(a) 4 (b) 1 (c) 2 (d) 6

Q20. In the given figure, AB is diameter of the circle, C lie on the semicircle. ∠ABC = 65° and ∠CAD=45° find ∠DCA = ?



(a) 45° (b) 25° (c) 20° (d) None of there

Q21. If $x^2 + y^2 + z^2 + 2 = 2(y - x)$ then find the value of $x^3 + y^3 + z^3$:

(a) 0 (b) 2 (c) 3 (d) 1

Q22. Find the greatest number that will divide 148, 246 and 623 leaving remainders 4,6 and 11 respectively.

(a) 12 (b) 16 (c) 14 (d) 15

Q23. Tea costing ₹ 136 a kilogram is mixed with tea costing ₹ 141 a kilogram in the ratio 2:3. The cost of one kilorgram of the mixture is

(a) ₹138 (b) ₹138.50 (c) ₹139 (d) ₹139.50

Q24. A copper wire when bent in the form of square, encloses a region having area 121cm^2. If the same wire is bent in the form of a circle, then the area of the region enclosed by the wire will be (Take $\pi = \frac{22}{7}$)

(a) 154cm^2 (b) 143cm^2 (c) 132cm^2 (d) 121cm^2

Q25. A train cross a telegraph post in 8seconds and a bridge 200m. long in 24 seconds. What is the length of the train?

(a) 100m. (b) 120m. (c) 140m. (d) 160m.

PART–III : ENGLISH

In each of the following sentences find out which part of the sentence has an error.

Q1. Only when you have your children (a)/ you will understand (b)/ how difficult it is (c)/ No error (d)/

Q2. If she will go to the university next year (a)/ we will have the (b)/ house to ourselves (c)/ No error (d)/

Q3. I told goodbye to (a)/ Deepesh but he (b)/ ignored me completely (c)/ No error (d)/

Choose the best expression amongst multiple choices for a given idiom/proverb.

Q4. To get admission in present day educational institutions, all children should be born with a silver spoon in the mouth.
(a) be born in a rich family
(b) be born to silver spoon manufacture
(c) always hold a silver spoon
(d) be born with silver spoon

Q5. A man of straw means
(a) A very active person
(b) A worthy fellow
(c) An unreasonable person
(d) A man of no substance

Q6. To be above board.
(a) To have a good height
(b) To be honest in any business deal
(c) Having no debts.
(d) To try to be beautiful

Q7. To cry wolf.
(a) To listen eagerly
(b) To give false alarm
(c) To turn pale
(d) To keep off starvation

In each of the following question out of the four alternatives, choose the one which can be substitute for the given word/ sentence.

Q8. List of the business or subjects to be considered at a meeting
(a) Schedule (b) Timetable (c) Agenda (d) Plan

Q9. Leave or remove from a place considered dangerous
(a) Evade (b) Evacuate (c) Avoid (d) Exterminate

Q10. A prima facie case is such
(a) As it seems at first sight
(b) As it is made to seem at first sight
(c) As it turns out to be at the end
(d) As it seems to the court after a number of hearings

In these questions, the first and last sentences of the passage are numbered 1 and 6. The rest of passage is split into four parts and named P, Q, R and S. These four parts are not given in their proper order. Read the sentence and find out which of the four combinations is correct.

Q11. S1: The city is almost a slum and stinks most of time.
P : The slush on the road did not deter them.
Q : The occasional slips and falls were considered a small price to pay for the trip.
R : They were excited, fascinated by the sight of fresh snow on the roads.
S : Even so, it looked beautiful to tourists of various categories.
S6: But some visitors came away with the unforgettable sight of young labours scantily clad.
The Proper sequence should be:
(a) RQPS (b) QPRS (c) RSQP (d) SPQR

Q12. S1: Venice is a strange and beautiful city in the north of Italy.
P : There are about four hundred old stone bridges joining the island of Venice.
Q : In this city there are no motor cars, no horses, no buses.
R : These small islands are near one another.
S : It is not an island but a hundred and seventeen islands.
S6: This is because Venice has no streets.
The Proper sequence should be:
(a) PQRS (b) PRQS (c) SRPQ (d) PQSR

Q13. S1: The Hound of Baskervilles was feared by the people of the area.
P : Some people spoke of seeing a huge, shadowy form a Hound at midnight on the moor.
Q : But they spoke of it in tones of horror.
R : Nobody had actually seen the hound.
S : This shadowy form did not reveal any details about the animal.
S6: The Hound of Baskervilles remains an unsolved mystery.
The Proper sequence should be:
(a) SPQR (b) SPRQ (c) PSRQ (d) PQRS

Q14. S1: A gentleman who lived alone always had two plates placed on the table at dinner time.
P : One day just as he sat down to dine, the cat rushed in to the room.
Q : One plate was for himself and other was for his cat.
R : she drooped a mouse into her own plate and another into her master plate.
S : He used to give the cat a piece of meat from his own plate.
S6: In this way the cat showed her gratitude to her master.
The Proper sequence should be:
(a) QSPR (b) PSRQ (c) QRSP (d) RPQS

For Underlined part of the sentence chooses part of the sentence from given choices, to correct or improve it.

