

**AFCAT 2 2024 Previous Year Paper (Memory Based)**

**Q1. Select the most appropriate synonym of the given word.**

**Acrimonious**

- (a) Bitter
- (b) Sweet
- (c) Harmonious
- (d) Pleasant

**Q2. Select the most appropriate synonym of the given word.**

**Taciturn**

- (a) Garrulous
- (b) Loquacious
- (c) Silent
- (d) Talkative

**Q3. Select the most appropriate ANTONYM of the given word.**

**Acerbic**

- (a) Sweet
- (b) Sharp
- (c) Harsh
- (d) Caustic

**Q4. Select the most appropriate ANTONYM of the given word.**

**Dissemble**

- (a) Reveal
- (b) Conceal
- (c) Feign
- (d) Pretend

**Q5. Select the most appropriate ANTONYM of the given word.**

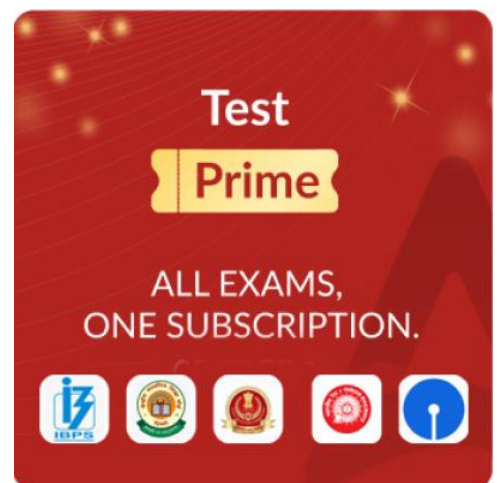
**Perspicacious**

- (a) Ignorant
- (b) Insightful
- (c) Astute
- (d) Perceptive

**Q6. Select the word which means the same as the group of words given.**

A person who takes care of a museum.

- (a) Curator
- (b) Custodian
- (c) Caretaker
- (d) Conservator



**Q7. Select the word which means the same as the group of words given.**

A person who has long experience in a particular field.

- (a) Novice
- (b) Veteran
- (c) Amateur
- (d) Apprentice

**Q8. Choose the meaning of the highlighted phrase/Idiom-**

I am going to stay at home because I am feeling **under the weather** today.

- (a) unhappy
- (b) depressed
- (c) irritated
- (d) sick

**Q9. Choose the correct answer from the given options-**

The teacher said to the students, "Take back your books". (Change into indirect speech)

- (a) The teacher asked the students to take back your books.
- (b) The teacher asked the students to take back their books.
- (c) The teacher told the students to take back books.
- (d) The teacher ordered the students to take back your books.

**Q10. Fill in the blank spaces in the given sentence choosing correct answer from the given options-**

" ..... tiger is ..... fierce wild animal".

- (a) a , the
- (b) the, a
- (c) a, a
- (d) the, the

**Q11. Choose the correct option:**

They made me laugh. (Change into passive voice)

- (a) They were made to laugh by me.
- (b) They made too laugh by me.
- (c) I was made to laugh.
- (d) I were made to laugh by them.

**Q12. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.**

Any portion of the underground rhizome when broken of (1)/ is capable of producing a new plant; hence the (2)/ difficulty of eradicating them when once established. (3)/ No Error (4)

- (a) No Error
- (b) Any portion of the underground rhizome when broken of
- (c) difficulty of eradicating them when once established.
- (d) is capable of producing a new plant; hence the

**Q13. In the following question, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.**

Neither the severe earthquake or the subsequent famine could demoralise the people of the country.

- (a) could demoralise the people of the country.
- (b) Neither the severe earthquake
- (c) or the subsequent famine
- (d) No error

**Q14. A sentence has been given with a blank to be filled with an appropriate word. Choose the correct alternative.**

The Egyptian mongoose is mainly \_\_\_\_\_, although it sometimes hunts during the day.

- (a) avarice
- (b) substantial
- (c) nocturnal
- (d) pliant

**Q15. The question below consists of a set of labelled sentences. Out of four options given, select the most logical order of the sentences which form a paragraph.**

The pivotal engineering and scientific success of the Twentieth century was the Manhattan Project.

P. The only cloud hanging over the impressive achievement of the atomic researchers and engineers is what their success truly meant; hundreds of thousands of innocent lives obliterated.

Q. The Manhattan Project assimilated concepts and leaders from all scientific fields and engineering disciplines to construct the first two atomic bombs.

R. The presence of communication amid scientific minds was equally important to the success of the Manhattan Project as scientific intellect was.

S. From the study of nuclear physics and chemistry to the practical engineering and processing of uranium 235 and plutonium 239 and the final construction of the weapons, scientific knowledge grew at an exponential rate to critical levels.

Yet this grave definition of success cannot diminish the impressive collaboration and efficiency of the Manhattan Project.

- (a) QSPR
- (b) QSRP
- (c) QPRS
- (d) QPSR

**Q16. Some parts of a sentence have been jumbled up, and labelled P, Q, R and S. Select the option that gives the correct sequence in which these parts can be rearranged to form a meaningful and grammatically correct sentence.**

The cacophony of deafening noises

P. memories I have from

Q. is one of the more vivid

R. my time I

S. served in the  
pre-Iraq war.

- (a) QPSR
- (b) QPSP
- (c) QPRS
- (d) QSPR

**Q17. The question below consist of a set of labelled sentences. Out of four options given, select the most logical order of the sentences which form a paragraph.**

Google's history began in 1995 when Larry Page met Sergey Brin.

P. At the time Larry Page was a Ph.D. student at Stanford University, and Sergey was considering studying there.

Q. In 1996 Larry and Sergey began working on a search engine called BackRub.

R. This engine worked on the Stanford servers for more than a year which eventually clogged up the bandwidth and hence Google.com was registered on September 15th, 1997.

S. The name came from the algorithms ranking for how many "back-links" a page has.

Google, is a play on words of "googol" which is a mathematical term for the number 1 followed by 100 zeros. It is rumoured that this reflects the founders' mission to organize the infinite amount of information on the internet.

- (a) PQSR
- (b) PQRS
- (c) PSQR
- (d) PRSQ

**Directions (18-21): In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.**

The first ceremony for the 'One DAE One Subscription' (ODOS) program took place at Tata Memorial Hospital in Mumbai. This initiative aims to improve access to \_\_\_\_\_ (1) scientific research for the Department of Atomic Energy (DAE) and its around 60 units.

ODOS is \_\_\_\_\_ (2) to make it easier for DAE members to access both national and international research papers and journals online. This will help promote \_\_\_\_\_ (3) in scientific knowledge and encourage \_\_\_\_\_ (4) among the DAE community.

**Q18. Select the most appropriate option to fill in blank number 1.**

- (a) innovative
- (b) comprehensive
- (c) vitally
- (d) academic

**Q19. Select the most appropriate option to fill in blank number 2.**

- (a) designed
- (b) proposed
- (c) required
- (d) suggested

**Q20. Select the most appropriate option to fill in blank number 3.**

- (a) growth
- (b) decline
- (c) stagnation
- (d) decrease

**Q21. Select the most appropriate option to fill in blank number 4.**

- (a) competition
- (b) collaboration
- (c) isolation
- (d) secrecy

**Directions (22-25): In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.**

The Apple Vision Pro, launched in Australia, allows people to enter \_\_\_\_\_ (1) online environments known as the metaverse. In these virtual spaces, users can \_\_\_\_\_ (2) various activities, but there are also risks, leading to the rise of 'metacrimes'.

Understanding the Metaverse The metaverse is made up of three-dimensional virtual worlds that you \_\_\_\_\_ (3) with VR headsets. In these worlds, users can interact in realistic settings. Movies like Ready Player One show what these \_\_\_\_\_ (4) universes can be like, bringing new types of online behaviors and crimes.

**Q22. Select the most appropriate option to fill in blank number 1.**

- (a) immersive
- (b) limited
- (c) temporary
- (d) expansive

**Q23. Select the most appropriate option to fill in blank number 2.**

- (a) avoid
- (b) experience
- (c) ignore
- (d) analyze

**Q24. Select the most appropriate option to fill in blank number 3.**

- (a) design
- (b) access
- (c) avoid
- (d) exit

**Q25. Select the most appropriate option to fill in blank number 4.**

- (a) interactive
- (b) static
- (c) isolated
- (d) crowded

**Directions (26-30): Read the following passage and answer the questions given after it.**

Arms control represents a critical facet of international security policy, designed to regulate the acquisition, production, and deployment of weapons through international agreements. These measures aim to prevent the escalation of armed conflicts, reduce military spending, and ensure global peace and stability. A

significant component of arms control is the non-proliferation of nuclear weapons, as highlighted by treaties such as the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The NPT, along with other agreements like the Strategic Arms Reduction Treaty (START) and the Comprehensive Nuclear-Test-Ban Treaty (CTBT), seeks to limit the spread of nuclear capabilities and the number of existing nuclear warheads.

Effective arms control strategies not only involve disarmament efforts but also transparency and confidence-building measures among nations. These initiatives encourage countries to share information regarding their military capabilities and intentions, fostering a climate of trust. Verification mechanisms, including satellite surveillance and on-site inspections, play an essential role in ensuring compliance with arms control agreements.