Q15. No one could explain how a calm and balanced person like him could *penetrate* such a mindless act on his friends.
(a) perpetuate (b) perpetrate (c) precipitate (d) No improvement

Q16. Five years ago today, I *am sitting* in a small Japanese car, driving across Poland towards Berlin.
(a) was sitting (b) sat (c) have been sitting (d) No improvement

Q17. I took the cycle *which he bought yesterday*.
(a) that he bought yesterday (b) that which he had bought yesterday
(c) that he had bought yesterday (d) No improvement

Q18. Please make it a point to send you letter *at my address*.
(a) on my address (b) to my address (c) in my address (d) No improvement

Q19. If you are living near a market place you should be ready *to bear* the disturbances caused by traffic.
(a) to bear upon (b) to bear with (c) to bear away (d) No improvement

In each or the following questions, a sentence has been given in Active (or Passive) voice. Out of the four alternatives suggested, select the one which best express the same sentence in Passive (or Active) voice.

Q20. The people elected him Mayor.
(a) Him was elected Mayor the people. (b) He was elected Mayor by the people.
(c) Mayor is elected by the people. (d) He is elected by the people Mayor.

Q21. Someone saw him picking up a gun.
(a) He was seen pick up a gun by someone (b) He was seen picking up a gun by someone
(c) He was seen when he was picking up a gun (d) He was seen by someone pick a gun

Q22. The boy has rung the bell
(a) The bell has been rung by the boy. (b) The bell was being rung by the boy.
(c) The bell was rung by the boy. (d) The bell has been being rung by the boy.

Rearrange the following part of the sentence in form of a meaningful sentence.

Q23. Mohan, the son of my friend, gave me a set of pens (P)/ which is very precious (Q)/ while working in Japan (R)/ who died in an accident (S)/
(a) P Q R S (b) S R P Q (c) R S P Q (d) S P Q R

Q24. The clerk on the desk (P)/ left the money (Q)/ in the safe (R)/ which he should have locked up (S)/
(a) P Q R S (b) R S P Q (c) Q P R S (d) Q P S R

Q25. There must be countries now in which peasants can spend several years in universities (P)/ so that (Q)/ a lot of young persons (R)/ are going without substantial meals (S)/
(a) S R Q P (b) P Q R S (c) S Q R P (d) Q P S R

PART–IV : GENERAL KNOWLEDGE

Q1. Satellite having the same orbital period as the period of rotation of the Earth about its ouwn axis is known as
(a) polar satellite (b) stationary satellite (c) geostationary satellite (d) INSAT

Q2. Notification regarding commencement on cessation of a state of war is the responsibility of
(a) Ministry of Home Affairs (b) Ministry of Defence
(c) Ministry of External Affairs (d) None of the above

Q3. The Planning Commission of India has been constituted
(a) under constitutional provision with specific mention for it
(b) through an Act of Parliament
(c) through a cabinet decision in this regard
(d) through constitutional amendment

Q4. Electoral disputes arising out of Presidential and Vice Presidential Elections are settled by
(a) Election Commission of India (b) Joint Committee of Parliament
(c) Supreme Court of India (d) Speaker of Lok Sabha

Q5. Power of the Supreme Court of India to decide the between centre and state falls under
(a) advisory jurisdiction (b) original jurisdiction (c) appellate jurisdiction (d) constitutional jurisdiction

Q6. The Governor may recommend the imposition of the President's rule in the state
(a) on the recommendation of the State Legislature
(b) on the recommendation of the President
(c) on the recommendation of the Chief Minister
(d) if he is convinced that the Government of the State cannot be carried on in accordance with the provisions of the Constitution of India

Q7. Which one among the following writs literally means you many have the body?
(a) Certiorari (b) Habeas Corpus (c) Mandamus (d) Quo Warranto

Q8. The Speaker of the Lok Sabha may be removed from office by
(a) the majority party in the house adopting a no confidence motion
(b) a resolution passed by not less than half of the total membership of the house
(c) a resolution passed by at least two-thirds of the total membership of the house
(d) a resolution passed by a majority of all the members of the house

Q9. Under flexible exchange rate system, the exchange rate is determined
(a) predominantly by market mechanism (b) by the Central Bank
(c) as a weighted index of a group of currencies (d) by the World Trade Organization

Q10. Rise in the price of a commodity means
(a) rise in the value of currency only
(b) fall in the value of currency only
(c) rise in the value of commodity only
(d) fall in the value of currency and rise in the value of commodity.