The challenges to successful arms control are manifold, involving geopolitical rivalries, the interests of the military-industrial complexes, and national security concerns. Despite these hurdles, the pursuit of arms control is vital for maintaining a balance of power and avoiding the destructive potential of modern warfare. As global dynamics evolve, so too must strategies for arms control adapt, ensuring they are resilient against the complexities of modern international relations and technological advancements.

**Q26.** What is the primary goal of arms control?

- (a) To enhance military capabilities of global powers.
- (b) To reduce and regulate weapons through international agreements.
- (c) To increase economic benefits from military expenditures.
- (d) To solely focus on the disarmament of nuclear weapons.

**Q27.** Which treaty is NOT mentioned in the passage as being related to nuclear non-proliferation or arms reduction?

- (a) Treaty on the Non-Proliferation of Nuclear Weapons (NPT)
- (b) Strategic Arms Limitation Talks (SALT)
- (c) Strategic Arms Reduction Treaty (START)
- (d) Comprehensive Nuclear-Test-Ban Treaty (CTBT)

**Q28.** What role do transparency and confidence-building measures play in arms control?

- (a) They primarily enforce economic sanctions on non-compliant countries.
- (b) They encourage states to reduce their overall military spending.
- (c) They foster trust through the sharing of military capabilities and intentions.
- (d) They allow countries to expand their military presence globally.

**Q29.** According to the passage, which mechanism is crucial for ensuring compliance with arms control agreements?

- (a) Unilateral military interventions
- (b) Diplomatic negotiations without verification
- (c) Verification mechanisms, including satellite surveillance and on-site inspections
- (d) Increased arms production to maintain balance of power

**Q30.** What is a significant challenge to successful arms control as mentioned in the passage?

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- (a) The lack of interest in military affairs by global leaders.
- (b) The geopolitical rivalries and interests of military-industrial complexes.
- (c) The reduction of military budgets in developed nations.
- (d) The unilateral disarmament efforts by nuclear powers.

**Q31.** When was Kareena Kapoor Khan appointed as the National Ambassador of UNICEF India?

- (a) March 2023
- (b) May 2024
- (c) January 2022
- (d) July 2021

**Q32.** The Rampage missile, a recent addition to the Indian Air Force (IAF) and Indian Navy, is characterized as which of the following?

- (a) A long-range, subsonic, air-to-air missile
- (b) A medium-range, supersonic, anti-ship missile
- (c) A long-range, supersonic, air-to-ground missile
- (d) A short-range, supersonic, surface-to-air missile

**Q33.** What is one of the primary uses of the military version of the Il-76 aircraft?

- (a) Aerial reconnaissance
- (b) Airborne early warning and control
- (c) Aerial refueling tanker or command center
- (d) Light tactical transport

**Q34.** Which of the following is a subject under the State List in the Indian Constitution?

- (a) Defence
- (b) Banking
- (c) Police
- (d) Foreign Affairs

**Q35.** The phrase "Tamaso Ma Jyotirgamaya" is part of which ancient Indian scripture?

- (a) Rigveda
- (b) Yajurveda
- (c) Upanishads
- (d) Mahabharata

**Q36.** Kho-Kho is a traditional sport in India. How many players are there in a standard Kho-Kho team?

- (a) 7
- (b) 9
- (c) 11
- (d) 12

**Q37.** Where is the Indian Air Force (I.A.F.) Heritage Centre located?

- (a) New Delhi
- (b) Chandigarh
- (c) Pune
- (d) Bengaluru



**Q38.** What is the full form of the acronym "SMART"?

- (a) Specific, Measurable, Achievable, Relevant, Time-bound
- (b) Simple, Manageable, Accurate, Realistic, Timely
- (c) Strategic, Motivational, Actionable, Realistic, Timely
- (d) Structured, Measurable, Achievable, Reliable, Timely

**Q39.** What does the acronym "GST" stand for in the context of Indian taxation?

- (a) Goods and Supply Tax
- (b) Goods and Services Tax
- (c) General Sales Tax
- (d) Government Sales Tax

**Q40.** Who was Vishakhadatta, and which famous Sanskrit play did he author?

- (a) Shakuntala
- (b) Mudrarakshasa
- (c) Malavikagnimitram
- (d) Abhijnanashakuntalam

**Q41.** What is the gravitational force of Earth, and how does it affect objects?

- (a) It attracts objects towards the center of the Earth.
- (b) It repels objects away from the Earth.
- (c) It has no effect on objects on Earth.
- (d) It only affects objects in space.

**Q42.** Who was the first Indian to win an Oscar, and for what achievement?

- (a) Bhanu Athaiya for Costume Design
- (b) Satyajit Ray for Lifetime Achievement
- (c) A.R. Rahman for Best Original Score
- (d) Resul Pookutty for Sound Mixing

**Q43.** What is a food chain, and what does it represent in an ecosystem?

- (a) A linear sequence of organisms where each is eaten by the next.
- (b) A random collection of animals and plants.
- (c) A cycle where all organisms are predators.
- (d) A group of species that do not interact with each other.

**Q44.** Which of the following is a form of carbon material known for its exceptional strength and electrical conductivity?

- (a) Diamond
- (b) Graphene
- (c) Carbon dioxide
- (d) Methane

**Q45.** What is the name of the Chinese navigation satellite system that provides global positioning services?



- (a) GPS
- (b) GLONASS
- (c) Galileo
- (d) BeiDou

**Q46.** What was the "Bagh Nakh" used by Chhatrapati Shivaji Maharaj, and for what purpose was it famously used?

- (a) A ceremonial sword used in royal rituals
- (b) A tiger claw weapon used in personal combat
- (c) A shield used in defensive battles
- (d) A spear used in warfare

**Q47.** Which Indian state will be the first to adopt a 10-year road safety action plan aimed at reducing road accidents by 50% by 2030, and what technological measure will be implemented as part of this plan?

- (a) Maharashtra
- (b) Tamil Nadu
- (c) Rajasthan
- (d) Kerala

**Q48.** What is Amnesty International, and what is its primary focus?

- (a) A global human rights organization
- (b) An environmental conservation group
- (c) A financial institution
- (d) A technology company

**Q49.** What is "Project Ishan," and what is its primary objective?

- (a) A government initiative to promote agriculture in South India
- (b) A development initiative focused on the Northeastern region of India
- (c) A cultural exchange program between India and Southeast Asia
- (d) A technology project aimed at enhancing digital literacy in rural areas

**Q50.** What harmful substances are found in cigarette smoke?

- (a) Nicotine, Tar, Carbon Monoxide
- (b) Oxygen, Water Vapor, Vitamin C
- (c) Calcium, Iron, Potassium
- (d) Sodium Chloride, Sucrose, Citric Acid

**Q51.** What are the eight limbs of Yoga as described in the ancient text "Yoga Sutras" by Patanjali?

- (a) Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana, Samadhi
- (b) Yama, Niyama, Pranayama, Asana, Pratyahara, Kundalini, Mudra, Samadhi
- (c) Pranayama, Asana, Niyama, Karma, Mantra, Dharana, Dhyana, Samadhi
- (d) Yama, Mudra, Asana, Pranayama, Pratyahara, Dharana, Dhyana, Shakti

**Q52.** What is the purpose of the BHISHM Cube under Project Aarogya Maitri, and what technological advancements does it integrate for effective disaster response?

- (a) To provide routine healthcare services using basic medical tools
- (b) To serve as a mobile educational unit with digital classrooms
- (c) To offer comprehensive medical support during disasters using AI and data analytics
- (d) To distribute food supplies in rural areas using automated drones

**Q53.** In which year and city was the first football tournament held during the Asian Games?

- (a) 1951, New Delhi
- (b) 1954, Manila
- (c) 1962, Jakarta
- (d) 1966, Bangkok

**Q54.** Which of the following rivers is correctly matched with its tributary?

- (a) Ganga - Narmada
- (b) Yamuna - Chambal
- (c) Brahmaputra - Godavari
- (d) Indus - Krishna

**Q55.** What is the primary role of an Air Traffic Controller (ATC)?

- (a) To guide airplanes during takeoff and landing
- (b) To refuel airplanes on the ground
- (c) To repair and maintain aircraft
- (d) To provide in-flight meal services to passengers

**Q56.** The probability of Winning first prize in a lottery is 0.08. If 60,000 tickets are sold, how many tickets has he bought?

- (a) 2000
- (b) 480
- (c) 4800
- (d) 2400

**Q57.** Weight of A and B are in the ratio 11 : 8. A's weight increases by 40% and the total weight of A and B increases by 30%. What is the percentage increase in the B's weight?

- (a) 10.25
- (b) 16.25
- (c) 12.5
- (d) 18.75

**Q58.** The value of a car depreciates at the rate of 15% per annum. If its present value is Rs. 433500, then what was the value (in Rs.) of the car 2 years ago?

- (a) 594200
- (b) 620000
- (c) 563550
- (d) 600000

**Q59.** If a number is reduced by 35%, then it becomes 416. By how much percent should the number be increased, so that it become 876.8?

- (a) 33
- (b) 37
- (c) 34.2
- (d) 38.4

**Q60.** If 60 boys can finish a work in 15 days by working 8 hours a day, then how many hours a day should 72 boys work to finish that work within 20 days?

- (a) 4
- (b) 6
- (c) 5
- (d) 7

**Q61.** S does half as much work as T in  $\frac{1}{7}$  of the time taken by T. If together they take 21 days to complete a work, then how many days shall S take to complete that work alone?

- (a) 26
- (b) 27
- (c) 28
- (d) 32

**Q62.** A girl walking at the speed of 2 km/hr covers a certain distance in 7 hr 30 min. If she covers the same distance by cycle in 5 hours, then what is the speed (in km/hr) of cycle?

- (a) 2.5
- (b) 4
- (c) 3
- (d) 3.5

**Q63.** The distance between two cities X and Y is 270 km. First train starts from X at 7:00 am and travels towards Y at 40 km/hr. Second train starts from Y at 8:30 am and travels towards X at 30 km/hr. At what time (in a.m.) will both the trains meet?

- (a) 10:00
- (b) 11:00
- (c) 11:30
- (d) 12:30

**Q64.** A boat covers a distance of 14 km upstream and 16 km downstream in 9 hours. It covers a distance of 12 km upstream and 40 km downstream in 11 hours. What is the speed (in km/h) of the boat in still water?

- (a) 5
- (b) 2
- (c) 3
- (d) 4

**Q65.** A farmer's land is in the shape of a trapezium which has its parallel sides measuring 2.56 yards and 3.44 yards and the distance between the parallel sides is 1.44 yards. The cost of ploughing the land is Rs. 1800 per square yard. What amount will (in Rs.) have to be spent in order to plough the entire land?

- (a) 3672
- (b) 6732
- (c) 7776
- (d) 8214

**Q66.** One of the diagonal of a rhombus is 70% of the other diagonal. What is the ratio of area of rhombus to the square of the length of the larger diagonal?

- (a) 3 : 10
- (b) 3 : 20
- (c) 7 : 20
- (d) 7 : 10

**Q67.** In a bucket, paint and oil are in the ratio 7:5:24 litres of mixture is drawn off and 24 litres of oil is added. If the ratio of paint and oil becomes 1 : 1, then how many litres of paint was contained in the bucket initially?

- (a) 49
- (b) 63
- (c) 84
- (d) 98

**Q68.** Mukesh sells two shirts. The cost price of the first shirt is equal to the selling price of the second shirt. The first shirt is sold at a profit of 30% and the second shirt is sold at a loss of 30%. What is the ratio of the selling price of the first shirt to the cost price of the second shirt?

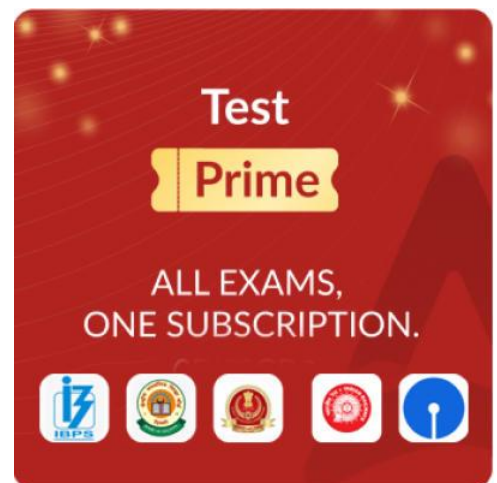
- (a) 91 : 100
- (b) 100 : 91
- (c) 31 : 50
- (d) 50 : 31

**Q69.** If 60% of total articles are sold at a loss of 50% and remaining articles are sold at a profit of 50%, then what will be the overall loss percentage?

- (a) 20
- (b) 15
- (c) 25
- (d) 10

**Q70.** There were 24 students in a class. One of them, who was 18 years old, left the class and his place was filled up by a new comer. If the average of the class thereby, was lowered by one month, the age of the newcomer is

- (a) 14 years
- (b) 15 years
- (c) 16 years
- (d) 17 years



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**Q71.** The average age of 9 students and their teacher is 16 years. The average age of the first four students is 19 years and that of the last five is 10 years. The teacher's age is

- (a) 36 years
- (b) 34 years
- (c) 30 years
- (d) 28 years

**Q72.** X and Y started a business by investing Rs. 171000 and Rs. 243000, respectively. If X's share in the profit earned at the end of year is Rs. 3800, then what will be the total profit (in Rs.) earned by them together?

- (a) 9200
- (b) 9600
- (c) 8400
- (d) 8800

**Q73.** Rs 2,40,000 is taken as loan for three years compounded annually at 12.5% p.a. At the end of first year, the interest is revised to 12% p.a. The total amount to be repaid at the end of third year is:

- (a) Rs 3,26,400
- (b) Rs 3,34,800
- (c) Rs 3,38,688
- (d) Rs 3,42,648

**Q74.** The students of a class donated Rs.3,481 towards relief. Each student donated an amount equal to the number of students in the class. The number of students in the class is:

- (a) 49
- (b) 59
- (c) 61
- (d) 51

**Q75.** If it takes 42 days for a pond to get filled with rain water. If the level of water doubles each day. Then how long would it take to fill 1/16 of pond.

- (a) 38 days
- (b) 39 days
- (c) 32 days
- (d) 8 days

**Q76. Choose the correct appropriate answer.**

In each of the following questions, find out the alternative which will replace the question mark.

Horse : Stable :: ? : ?

- (a) Dog : Byre
- (b) Eagle : Igloo
- (c) Pig : Sty
- (d) Cow : Kennel

**Q77. Choose the correct appropriate answer.**

In each of the following questions, four words have been given out of which three are alike in same manner, while the fourth one is different. Choose the word which is different from the rest.

- (a) Commander
- (b) Major
- (c) Brigadier
- (d) Captain

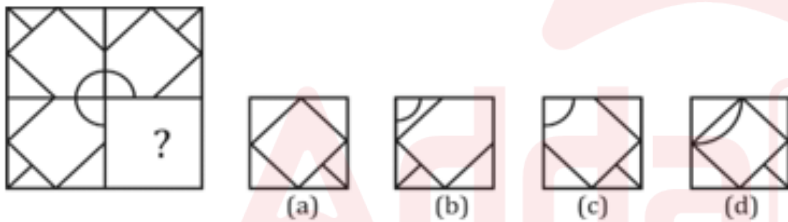
**Q78. Choose the correct appropriate answer.**

In each of the following questions, four words have been given out of which three are alike in same manner, while the fourth one is different. Choose the word which is different from the rest.

- (a) Trident
- (b) Triumph
- (c) Tripod
- (d) Triangle

**Q79. Choose the correct appropriate answer.**

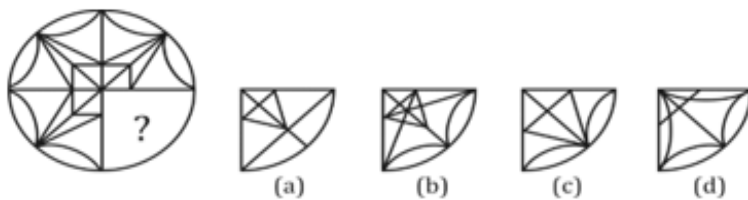
In each of the following questions, select a figure from amongst the four alternatives, which when placed in the blank space of figure (x) would complete the pattern.



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

**Q80. Choose the correct appropriate answer.**

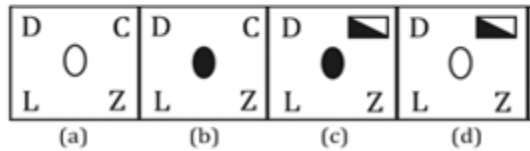
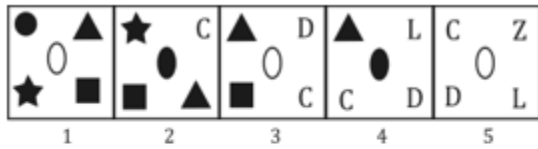
In each of the following questions, select a figure from amongst the four alternatives, which when placed in the blank space of figure (x) would complete the pattern.



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

**Q81. Choose the correct appropriate answer.**

Each of the following questions consists of five figures marked 1, 2, 3, 4 and 5 called the problem figures followed by four other figures marked a, b, c and d called the Answer figures. Select a figure from amongst the Answer figures which will continue the same series as established by the five figures.



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

**Q82. Choose the correct appropriate answer.**

Each of the following questions consists of two sets of figures. Figures 1, 2, 3 and 4 constitute the problem set while figure a, b, c and d constitute the Answer set. There is a definite relationship between figures (1) and (2). Establish a similar relationship between figures (3) and (4) by selecting a suitable figure from the Answer set that would replace the question mark (?) in fig. (4)

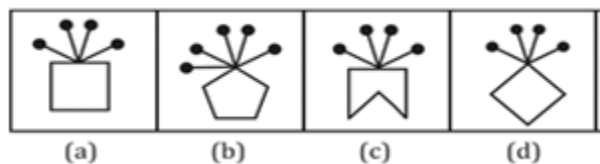


- (a) a
- (b) b
- (c) c
- (d) d



**Q83. Choose the correct appropriate answer.**

In each problem, out of the four figures marked (a), (b), (c) and (d) three are similar in a certain manner. However, one figure is not like the other three. Choose the figure which is different from the rest.