Q11. An exceptional demand curve is one that slopes
(a) downward to the right (b) upward to the right (c) horizontally (d) upward to the left

Q12. 'Arihant is a
(a) Multi barrel rocket launcher (b) Airborne Early Warning and Control System
(c) Unmarmed Combat Aerial Vehicle (d) Nuclear-powered ballistic missile submarine

Q13. Which Indian armed force has created a first-of-its kind 'human rights cell'?
(a) India Navy (b) Indian Army (c) Indian Coast Guard (d) Indian Air Force

Q14. What is 'INS Karanj', which was making news recently, with reference to Indian defence?
(a) Scorpene submarine (b) Aircraft carrier (c) Frigate (d) Destroyer

Q15. Which state /UT plays host to the Khelo India Winter Games 2021?
(a) Delhi (b) Jammu and Kashmir (c) Maharashtra (d) Uttar Pradesh

Q16. Which state of India houses the Shaheed Veer Narayan Singh International Cricket Stadium?
(a) Jharkhand (b) Chattisgarh (c) Madhya Pradesh (d) Maharashtra

Q17. Which country houses the headquarters of the International Tennis Federation?
(a) Canada (b) Switzerland (c) France (d) United Kingdom

Q18. Which sport's competition is known as the "Davis Cup"?
(a) Tennis (b) Football (c) Cricket (d) Volleyball

Q19. Which one of the following is a peacetime Gallentry Award?

(a) Shaurya Chakra (b) Vir Chakra (c) Yudh Seva Medal (d) Param Vir Chakra

Q20. The National Dope Testing Laboratory functions under
(a) Ministry of Health and Family Welfare (b) Ministry of Science and Technology
(c) Ministry of Youth Affairs and Sports (d) Ministry of Home Affairs

Q21. What is the rank of India in the World Press Freedom index 2021?
(a) 142 (b) 152 (c) 162 (d) 172

Q22. The Commercial Crew Program (CCP), which was making news recently, is a flagship initiative of which space agency?
(a) ISRO (b) NASA (c) JAXA (d) Roscosmos

Q23. Which state/UT announced that all departments of the government will use only electric vehicles?
(a) Odisha (b) Delhi (c) West Bengal (d) Telangana

Q24. Which organisation is set to launch Covid-19 Oxygen Emergency Taskforce?
(a) UNICEF (b) Indian Medical Association
(c) AIIMS (d) WHO

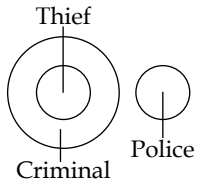
Q25. 'B.1.526' is a new highly contagious Covid-19 mutant variant first recorded in which country?
(a) China (b) USA (c) South Africa (d) India

PART–I : REASONING

ANSWER PRACTICE TEST PAPER - 6

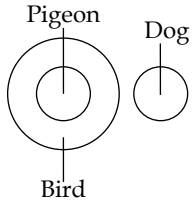
1. (a)

Explanation:



2. (a)

Explanation: Pigeon is a bird and dog is an animal.



3. (b) Q

Explanation: Letter Q represents those Actors who are also Dancers, Singers as well as violinists.

4. (a) 9th

Explanation: Number of boys the row = (15+4+3) = 22.

C is just left of A. So, C is 14th from the left end. Number of boys to the right of C = (22 – 14) = 8

So, C is 9th from the right end of the row.

5. (c) 4th

Explanation: Number of boys to the left of Deepak = (40 – 31) = 9.

So, Deepak is 10th from the left end. Shreya is third to the right of Amit. So, Shreya is 14th from the left end.

Clearly, Shreya is fourth to the right of Deepak.

6. (c) 13 km

Explanation: Clearly, according to Sunita, the distance was more than 12 km but less than 14 km, which is 13 km.

7. (c) Wednesday

Explanation: Desk officer received the application on Friday. Clearly, the application was forwarded to the table of the senior clerk on Thursday. So, the application was received by the inward clerk on Wednesday.

8. (a) 9

Explanation: Using the correct symbols, we have:

Given expression $= 16 + 3 - 5 \div 2 \times 4 = 16 + 3 - \frac{5}{2} \times 4$
$= 19 - 10 = 9$

9. (d) None of these

Explanation: Using the correct symbols, we have:

Given expression = 15 × 2 + 900 ÷ 90 – 100 = 30 + 10 – 100 = – 60.

10. (b) 30

Explanation: Using the correct symbols, we have:

Given expression = 28 ÷ 7 × 8 – 6 + 4

= 4 × 8 – 6 + 4 = 32 – 6 + 4 = 36 – 6 = 30.

11. (b) 16

Explanation: In the first row, 11 × 2 + (6 ÷ 2) = 25.

In the second row, 6 × 2 + (8 ÷ 2) = 16.

∴ In the third row, missing number = 5 × 2 + (12 ÷ 2) = 10 + 6 = 16.

12. (c) 48

Explanation: The sequence in first column is × 5 .

Thus, 1 × 5 = 5, 5 × 5 = 25, 25 × 5 = 125.
The sequence in third column is × 2. Thus, 7 × 2 = 14, 14 × 2 = 28, 28 × 2 = 56.

The sequence in second column is × 4.

∴ Missing number = 12 × 4 = 48

13. (a) 10C

Explanation: In each row, out of the letters A, B and C, each of these must appear once. In each column, the product of the first and third numbers is equal to the second number. So, the missing number will be (2 × 5) i.e., 10 and the letter will be C.

Thus, the answer is 10C.

14. (c) 343

Explanation: Moving clockwise, the terms are: $2^3, 3^3, 4^3, 5^3, 6^3, 7^3$.

15. (d) 9

Explanation: We have: 93 – (27 + 63) = 3;

79 – (38 + 37) = 4.

So, missing number 67 – (16 + 42) = 9.

16. (d) 31

Explanation: We have: $\sqrt{36} + \sqrt{64} + \sqrt{25} + \sqrt{49} = 26$;

$\sqrt{9} + \sqrt{25} + \sqrt{16} + \sqrt{81} = 21$.

So, missing number $= \sqrt{25} + \sqrt{144} + \sqrt{36} + \sqrt{64}$

= (5 + 12 + 6 + 8) = 31.

17. (b) if only conclusion II follows;

Explanation: Since both the premises are universal and affirmative, the conclusion must be universal affirmative and should not contain the middle term. So, it follows that

'All pens are houses'. II is the converse of this conclusion and so it holds. Since the term houses' is distributed in I without being distributed in any of the premises, so I does not follow.

18. (c) if neither conclusion I nor II follows;

Explanation: Since the middle term 'good athletes' is distributed twice in the premises, the conclusion must be particular and should not contain the middle term. So it follows that 'Some of those who win, eat well'

19. (b) if only conclusion II follows;

Explanation: Since the middle term 'tall' is not distributed even once in the premises, no definite conclusion follows. However, II is the converse of the second premise and so it holds.

20. (d)

Explanation: The figure gets laterally inverted and the number of arrows increases by one in each step.

21. (d)

Explanation: Similar figure repeats in every second step. Each time a particular figure reappears, it gets laterally inverte

22. (d)

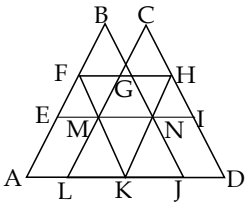
Explanation: Figure (d) consists of five line segments while each one of the other figures consists of four line segments.

23. (b)

Explanation: All other figures can be rotated into each other.

24. (b) 18

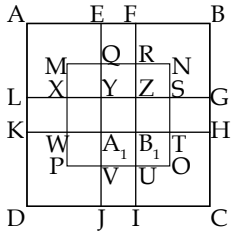
Explanation: We may label the figure as shown.



The simplest triangles are BFG, CGH, EFM, FMG. GMN, GHN, HNI, LMK, MNK and KNJ Le.. 10 in number.
The triangles composed of three coniponents each are FAK and HKD te, 2 in number. The triangles composed of four components each. are BEN, CMI, GLJ and FHK i.e., 4 in number.
The triangles composed of eight components each are BAJ and CLD i.e., 2 in number. Thus, there are 10+2+4+2 18 triangles in the given figure

25. (d) 27

Explanation: The figure may be labelled as shown.



The simplest squares are EFRQ, MQYX, QRZY, RNSZ, LXWK, XYA,W. YZB,A,, ZSTB. SGHT, WA,VP. A,B,UV, B, TOU and VUIJ i.e., 13 in number. The squares having two components each are AEYL, FBGZ, KA,JD and B,HCI i.e., 4 in number.

The squares having four components each are MRB, W, QNTA,, XZUP and YSOV i.e., 4 in number. The squares having seven components each are AFB,K, EBHA,, LZID and YGCJ i.e., 4 in number. There is only one square i.e., MNOP composed of nine components.

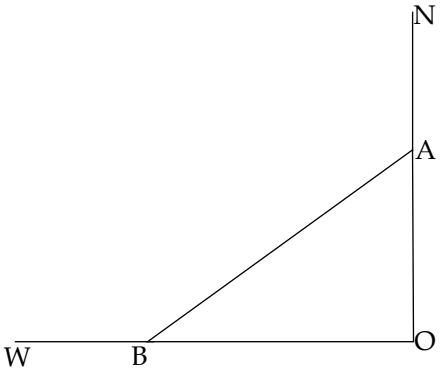
There is only one square i.e., ABCD composed of seventeen components.
∴ There are 13+4+4+4+1+1 = 27 squares in the figure.

PART–II : ELEMENTARY MATHEMATICS

ANSWER PRACTICE TEST PAPER - 6

1. (c) $300\sqrt{61}$ km

Explanation:



Distance covered by I plane in north = $\cancel{1000} \times \frac{3}{\cancel{2}}$

$= 1500$km.

Distance covered by 2nd plane in north = $\cancel{1200} \times \frac{3}{\cancel{2}}$

$= 1800$km.

Distance between the planes after $1\frac{1}{2}$ hours.