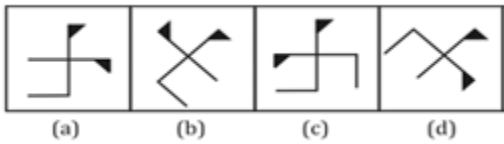


- (a) a
- (b) b
- (c) c
- (d) d



**Q84. Choose the correct appropriate answer.**

In each problem, out of the four figures marked (a), (b), (c) and (d) three are similar in a certain manner. However, one figure is not like the other three. Choose the figure which is different from the rest.



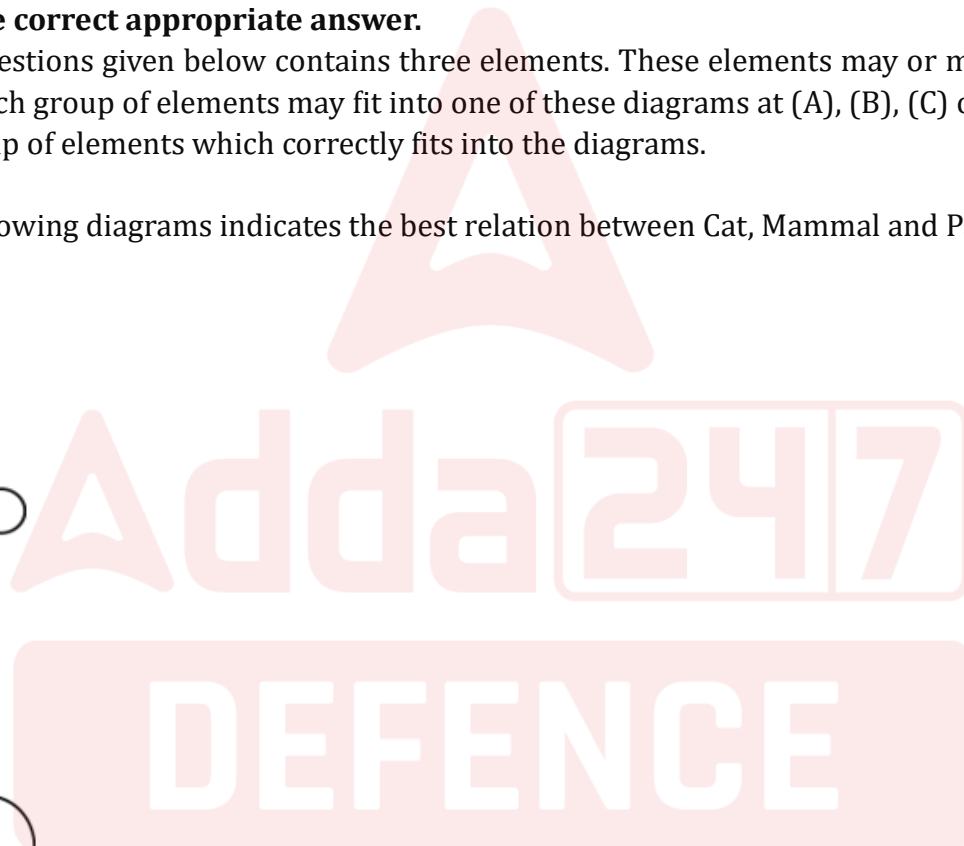
- (a) a
- (b) b
- (c) c
- (d) d

**Q85. Choose the correct appropriate answer.**

Each of these questions given below contains three elements. These elements may or may not have some inter-linkage. Each group of elements may fit into one of these diagrams at (A), (B), (C) or (D). you have to indicate the group of elements which correctly fits into the diagrams.

Which of the following diagrams indicates the best relation between Cat, Mammal and Parrot?

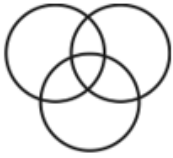
- (a)
- (b)
- (c)
- (d)



**Q86. Choose the correct appropriate answer.**

Which of the following diagrams indicates the best relation between World, Asia and Nepal?

- (a)
- (b)



(c)



(d)

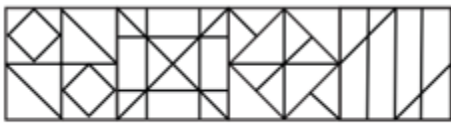
**Q87. Choose the correct appropriate answer.**

From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure**



**Answer Figures**

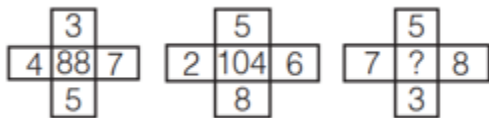


(a) (b) (c) (d)

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

**Q88. Choose the correct appropriate answer.**

In the following questions, select the number which can be placed at the sign of question mark (?) from the given alternatives.



- (a) 108
- (b) 112
- (c) 118
- (d) 120

**Q89. Choose the correct appropriate answer.**

Ratio of present ages of P and Q is 9 : 4. The difference between their ages is 20 yr. What will be the sum (in yr) of their ages after 10 yr?

- (a) 62
- (b) 66
- (c) 72
- (d) 76

**Q90. Choose the correct appropriate answer.**

In a certain code language, '+' represents '×', '-' represents '+', '×' represents '÷' and '÷' represents '-'. What is the answer to the following question?

$$80 + 2 \div 25 + 5 - 10 = ?$$

- (a) 35
- (b) 98
- (c) 36
- (d) 45

**Q91. Choose the correct appropriate answer.**

In a certain code language, '+' represents '×', '-' represents '+', '×' represents '÷' and '÷' represents '-'. What is the answer to the following question?

$$72 \times 9 - 14 + 2 = ?$$

- (a) 20
- (b) 86
- (c) 30
- (d) 36

**Q92. Choose the correct appropriate answer.**

In each of the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements.

**Statements**

1. Some boys are hardworking.
2. No intelligent are boys.

**Conclusions**

- I. Some hardworking are not intelligent.
- II. All hardworking are intelligent.
- III. Some intelligent are not hardworking.

- (a) Only conclusion I follows
- (b) Only conclusions I and III follow
- (c) All conclusions follow
- (d) No conclusion follows

**Q93. Choose the correct appropriate answer.**

Pointing to a woman in the photograph Arun said, "She is the wife of the only child of my father". How is the woman related to Arun?

- (a) Wife
- (b) Niece
- (c) Mother
- (d) Daughter

**Q94. Choose the correct appropriate answer.**

Introducing a girl a boy says, "She is the only daughter of the wife of my brother-in-law". How is the girl related to the boy?

- (a) Sister-in-law
- (b) Mother
- (c) Daughter
- (d) Niece

**Q95. Choose the correct appropriate answer.**

In a row of 74 girls, Shweta is 27<sup>th</sup> from left end. Palak is 7<sup>th</sup> to the right of Shweta. What is Palak's position from right end of the row?

- (a) 40
- (b) 41
- (c) 42
- (d) 44

**Q96. Choose the correct appropriate answer.**

In a class, P has more marks than Q and R does not have the least marks. S has more marks than T and T has more marks than P, who among them will have the least marks?

- (a) P
- (b) Q
- (c) S
- (d) T

**Q97. Choose the correct appropriate answer.**

Five students are sitting in a row. T is on the right of Z. M is on the left of Z but is on the right of L. T is on the left of Q. Who is sitting first from the left?

- (a) Z
- (b) Q
- (c) T
- (d) L

**Q98. Choose the correct appropriate answer.**

Eshan's birthday is on Friday 10<sup>th</sup> March. On what day of the week will be Shlok's birthday in the same year if Shlok was born on 25<sup>th</sup> September?

- (a) Monday
- (b) Wednesday
- (c) Friday
- (d) Thursday

**Q99. Choose the correct appropriate answer.**

Kamal starts walking from his home facing west direction. After walking 10 km he takes a right turn and walks another 10 km. He takes another right turn and walks 10 km to reach his school. How far (in km) and in which direction is he from his home?

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- (a) 10, North
- (b) 10, South
- (c) 20, North-East
- (d) 20, South-West

**Q100. Choose the correct appropriate answer.**

How many triangles are there in the given figure.



- (a) 10
- (b) 11
- (c) 12
- (d) 13

## Solutions

**S1. Ans.(a)**

**Sol.** The correct synonym of the given word "Acrimonious" is (a) "Bitter."

Acrimonious means (of speech or a debate) angry and bitter.

**Meaning of the given word in Hindi:** कटु

**Example:** The discussion turned **acrimonious**, with both sides shouting at each other.

**Bitter** means showing or caused by strong unrelenting hostility or resentment.

**Example:** He had no **bitter** feelings despite the unfair treatment.

**Synonyms:** caustic, sharp, harsh, **bitter**.

**Antonyms:** sweet, harmonious, pleasant, genial.

**Meanings of all the other given options:**

- Sweet: pleasing in general; delightful.
- Harmonious: free from disagreement or dissent.
- Pleasant: giving a sense of happy satisfaction or enjoyment.

**S2. Ans.(c)**

**Sol.** The correct synonym of the given word "Taciturn" is (c) "Silent."

Taciturn means (of a person) reserved or uncommunicative in speech; saying little.

**Meaning of the given word in Hindi:** मौन

**Example:** He was a **taciturn** man, rarely participating in conversations.

**Silent** means not making or accompanied by any sound.

**Example:** He was **silent** as he pondered the question.

**Synonyms:** reticent, reserved, **silent**, uncommunicative.

**Antonyms:** garrulous, loquacious, talkative, voluble.

### Meanings of all the other given options:

- Garrulous: excessively talkative, especially on trivial matters.
- Loquacious: tending to talk a great deal.
- Talkative: inclined to talk a lot.

### S3. Ans.(a)

**Sol.** The correct antonym of the given word is **(a) Sweet**.

**Acerbic:** (especially of a comment or style of speaking) sharp and forthright; tasting sour or bitter.

*Acerbic:* (कटु)

Example: His **acerbic** remarks left everyone in an awkward silence.

**Sweet:** having the pleasant taste characteristic of sugar or honey; not bitter or sour.

Example: Her **sweet** demeanor made her very popular among peers.

**Synonyms:** sharp, harsh, caustic, bitter.

**Antonyms:** **sweet**, gentle, mild, pleasant.

Meanings of all the other given options:

- **Sharp:** having an edge or point that is able to cut or pierce something.
- **Harsh:** unpleasantly rough or jarring to the senses.
- **Caustic:** able to burn or corrode organic tissue by chemical action; sarcastic in a scathing and bitter way.

### S4. Ans.(a)

**Sol.** The correct antonym of the given word is **(a) Reveal**.

**Dissemble:** conceal one's true motives, feelings, or beliefs.

*Dissemble:* (छिपाना)

Example: He tried to **dissemble** his anger with a smile.

**Reveal:** make (previously unknown or secret information) known to others.

Example: The investigation **revealed** the truth behind the incident.

**Synonyms:** conceal, feign, pretend, mask.

**Antonyms:** **reveal**, expose, disclose, uncover.

Meanings of all the other given options:

- **Conceal:** keep from sight; hide.
- **Feign:** pretend to be affected by (a feeling, state, or injury).
- **Pretend:** behave so as to make it appear that something is the case when in fact it is not.

### S5. Ans.(a)

**Sol.** The correct antonym of the given word is **(a) Ignorant**.

**Perspicacious:** having a ready insight into and understanding of things.

*Perspicacious:* (तीक्ष्णबुद्धि)

Example: The **perspicacious** detective quickly solved the complex case.

**Ignorant:** lacking knowledge, awareness, or information.

Example: He remained **ignorant** of the risks involved in the venture.

**Synonyms:** insightful, astute, perceptive, shrewd.

**Antonyms:** **ignorant**, unobservant, uninformed, dull.

Meanings of all the other given options:

- **Insightful:** having or showing an accurate and deep understanding.
- **Astute:** having or showing an ability to accurately assess situations.
- **Perceptive:** having or showing sensitive insight.

### S6. Ans.(a)

**Sol.** The correct one-word substitution for "a person who takes care of a museum" is **(a) curator**.

- "**Curator**" precisely describes someone who is in charge of a museum, library, or other collection.
- Correct word: **संग्राहक** (Curator in Hindi)
- Use in a sentence: The **curator** organized a new exhibition at the museum.
- **Meanings of the given other options:**
  - Option b: **Custodian** - A person who has responsibility for or looks after something.
  - Option c: **Caretaker** - A person employed to look after a building.
  - Option d: **Conservator** - A person responsible for the repair and preservation of works of art, buildings, or other things of cultural or environmental interest.

### S7. Ans.(b)

**Sol.** The correct one-word substitution for "a person who has long experience in a particular field" is **(b) veteran**.

- "**Veteran**" precisely describes someone who has a long experience in a particular occupation or field.
- Correct word: **अनुभवी** (Veteran in Hindi)
- Use in a sentence: The **veteran** journalist covered the story with great insight.
- **Meanings of the given other options:**
  - Option a: **Novice** - A person new to and inexperienced in a job or situation.
  - Option c: **Amateur** - A person who engages in a pursuit, especially a sport, on an unpaid rather than a professional basis.
  - Option d: **Apprentice** - A person who is learning a trade from a skilled employer, having agreed to work for a fixed period at low wages.

### S8. Ans.(d)

**Sol.** The correct meaning of the phrase "under the weather" is "sick."

- **Phrase Usage:** "Under the weather" is a common idiomatic expression used to describe feeling ill or unwell.
- **Contextual Understanding:** The idiom doesn't literally involve weather but is widely recognized and used to communicate a general state of poor health or discomfort, often implying mild sickness like a cold or fatigue.
- **Example:** If someone says, "I'm going to stay home from work today; I'm feeling under the weather," it means they feel too sick to carry out their normal activities, likely due to mild illness. This idiom effectively conveys a state of being sick without specifying a particular disease, commonly understood in everyday English communication.

### S9. Ans.(b)

**Sol. Direct Speech-** it means reporting the message of the speaker in the exact words as spoken by him.

**Indirect Speech-** It is speech which tells you what someone said, but does not use the person's actual word.

- Given sentence is a direct speech.  
**While changing direct speech into indirect speech following rules are to be followed:**
- When changing a command or request from direct to indirect speech, it's crucial to adjust pronouns and verb forms appropriately.
- **Pronoun Adjustment:** The direct speech command uses "your books," which, when reported, should refer to the students collectively. Thus, "your" changes to "their" to match the third-person perspective in indirect speech.



- **Verb Choice:** The use of "asked" is appropriate for conveying a polite request or command in indirect speech.

Option (b) correctly reflects the change in pronouns and maintains the essence of the teacher's instruction in indirect speech.

### S10. Ans.(b)

**Sol.** The correct way to fill in the blanks in the sentence is with option (b): "the, a."

- **Article Use:** The definite article "the" before "tiger" refers to the species as a whole, generalizing about tigers in the context of being fierce wild animals. This use of "the" signifies a universal statement about the characteristics of all tigers.
- **Contextual Clarity:** The indefinite article "a" before "fierce wild animal" is used because it indicates that the tiger, as a species, is one example of fierce wild animals, without implying that it is the only type or uniquely fierce.
- The combination in option (b) properly structures the sentence to convey a general truth about tigers while keeping the statement about being a fierce wild animal non-exclusive and appropriately broad.

### S11. Ans.(c)

**Sol. Active Voice-** It denotes that the noun or pronoun that acts as the subject in the sentence is the doer of the action. In other words, the subject performs the action or acts upon the verb.

**Passive Voice-** represents that the subject is one acted upon by the action or verb in the sentence. It can also be said that the passive voice indicates that the subject in the sentence is no longer active but passive.

- The sentence is an example of active voice having form:
- Sub + V2 + obj.
- When it is converted into passive voice, following rule is followed:
- Obj. + was/were + V3 + by + sub.

### S12. Ans.(b)

**Sol.** The error in the sentence is found in part (1): "Any portion of the underground rhizome when broken of." The phrase "broken of" is incorrect.

- The correct phrase should be "broken off." The word "off" is the appropriate preposition to use with "broken" in this context, indicating that a part has been separated from the main body.
- Therefore, the corrected sentence should read: "Any portion of the underground rhizome when broken off is capable of producing a new plant; hence the difficulty of eradicating them when once established."

### S13. Ans.(c)

**Sol.** The error in the sentence is found in part (c): "or the subsequent famine." The problem lies in the incorrect use of the conjunction "or" following "neither."

- When using "neither," the correct conjunction to pair it with is "nor," not "or." The structure "neither.. nor.." is used to connect two negative ideas or items.
- Therefore, the corrected sentence should read: "Neither the severe earthquake nor the subsequent famine could demoralise the people of the country." This correction maintains the parallel structure and proper use of correlative conjunctions.

### S14. Ans.(c)

**Sol.** The correct word to fill in the blank is "nocturnal." A nocturnal animal is one that is active during the night and rests during the day.

- This description fits the context of the sentence, which contrasts the Egyptian mongoose's usual behavior (being active at night) with its occasional daytime activity.
- Therefore, the complete sentence is: "The Egyptian mongoose is mainly nocturnal, although it sometimes hunts during the day."

**The meanings of the other options are:**

- **Avarice:** Extreme greed for wealth or material gain.
- **Substantial:** Of considerable importance, size, or worth.
- **Pliant:** Flexible, easily influenced or bent.

**S15. Ans.(b)**

**Sol.** The correct order of the sentences to form a logical paragraph is option (b) QSRP.

- Sentence Q introduces the Manhattan Project and its interdisciplinary nature.
- Sentence S elaborates on the scientific knowledge and progress involved in the project.
- Sentence R discusses the importance of communication among scientists.
- Sentence P reflects on the ethical implications of the project's success.
- The concluding sentence ties the paragraph together by acknowledging the collaboration and efficiency of the project.

**S16. Ans.(c)**

**Sol.** The sequence "QPRS" correctly arranges the sentence parts to form a coherent and grammatically correct sentence. Here's how it breaks down:

- Q introduces the subject of the sentence, "is one of the more vivid," which sets the context for what follows.
- P provides the specific details about the subject, "memories I have from," indicating the type of vivid experiences being described.
- R further specifies the origin of these memories, "my time I," which leads into the final part of the sentence.
- S completes the sentence with the location or event related to the memories, "served in the pre-Iraq war."