$AB^2 = OA^2 + OB^2$ [Pythagoras Theorm]

$(AB)^2 = 1500^2 + 1800^2$

$= 2250000 + 3240000$

$(AB)^2 = 5490000$

$AB^{\cancel{2}} = (300\sqrt{61}\text{ km})^{\cancel{2}}$

2. (a) 3, 9

Explanation:

$PQ = 10$

$\sqrt{(10-2)^2 + (y-(-3))^2} = 10$

$\sqrt{8^2 + (y+3)^2} = 10$

$64 + (y+3)^2 = 100$

$(y+3)^2 = 100-64$

$(y+3)^2 = 36$

$(y+3)^2 = (\pm 6)^2$

$y+3 = 6$ $\quad$ $y+3 = -6$

$y = 3$ $\quad$ $y = -9$

3. (c) 7

Explanation:

A(6,1); B(8,2);C(9,4) & D (9,3) are

vertices of paralleogram.

mid pt of BD= mid pt of AC

$\left(\frac{8+p}{2}, \frac{2+3}{2}\right) = \left(\frac{6+9}{2}, \frac{1+4}{2}\right)$

$\frac{8+p}{\cancel{2}} = \frac{6+9}{\cancel{2}}$

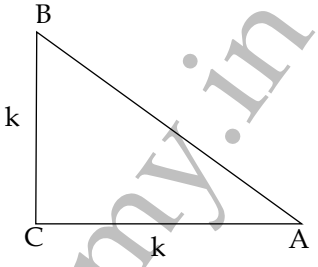
$8 + p = 15$

$p = 15 - 8$

$p = 7$

4. (b) 1

Explanation:



$\tan A = 1 = \frac{k}{k} = \frac{BC}{AC}$

Let $BC = k$ and $AC = k$

In ΔABC

$AB^2 = AC^2 + BC^2$

$AB^2 = k^2 + k^2$

$AB^2 = 2k^2$

$AB = \sqrt{2}\,k$

$\sin A = \frac{BC}{AC} = \frac{k}{\sqrt{2}\,k} = \frac{1}{\sqrt{2}}$

$\cos A = \frac{AC}{AB} = \frac{k}{\sqrt{2}\,k} = \frac{1}{\sqrt{2}}$

$2\sin A\cos A = 2 \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = 1$

5. (c) 6cm.

Explanation:

Let $AB = h$ meters be the height

In ΔABC

$\frac{h}{4} = \tan\theta$ ... (1)

In ΔABD

$\frac{h}{9} = \tan\theta\ (90 - \theta)$

$\frac{h}{9} = \cot\theta$ ...(2)

Multiply (1) & (2)

$\frac{h}{4} \times \frac{h}{9} = \tan\theta \times \cot\theta$

$\frac{h^2}{36} = \tan\theta \times \frac{1}{\cancel{\tan\theta}}$

$\frac{h^2}{36} = 1$

$h^2 = 36$

$h^2 = 6^2$

$h = 6$m.

6. (d) $\sqrt{119}$

Explanation:

$\angle P = 90°$

In ΔOPQ

$OP^2 + PQ^2 = OQ^2$

$5^2 + PQ^2 = 12^2$

$PQ^2 = 144 - 25$

$PQ^2 = 119$

$PQ^{\cancel{2}} = \sqrt{119}^{\cancel{2}}$

7. (a) *4375*

Explanation:

Diameter of wheel = 80cm

radius of wheel $= \frac{80}{2} = 40cm.$

Circumference of wheel $= 2\pi r$

$= 2 \times \frac{22}{7} \times 40 = \frac{1760}{7} cm.$

$= \frac{176}{70} m.$ $\left(1cm. = \frac{1}{100} m\right)$

Distance that will be covered in 10min=

$\cancel{66} \times \frac{\cancel{10}}{\cancel{60}} = 11km. = 11000m.$

If $\frac{176}{70} m.$ *is covered in = 1 revolution*

Then 1 m. is covered in $= \frac{1}{\frac{176}{70}} = \frac{70}{176}$

So 11000 is covered in $= \frac{35\cancel{70}}{\cancel{176}_{16}} \times \cancel{11000}^{125}$

$= 4375$ *revolutions*

8. (a) *2 units*

Explanation:

Area of circle = circumference of circle

$\cancel{\pi r^2} = \cancel{2\pi r}$

$r = 2$

9. (c) $24.44cm^2$

Explanation:

$OA = OB$

$\angle 1 = \angle 2$ *[Angles opposite to equal sides are equal]*

$60° + \angle 1 + \angle 2 = 180°$

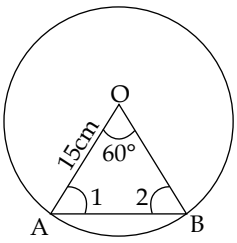
$60° + \angle 1 + \angle 1 = 180°$

$2\angle 1 = 120°$

$\angle 1 = \frac{\cancel{120°}^{60}}{\cancel{2}_{1}}$

ΔAOB *is an equilateral* Δ

$OA = AB = OB$



Area of sector $= \frac{60°}{360°} \pi r^2$

$= \frac{\cancel{60°}^{1}}{\cancel{360°}_{6}_{2}} \times \frac{314}{100} \times \cancel{15}^{5} \times 15$

$= 117.75cm^2$

Area of $\Delta OAB = \frac{\sqrt{3}}{4} s^2$

$\frac{1.73}{4} \times 15 \times 15$

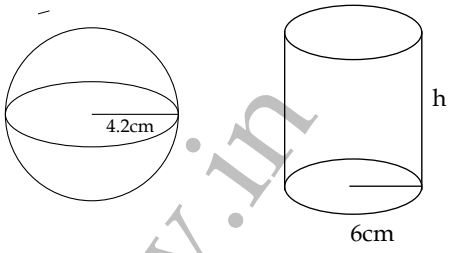
$= 93.3125cm^2$

Area of minor segment $= 117.75cm^2 - 93.3125cm^2$

$= 24.4375cm^2 = 24.44cm^2$

10. (c) *2.744cm.*

Explanation:



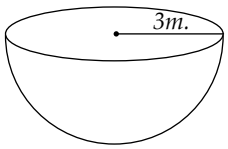
Volume of cylinder= volume of sphere

$\pi 6^2 h = \frac{4}{3} \pi (4.2)^3$

$h = \frac{\cancel{4}}{\cancel{3}} \times \frac{\cancel{42}}{10} \times \frac{\cancel{14}}{\cancel{42}} \times \frac{\cancel{7}}{\cancel{42}} \times \frac{1}{\cancel{36}} = 2.7444cm.$

11. (a) *16.5min*

Explanation:



Diameter of tank = 3m

radius $= \frac{3}{2} m.$

Volume of hemispherical tank $= \frac{2}{3} \pi r^3$

$= \frac{\cancel{2}^{1}}{\cancel{3}_{1}} \times \frac{\cancel{22}^{11}}{7} \times \frac{\cancel{3}^{1}}{\cancel{2}_{1}} \times \frac{3}{\cancel{2}_{1}} \times \frac{3}{\cancel{2}} =$

$\frac{99}{14} m^3 = \frac{99000}{14} l$ $[lm^3 = 1000l]$

half capacity $= \frac{99000}{14} \div 2$

$= \frac{99000}{28} l.$

If $3\frac{4}{7} l.$ *is emptied is = 1sec.*

Then 1l. is emptied is $= \frac{1}{\frac{25}{7}} s = \frac{7}{25} s.$

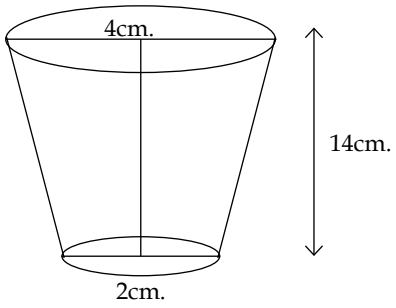
So $\frac{99000}{28} l.$ *is emptied is* $= \frac{\cancel{7}^{1}}{\cancel{25}_{1}} \times \frac{\cancel{24750}^{\cancel{990}}}{\cancel{99000}_{\cancel{28}_{1}}}$

$= 990 seconds$

$= 16.5 minutes$

12. (c) $308cm^3$

Explanation:



$r_1 = \frac{4}{2} = 2cm.$

$r_2 = \frac{2}{2} = 1cm.$

$h = 14cm.$

$volume\ of\ glass = \pi(r_1^2 + r_2^2 + r_1r_2) \times h$

$\frac{22}{7}(2^2 + 1^2 + 2\times1) \times 14$

$\frac{22}{7} \times 7 \times 14 = 308cm^3$

13. (a) $\frac{1}{2}$

Explanation:

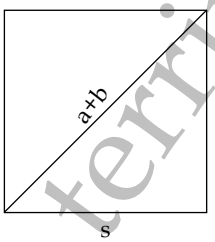
when a die is thrown there are 6 outcomes

$s = \{1,2,3,4,5,6\}$

Prime numbers $= 2,3,5$

$P\ (prime\ number) = \frac{3}{6} = \frac{1}{2}$

14. (c) $\sqrt{2}\ (a+b)$



Explanation:

Let side of sq. be s.

$\sqrt{2}\ s = a + b$

$s = \frac{a+b}{\sqrt{2}}$

Area of sq A = side²

$\left(\frac{a+b}{\sqrt{2}}\right)^2 = \frac{(a+b)^2}{2}$

Now area of new square $= 2 \times \frac{(a+b)^2}{2} = (a+b)^2$

$side^2 = (a+b)^2$

$side = a+b$

diagonal of new side $= \sqrt{2}\ side$

$= \sqrt{2}\ (a+b)$

15. (b) ₹ 22500

Explanation:

Suppose family income of man is ₹ x

expenditure food $= 40\%\ of\ x = \frac{2x}{5}$

$Remaining\ amount = x - \frac{2x}{5} = \frac{3x}{5}$

$expenditure\ on\ transport = \frac{1}{3} \times \frac{3x}{5} = \frac{x}{5}$

$remaining\ amount = \frac{3x}{5} - \frac{x}{5} = \frac{2x}{5}$

ATQ

$\frac{1}{2} \times \frac{2x}{5} = 4500$

$x = 4500 \times 5 = ₹\ 22500$

16. (b) 25%

Explanation:

SP of 12 articles = CP of 15 articles

Let CP of 1 article = ₹ 1

Let CP of 15 article = ₹ 15

SP of 12 articles = ₹ 15

$SP\ of\ 1\ articles = \frac{15}{12} = \frac{5}{4}$

$gain = SP - CP = \frac{5}{4} - 1 = \frac{1}{4}$

$gain\ \% = = \frac{\frac{1}{4}}{1} 100 = 25\%$

17. (d) 3 l.