**S17. Ans.(a)**

**Sol.** The correct order of the sentences to form a logical paragraph is option (a) PQSR.

- Sentence P introduces the beginning of Google's history, with Larry Page meeting Sergey Brin.
- Sentence Q talks about Larry Page being a Ph.D. student at Stanford University and Sergey considering studying there.
- Sentence S provides information about the origin of the name "Google."
- Sentence R describes the development of the search engine BackRub.
- This order forms a coherent paragraph.

**S18. Ans.(a)**

**Sol.** The word that can be filled in the blank is 'innovative' to make the sentence grammatically and contextually correct.

- **'Innovative'** is used to describe something featuring new methods; advanced and original, which fits well in describing the type of scientific research the initiative aims to provide.

- Thus, 'innovative' is the correct option, as it best describes the forward-thinking nature of the ODOS program.

**Meanings of other given words:**

- **Comprehensive** - complete and including everything that is necessary.
- **Academic** - relating to education and scholarship.
- These words, while relevant, do not specifically emphasize the newness or originality that 'innovative' conveys.

**S19. Ans.(a)**

**Sol.** The word that can be filled in the blank is 'designed' to make the sentence grammatically and contextually correct.

- **'Designed'** refers to something that was planned or conceived in a way with a specific purpose in mind.
- In this context, describing ODOS as a program specifically planned to facilitate easier access fits perfectly, making 'designed' the correct choice.

**Meanings of other given words:**

- **Proposed** - suggested for consideration by others.
- **Required** - necessary according to rules or law.
- **Suggested** - put forward for consideration.
- Thus, 'designed' directly addresses the intentional creation of ODOS, more so than the other options.

**S20. Ans.(a)**

**Sol.** The word that can be filled in the blank is 'growth' to make the sentence grammatically and contextually correct.

- **'Growth'** refers to the process of increasing in size, amount, or importance.
- In this context, the objective of promoting an increase in scientific knowledge through ODOS makes 'growth' the apt choice.

**Meanings of other given words:**

- **Decline** - become smaller, fewer, or less; decrease.
- **Stagnation** - the state of not flowing or moving.
- **Decrease** - to become or make less; a reduction.
- 'Growth' is clearly the most positive and fitting term in this setting compared to the negative connotations of the other options.

**S21. Ans.(b)**

**Sol.** The word that can be filled in the blank is 'collaboration' to make the sentence grammatically and contextually correct.

- **'Collaboration'** refers to the action of working with someone to produce or create something.
- In the context of the ODOS program, encouraging collaborative efforts among the DAE community is a key goal, making 'collaboration' the correct choice.

**Meanings of other given words:**

- **Competition** - the activity or condition of competing.
- **Isolation** - the process or fact of isolating or being isolated.
- **Secrecy** - the action of keeping something secret or the state of being kept secret.
- None of these other words appropriately describe the cooperative nature intended in the passage.

**S22. Ans.(a)**

**Sol.** The word that can be filled in the blank is 'immersive' to make the sentence grammatically and contextually correct.

- '**Immersive**' is used to describe an environment or experience that completely surrounds and involves someone, making them feel as if they are physically part of it.
- As per the context, the word 'immersive' fits very well in describing the metaverse, which aims to engage users fully. Hence, it is the correct option.

**Meanings of other given words:**

- **Limited** - restricted in size, amount, or extent; few, small, or short.
- **Temporary** - lasting for only a limited period of time; not permanent.
- **Expansive** - covering a wide area in terms of space or scope; extensive or wide-ranging.
- Thus, all the other given words have different meanings and do not fit as well in the context of the sentence.

**S23. Ans.(b)**

**Sol.** The word that can be filled in the blank is 'experience' to make the sentence grammatically and contextually correct.

- '**Experience**' refers to encountering or undergoing an event or occurrence, typically gaining knowledge or skill from it.
- As per the context, the word 'experience' correctly describes what users can do in the metaverse— participate in various activities. Hence, it is the correct option.

**Meanings of other given words:**

- **Avoid** - keep away from or stop oneself from doing (something).
- **Ignore** - refuse to take notice of or acknowledge; disregard intentionally.
- **Analyze** - examine methodically and in detail the constitution or structure of (something, especially information), typically for purposes of explanation and interpretation.
- Thus, all the other given words convey different actions and are not suitable for describing participation in the metaverse.

**S24. Ans.(b)**

**Sol.** The word that can be filled in the blank is 'access' to make the sentence grammatically and contextually correct.

- '**Access**' means the means or opportunity to approach or enter a place.
- As per the context, describing the use of VR headsets to enter the three-dimensional virtual worlds of the metaverse makes 'access' the correct choice.

**Meanings of other given words:**

- **Design** - do or plan (something) with a specific purpose or intention in mind.
- **Avoid** - keep away from or stop oneself from doing (something).
- **Exit** - go out of or leave a place.
- Thus, all the other given words suggest different actions that do not fit in the context of entering or using VR headsets for the metaverse.

**S25. Ans.(a)**

**Sol.** The word that can be filled in the blank is 'interactive' to make the sentence grammatically and contextually correct.

- **'Interactive'** is used to describe activities or systems that allow a two-way flow of information between it and a user, responding to the user's input.
- In the context of virtual universes like those in the metaverse, 'interactive' aptly describes how users can engage with the environment and others. Therefore, it is the correct option.

**Meanings of other given words:**

- **Static** - lacking in movement, action, or change, especially in a way viewed as undesirable or uninteresting.
- **Isolated** - far away from other places, buildings, or people; remote.
- **Crowded** - full of people, leaving little or no room for movement; packed.
- Thus, all the other given words describe different qualities of universes that do not fit the dynamic and engaging nature of the metaverse.

**S26. Ans.(b)**

**Sol.** The primary goal of arms control, as indicated in the passage, is to reduce and regulate weapons through international agreements. This is directly stated as the purpose of arms control measures, which aim to prevent the escalation of armed conflicts, reduce military spending, and ensure global peace and stability.

- Option (a), enhancing military capabilities of global powers, contradicts the purpose of arms control.
- Option (c), increasing economic benefits from military expenditures, is not mentioned as a goal.
- Option (d), focusing solely on the disarmament of nuclear weapons, is too narrow as arms control covers a broader range of weapons.

**S27. Ans.(b)**

**Sol.** The Strategic Arms Limitation Talks (SALT) is not mentioned in the passage, whereas the other treaties—NPT, START, and CTBT—are specifically referenced as being related to nuclear non-proliferation or arms reduction.

- The passage highlights these treaties as examples of efforts to limit nuclear capabilities and weapons, whereas SALT, though related in theme, is not explicitly mentioned.

**S28. Ans.(c)**

**Sol.** Transparency and confidence-building measures in arms control foster trust among nations by encouraging them to share information regarding their military capabilities and intentions. This is explicitly stated in the passage as a critical function of these initiatives, which help to build a climate of trust.

- Options (a) and (d) are not mentioned in the context of transparency and confidence-building measures.
- Option (b), while related to the broader goals of arms control, is not the specific role of transparency and confidence-building measures as described in the passage.

**S29. Ans.(c)**

**Sol.** Verification mechanisms, including satellite surveillance and on-site inspections, are crucial for ensuring compliance with arms control agreements. The passage specifically states these mechanisms play an essential role in verifying that nations adhere to the terms of arms control treaties.

- Options (a), (b), and (d) do not align with the passage's emphasis on verification as the critical mechanism for ensuring treaty compliance.

### S30. Ans.(b)

**Sol.** The significant challenges to successful arms control mentioned in the passage include geopolitical rivalries and the interests of the military-industrial complexes. These factors create hurdles in achieving effective arms control, as they can conflict with the goals of reducing and regulating weapons.

- The other options are not supported by the text. Option (a) is incorrect as the passage does not mention a lack of interest in military affairs by global leaders. Option (c) is unrelated to the passage's discussion, and option (d) is not indicated as a significant challenge in the context provided.

### S31. Ans.(b)

**Sol.** The correct answer is (b) May 2024.

- **Kareena Kapoor Khan** was appointed as the National Ambassador of UNICEF India on May 4, 2024. This appointment was significant as it aligned with UNICEF India's 75th year of partnership with the country. As a National Ambassador, she will be involved in promoting the rights and well-being of children across India, particularly through the #ForEveryChild campaign.

#### Information Booster:

- **UNICEF India:** The organization has been working in India for 75 years, focusing on improving child health, education, nutrition, and protection.
- **Ambassador's Role:** National Ambassadors of UNICEF use their influence to raise awareness and mobilize public support for various child welfare initiatives.
- **Kareena Kapoor Khan's Impact:** Her role as the National Ambassador is expected to amplify UNICEF's campaigns and reach a broader audience, highlighting crucial issues affecting children in India.
- UNICEF stands for the United Nations International Children's Emergency Fund.
- UNICEF was created on December 11, 1946, by the United Nations General Assembly to provide emergency food and healthcare to children in countries devastated by World War II.
- UNICEF's headquarters is located in **New York City, United States.**

### S32. Ans.(c)

**Sol.** The correct answer is (c) A long-range, supersonic, air-to-ground missile.

- The **Rampage missile** is a **long-range, supersonic, air-to-ground missile** recently added to the arsenal of the Indian Air Force (IAF) and Indian Navy. This missile is designed to engage high-value ground targets, such as enemy infrastructure and strategic installations, with high precision. Its supersonic speed and long-range capabilities make it a significant asset in modern warfare, allowing for deep strikes within enemy territory.

#### Information Booster:

- **Development and Origin:** The Rampage missile was developed by Israel Aerospace Industries (IAI) and Israel Military Industries (IMI) and is now part of the military equipment of several countries, including India.
- **Capabilities:** The missile is designed to penetrate well-defended, high-value targets such as communication hubs, airfields, and logistical centers. It offers a range of over 150 kilometers, enhancing the strike capabilities of the IAF and Indian Navy.
- **Deployment:** The missile can be launched from various combat aircraft, providing flexibility in military operations and increasing the effectiveness of air strikes.
- **Strategic Importance:** The addition of the Rampage missile to the Indian military's arsenal strengthens India's ability to conduct precision strikes and enhances its overall deterrence capabilities in the region.



### S33. Ans.(c)

**Sol.** The correct answer is (c) Aerial refueling tanker or command center.

- The **military version of the Il-76** aircraft is widely used as an **aerial refueling tanker or command center**. In addition to its military roles, the Il-76 has also been extensively employed as a commercial freighter, particularly for transporting outsized or heavy cargo that cannot be accommodated by other means. Its design allows for ramp-delivered cargo, making it a versatile and essential asset in both military and civilian operations.

#### Information Booster:

- **Il-76 Aircraft:** The Ilyushin Il-76 is a multi-purpose, four-engine turboprop strategic airlifter designed by the Soviet Union and used by various countries for both military and commercial purposes.
- **Military Roles:** Besides being used as a refueling tanker or command center, the Il-76 is also deployed for airborne troop transport, medical evacuation, and as a firefighting aircraft. Its robust design allows it to operate in remote and unprepared airfields.
- **Commercial Use:** The aircraft has seen extensive service as a commercial freighter, especially for transporting heavy and outsized items, thanks to its large cargo hold and ability to carry ramp-delivered cargo.
- **Global Service:** The Il-76 has been widely used in Europe, Asia, and Africa, serving various military forces and commercial operators for decades.

### S34. Ans.(c)

**Sol.** The correct answer is (c) Police.

- **Police** is a subject under the **State List** in the Indian Constitution. This means that the state governments have the exclusive power to legislate on matters related to police, including law and order within their respective states. The State List is one of the three lists in the Seventh Schedule of the Constitution, dividing the powers and responsibilities between the Union and State governments.

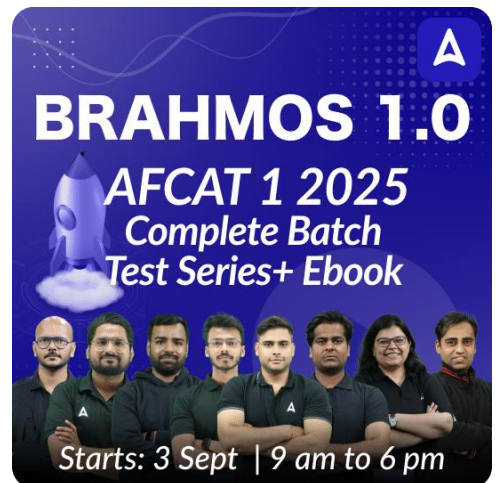
#### Information Booster:

- **State List:** The State List contains subjects on which only the state governments can legislate. There are 61 subjects in the State List, including law and order, public health, agriculture, and local government.
- **Union List:** The Union List contains subjects on which only the central government can legislate. These include defense, foreign affairs, banking, and atomic energy.
- **Concurrent List:** The Concurrent List contains subjects on which both the central and state governments can legislate. In case of a conflict between the central and state laws on a concurrent subject, the central law prevails.
- **Division of Powers:** The division of powers between the Union and the states is an essential feature of Indian federalism, ensuring a clear demarcation of responsibilities.

### S35. Ans.(c)

**Sol.** The correct answer is (c) Upanishads.

- The phrase "**Tamaso Ma Jyotirgamaya**" is found in the **Brihadaranyaka Upanishad**, which is one of the ancient Indian scriptures. The phrase translates to "From darkness, lead me to light." It is part of a prayer asking for guidance from ignorance (darkness) to knowledge (light), symbolizing the journey from ignorance to enlightenment.



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- **Upanishads:** The Upanishads are a collection of ancient Indian texts that form the philosophical basis of Hinduism. They explore concepts such as Brahman (ultimate reality), Atman (soul), and the nature of existence. The Upanishads are considered the concluding part of the Vedas and are often referred to as Vedanta.
- **Brihadaranyaka Upanishad:** One of the oldest and most significant Upanishads, it contains profound philosophical ideas and discussions on the nature of reality, self, and the universe.
- **Spiritual Significance:** The phrase "Tamaso Ma Jyotirgamaya" is often used in spiritual contexts, symbolizing the aspiration for enlightenment and wisdom.
- **Other Vedic Scriptures:** The Vedas consist of four main texts: Rigveda, Yajurveda, Samaveda, and Atharvaveda. Each has its own significance and focuses on various aspects of rituals, hymns, and philosophical teachings.

### S36. Ans.(b)

**Sol.** The correct answer is (b) 9.

- In a standard **Kho-Kho team**, there are **9 players**. Kho-Kho is a traditional Indian sport played between two teams. The game involves chasing and tagging, with the primary objective being to avoid being caught by the opponents. It requires agility, speed, and teamwork.

### Information Booster:

- **Team Composition:** A Kho-Kho team consists of 12 players, out of which 9 take the field, and the remaining 3 are substitutes. The team that is chasing sits in a row, and the runners try to avoid getting tagged by the chasers.
- **Game Format:** The game is played in two innings, with each inning consisting of chasing and defending roles for each team. The team with the most points at the end of the game wins.
- **Origin:** Kho-Kho is believed to have originated in Maharashtra, India, and is one of the most popular traditional games in the country. It is particularly well-known in rural areas and is also played at the national and international levels.
- **Recognition:** Kho-Kho is recognized by various sports authorities in India and has a governing body that organizes national and international tournaments.

### S37. Ans.(b)

**Sol.** The correct answer is (b) Chandigarh.

- The **Indian Air Force (I.A.F.) Heritage Centre** is located in **Chandigarh**. This heritage centre showcases the rich history, achievements, and contributions of the Indian Air Force. It houses various exhibits, including aircraft models, memorabilia, uniforms, and other artifacts that highlight the IAF's role in safeguarding the nation's skies.

### Information Booster:

- **Purpose:** The IAF Heritage Centre serves as a museum and educational facility that aims to inspire visitors, especially the younger generation, by providing insights into the Indian Air Force's glorious past and its evolving capabilities.
- **Exhibits:** The centre features aircraft models, weapon systems, and displays detailing significant events in the history of the Indian Air Force, including its participation in various wars and peacekeeping missions.
- **Location:** Chandigarh, a city known for its architecture and urban design, is home to this heritage centre, making it accessible to a large number of visitors from different parts of the country.

- **Inauguration:** The IAF Heritage Centre was inaugurated to commemorate and honor the legacy of the Indian Air Force, making it a key site of national importance.

**S38. Ans.(a)** Specific, Measurable, Achievable, Relevant, Time-bound  
**Sol.**

The correct answer is **(a)** Specific, Measurable, Achievable, Relevant, Time-bound.

- **Specific:** The goal must be clear and specific.
- **Measurable:** Progress towards the goal should be measurable.
- **Achievable:** The goal should be realistic and attainable.
- **Relevant:** The goal should matter and align with other goals.
- **Time-bound:** The goal should have a clear deadline.

**S39. Ans.(b)** Goods and Services Tax

**Sol.** The correct answer is **(b)** Goods and Services Tax.

- **Goods and Services Tax (GST):** GST is a comprehensive, multi-stage, destination-based tax that is levied on every value addition in India. It was introduced on July 1, 2017, and replaced several indirect taxes like VAT, service tax, and excise duty.

**Information Booster:**

- **GST Structure:** GST in India is a dual system with CGST (Central GST) and SGST (State GST) or IGST (Integrated GST) for interstate transactions.
- **Objective:** The objective of GST is to simplify the indirect tax structure, reduce tax evasion, and create a unified market across India.

**S40. Ans.(b)** Mudrarakshasa

**Sol.** The correct answer is **(b)** Mudrarakshasa.

- **Vishakhadatta:** Vishakhadatta was an ancient Indian Sanskrit poet and playwright, known for his remarkable contributions to Indian classical literature.
- **Mudrarakshasa:** One of his most famous works is the play *Mudrarakshasa*, which is a political drama centered around the clever strategist Chanakya and the rise of Chandragupta Maurya to power. The play is celebrated for its intricate plot and portrayal of political intrigue in ancient India.

**Information Booster:**

- **Kalidasa:** Kalidasa is one of the greatest Sanskrit poets and playwrights in Indian literature. He is the author of several classical works, including the famous plays *Shakuntala*, *Malavikagnimitram*, and *Abhijanashakuntalam*.

**S41. Ans.(a)** It attracts objects towards the center of the Earth.

**Sol.** The correct answer is **(a)** It attracts objects towards the center of the Earth.

- **Gravitational Force:** The gravitational force of Earth is a natural phenomenon by which all objects with mass are attracted toward the center of the Earth. This force is responsible for keeping everything anchored to the surface and is what gives us weight.