Explanation:

Total amount of mixture = 45l

$Amount\ of\ phenol = \frac{2}{25} \times 45 = 3.6l$

$Amount\ of\ water = \frac{23}{25} \times 45 = \frac{207}{5} = 41.4l.$

Let xl. of water is added.

ATQ

$\frac{3.6}{41.4 + x} = \frac{3}{37}$

$124.2 + 3x = 133.2$

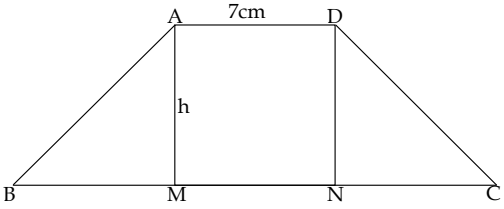
$3x = 133.2 - 124.2$

$3x = 9$

$x = 3l.$

18. (b) $2\sqrt{10}$ cm.

Explanation:



$Area\ of\ trapezium = 54cm^2$

$\frac{1}{2}(AD + BC) \times h = 54cm^2$

$\frac{1}{2}(AD + BC) \times h = 54cm^2$

$\frac{1}{2}(7 + 11) \times h = 54$

$\frac{1}{2} \times 18 \times h = 54$

$h = \frac{54}{9} = 6cm.$

In $\Delta ABM\ \&\ \Delta DCN$

$AB = DC\ (given)$

$\angle M = \angle N\ (each\ 90°)$

$AM = DN$

$\Delta ABM \cong \Delta DCN$ (RHS $\cong$)

$BM = CN$ (CPCT)

$BM + CN = 11 - 7 = 4cm.$

$BM = CN = 2$

Now is ΔCDN

$DN^2 + CN^2 = DC^2$ [Pythagoras Theorem]

$6^2 + 2^2 = DC^2$

$36 + 4 = DC^2$

$DC^2 = 40$

$DC^2 = (2\sqrt{10})^2$

$DC = 2\sqrt{10}$ cm.

19. (c) 2

Explanation:

$$P = \frac{4xy}{x+y}$$

$$\frac{P}{2x} = \frac{2y}{x+y}$$

applying componendo & dividendo

$$\frac{P+2x}{P-2x} = \frac{2y+x+y}{2y-x-y} = \frac{3y+x}{y-x}$$

$$P = \frac{4xy}{x+y}$$

$$\frac{P}{2y} = \frac{2x}{x+y}$$

applying componendo & dividendo

$$\frac{P+2y}{P-2y} = \frac{2x+x+y}{2x-x-y}$$

$$\frac{P+2y}{P-2y} = \frac{3x+y}{x-y}$$

Now

$$\frac{P+2y}{P-2x} + \frac{P+2y}{P-2y}$$

$$\frac{3x+x}{y-x} + \frac{3x+y}{x-y}$$

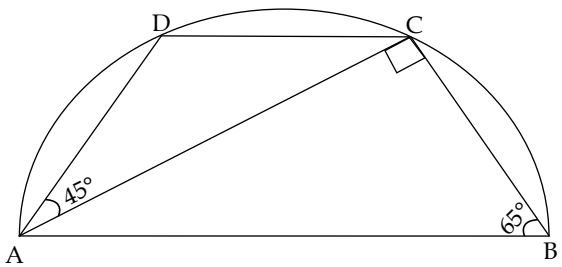
$$\frac{3y+x}{y-x} + \frac{3x+y}{y-x}$$

$$\frac{3y+x-3x-y}{y-x} = \frac{2y-2x}{y-x}$$

$$\frac{2(y-x)}{y-x} = 2$$

20. (c) 20°

Explanation:



$\angle ACB = 90°$[angle in semi circle is right angle]

$\angle B + \angle D = 180°$(ABCD is cyclic quadritatoal)

$65° + \angle D = 180°$

$\angle D = 180° - 65°$

$\angle D = 115°$

In ΔADC

$45° + 115° + \angle DCA = 180°$ (sum of angles of Δ is 180°)

$160° + \angle DCA = 180°$

$\angle DCA = 180° - 160° = 20°$

21. (c) 0

Explanation:

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

$x^2 + y^2 + z^2 + 2 - 2y + 2x = 0$

$(x^2 + 2x + 1) + (y^2 - 2y + 1) + z^2 = 0$

$(x+1)^2 + (y-1)^2 + z^2 = 0$

$(x+1)^2 = 0$ $(y-1)^2 = 0$ $z^2 = 0$

$x + 1 = 0$ $y - 1 = 0$ $z = 0$

$x = -1$ $y = 1$

$x^3 + y^3 + z^3 = (-1)^3 + 1^3 + 0^3$

$= -1 + 1 = 0$

22. (a) 12

Explanation:

$148 - 4 = 144$

$246 - 6 = 240$

$623 - 11 = 612$

[Note: remainders are subtracted]

Now find HCF of 144, 240 and 612

2	144
2	72
2	36
2	18
3	9
	3

2	240
2	120
2	60
2	30
3	15
	5

2	612
2	306
3	153
3	51
	17

$144 = \underline{2\times2}\times2\times2\times\underline{3}\times3$

$240 = \underline{2\times2}\times2\times2\times\underline{3}\times5$

$612 = \underline{2\times2}\times3\times\underline{3}\times17$

$HCF = 2\times2\times3 = 12$

12 is the greatest number that will divide 148, 246 and 623 leaving remainders 4, 6 & 11 respectively.

23. (c) ₹139

Explanation:

cost of 2 kg tea = 2×136 = ₹272

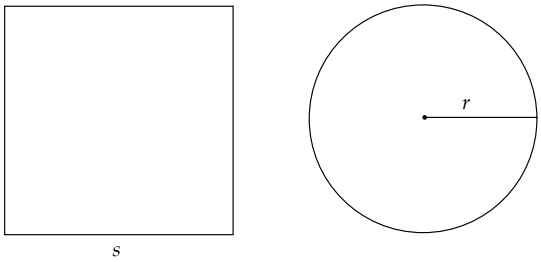
cost of 3 kg tea = 141×3 = ₹423

cost of 5 kg tea = ₹272+₹423 = ₹695

Now 1 kg mixture is sold = $\frac{695}{5}$ = ₹139

24. (a) 154 cm^2

Explanation:



Area of square = 121 cm^2

$side^2$ =(11 cm)^2

side = 11 cm

Perimeter of square = 4×11 = 44 cm

Circumference of circle= Perimeter of square

$2\pi r = 44$

$2\times\frac{22}{7}\times r = 44$

$r = \frac{\cancel{44}^{22}}{1}\times\frac{1}{\cancel{2}_{1}}\times\frac{7}{\cancel{22}_{1}}$

r =7

Area of circle = πr^2

$= \frac{22}{\cancel{7}_{1}}\times 7\times\cancel{7}^{1} = 154\ cm^2$

25. (a) *100m.*

Explanation:

Let the length of the train be l

A.T.Q

$\frac{l}{8} = \frac{l+200}{24}$

24l = 8[l+200]

24l = 8l + 1600

16l = 1600

$l = \frac{\cancel{1600}}{\cancel{16}} = 100$

l = 100m

PART–III : ENGLISH
ANSWER PRACTICE TEST PAPER - 6

1. (c) geostationary satellite
2. (c) Ministry of External Affairs
3. (c) through a cabinet decision in this regard
4. (c) Supreme Court of India
5. (b) original jurisdiction
6. (d) if he is convinced that the Government of the State cannot be carried on in accordance with the provisions of the Constitution of India
7. (b) Habeas Corpus
8. (d) a resolution passed by a majority of all the members of the house
9. (a) predominantly by market mechanism
10. (b) fall in the value of currency only
11. (a) downward to the right
12. (d) Nuclear-powered ballistic missile submarine
13. (b) Indian Army
14. (a) Scorpene submarine
15. (b) Jammu and Kashmir
16. (b) Chattisgarh
17. (d) United Kingdom
18. (a) Tennis
19. (a) Shaurya Chakra
20. (c) Ministry of Youth Affairs and Sports
21. (a) 142
22. (b) NASA
23. (b) Delhi
24. (d) WHO
25. (b) USA

PART–IV : GENERAL KNOWLEDGE
ANSWER PRACTICE TEST PAPER - 6

1. (c) you will understand
   Only when you have your children will you understand how difficult it is.
2. (a) If she will go to the university next year
   If she goes to the university next year, we will have the house ourselves.
3. (a) I told goodbye to
   I said goodbye to Deepesh but he ignored me completely.
4. (a) be born in a rich family
5. (d) A man of no substance
6. (b) To be honest in any business deal
7. (b) To give false alarm
8. (c) Agenda
9. (b) Evacuate
10. (a) As it seems at first sight
11. (d) SPQR
12. (c) SRPQ
13. (a) SPQR
14. (a) QSPR
15. (b) perpetrate
16. (a) was sitting
17. (c) that he had bought yesterday
18. (b) to my address
19. (b) to bear with
20. (b) He was elected Mayor by the people.
21. (b) He was seen picking up a gun by someone
22. (a) The bell has been rung by the boy.
23. (b) S R P Q
24. (d) Q P S R
25. (c) S Q R P