**Information Booster:**

- **Effect on Objects:** Gravity causes objects to fall towards the Earth when dropped, and it governs the motion of planets, moons, and other celestial bodies in the solar system. The acceleration due to gravity on Earth's surface is approximately  $9.8 \text{ m/s}^2$ .
- **Importance:** Without gravity, there would be no atmosphere, no oceans, and life as we know it would not exist.

**S42. Ans.(a)** Bhanu Athaiya for Costume Design

**Sol.** The correct answer is **(a)** Bhanu Athaiya for Costume Design.

- **Bhanu Athaiya:** Bhanu Athaiya became the first Indian to win an Oscar in 1983. She received the Academy Award for Best Costume Design for her work in the film *Gandhi* (1982), directed by Richard Attenborough. Her contribution to the authentic and detailed costume designs in the film was highly acclaimed internationally.

**Information Booster:**

**Oscars:**

- **Full Name:** The official name of the Oscars is the **Academy Awards**. It is the most prestigious award in the film industry, honoring outstanding achievements in various aspects of filmmaking.
- **Organized by:** The awards are presented annually by the **Academy of Motion Picture Arts and Sciences (AMPAS)**.
- **First Ceremony:** The first Oscars ceremony was held on **May 16, 1929**, at the Hollywood Roosevelt Hotel, with only about 270 guests in attendance.

**S43. Ans.(a)** A linear sequence of organisms where each is eaten by the next.

**Sol.** The correct answer is **(a)** A linear sequence of organisms where each is eaten by the next.

- **Food Chain:** A food chain represents the flow of energy and nutrients in an ecosystem through a linear sequence of organisms, where each organism is eaten by the next one in the chain. It typically starts with producers (like plants) that make their own food, followed by primary consumers (herbivores), secondary consumers (carnivores), and ends with tertiary consumers (top predators).
- **Example:** A simple food chain might be: Grass → Grasshopper → Frog → Snake → Eagle. In this example, energy flows from the grass (producer) to the eagle (top predator) through various trophic levels.
- **Significance:** Food chains are fundamental to understanding the dynamics of ecosystems and the interdependence of organisms.

**Information Booster:**

**Types of food chains found in ecosystems:**

**Grazing Food Chain:**

- **Definition:** A grazing food chain starts with primary producers (usually green plants) that are consumed by herbivores, which are then consumed by carnivores.
- **Example:** Grass → Grasshopper → Frog → Snake → Hawk
- **Significance:** This type of food chain is common in most ecosystems and is directly dependent on the presence of sunlight, which plants use to produce energy through photosynthesis.

**Detritus Food Chain:**

- **Definition:** A detritus food chain begins with dead organic matter (detritus) that is broken down by decomposers (bacteria and fungi) and detritivores (organisms like earthworms). The energy is then transferred to predators.
- **Example:** Dead leaves → Earthworms → Birds → Hawks
- **Significance:** This type of food chain is crucial for recycling nutrients in ecosystems and is less dependent on direct sunlight since it operates primarily on the decomposition of organic matter.

**Parasitic Food Chain:**

- **Definition:** A parasitic food chain involves parasites feeding on host organisms. The energy flow is from larger organisms to smaller organisms.

- **Example:** Tree → Aphids → Parasitoid wasp
- **Significance:** Parasitic food chains play a role in controlling population sizes and maintaining the balance within ecosystems.

#### **Saprophytic Food Chain:**

- **Definition:** Similar to the detritus food chain, a saprophytic food chain involves saprophytes (organisms that feed on decaying organic matter) breaking down dead organisms. The energy is transferred from dead matter to saprophytes and then to other organisms.
- **Example:** Fallen logs → Fungi → Small mammals → Predators
- **Significance:** Saprophytic chains are essential for decomposing organic material and returning nutrients to the soil, making them available for primary producers.

#### **Aquatic Food Chain:**

- **Definition:** An aquatic food chain occurs in water environments and starts with primary producers like phytoplankton that are consumed by zooplankton, followed by various levels of fish and larger marine animals.
- **Example:** Phytoplankton → Zooplankton → Small fish → Larger fish → Shark
- **Significance:** Aquatic food chains are vital for the functioning of marine and freshwater ecosystems and are the basis for most marine life.

**S44. Ans.(b)** Graphene

**Sol.** The correct answer is **(b)** Graphene.

- **Graphene:** Graphene is a single layer of carbon atoms arranged in a two-dimensional honeycomb lattice. It is known for its exceptional strength, being over 200 times stronger than steel, and its excellent electrical conductivity. These properties make graphene a revolutionary material with potential applications in electronics, energy storage, and nanotechnology.
- **Structure:** Graphene is essentially a single layer of graphite, which is used in pencils, but with unique properties due to its 2D structure.
- **Applications:** Due to its conductive and mechanical properties, graphene is being explored for use in supercapacitors, flexible displays, and even as a material for constructing lighter and stronger composites.

#### **Information Booster:**

- Diamond is an allotrope of carbon where each carbon atom is covalently bonded to four other carbon atoms, forming a tetrahedral lattice structure. This strong bonding makes diamonds the hardest naturally occurring material on Earth.
- Carbon dioxide is a colorless, odorless gas composed of one carbon atom and two oxygen atoms (CO<sub>2</sub>). It is a linear molecule with double bonds between the carbon and oxygen atoms.
- Methane is a simple hydrocarbon with the chemical formula CH<sub>4</sub>, consisting of one carbon atom bonded to four hydrogen atoms. It is the simplest alkane and is a major component of natural gas.

**S45. Ans.(d)** BeiDou

**Sol.** The correct answer is **(d)** BeiDou.

- **BeiDou Navigation Satellite System (BDS):** The BeiDou system is China's independent global navigation satellite system, designed to provide accurate positioning, navigation, and timing services worldwide. It is comparable to the U.S. GPS, Russia's GLONASS, and the European Union's Galileo systems.

- **Development:** The BeiDou project began in 1994, and the system was officially launched for global use in 2020. It consists of a constellation of satellites that offer services to both civilian and military users.
- **Applications:** BeiDou is used in various applications, including transportation, emergency rescue, agriculture, and national defense. It is also integrated into smartphones and other consumer devices for navigation purposes.

**Information Booster:**

- China is the largest country in Asia and the fourth largest in the world by land area, covering approximately 9.6 million square kilometers.
- China shares its borders with 14 countries, including India, Russia, Mongolia, and North Korea, making it one of the countries with the most neighboring nations.
- The capital of China is Beijing, which is also the country's political and cultural center.

**S46. Ans.(b)** A tiger claw weapon used in personal combat

**Sol.** The correct answer is **(b)** A tiger claw weapon used in personal combat.

- **Bagh Nakh:** The Bagh Nakh, also known as "Tiger's Claw," is a traditional Indian weapon designed to fit over the knuckles or be concealed in the palm of the hand. It consists of a set of curved blades or claws used to slash and tear an opponent's flesh.
- **Famous Use:** Chhatrapati Shivaji Maharaj famously used the Bagh Nakh during the assassination of Afzal Khan, a formidable adversary, in 1659. This encounter is one of the most well-known events in Indian history, demonstrating Shivaji's tactical genius and bravery.
- **Significance:** The Bagh Nakh symbolizes Shivaji's cunning and strategic prowess in warfare, where he used it to overcome physically stronger opponents through surprise and skill.

**Information Booster:**

**Birth and Early Life:**

- **Born:** February 19, 1630, at Shivneri Fort in Maharashtra, India.
- **Parents:** Shivaji was the son of Shahaji Bhosale, a Maratha general, and Jijabai, who played a significant role in his upbringing, instilling in him values of bravery and patriotism.

**Founder of the Maratha Empire:**

- Shivaji is widely regarded as the founder of the Maratha Empire, which he established in the mid-17th century in western India. His empire eventually became one of the largest and most powerful in India.

**Coronation as Chhatrapati:**

- **Coronation:** Shivaji was formally crowned as "Chhatrapati" (Emperor) on June 6, 1674, at Raigad Fort, marking the official recognition of his authority and the establishment of the Maratha sovereignty.

**Military Strategy and Guerrilla Warfare:**

- Shivaji is known for his innovative military tactics, especially his use of guerrilla warfare, which allowed him to win battles against much larger and better-equipped enemies. His tactics included surprise attacks, swift cavalry raids, and effective use of the mountainous terrain.

**S47. Ans.(c)** Rajasthan

**Sol.** The correct answer is **(c)** Rajasthan.

- **Rajasthan:** Rajasthan is set to become the first state in India to adopt a 10-year road safety action plan with an ambitious goal to reduce road accidents by 50% by 2030. This plan is a significant step towards enhancing road safety and minimizing fatalities on the state's roads.



**Information Booster:**

- **Technology Use:** As part of the action plan, the Rajasthan government will implement the iRAD (Integrated Road Accident Database) application. This technology will facilitate the online data entry of road accidents, helping in better analysis, response, and prevention of future accidents.
- **Goal:** The adoption of this action plan demonstrates Rajasthan's commitment to improving road safety through a combination of technological advancements, stricter enforcement of traffic laws, and public awareness campaigns.

**S48. Ans.(a)** A global human rights organization

**Sol.** The correct answer is **(a)** A global human rights organization.

- **Amnesty International:** Amnesty International is a global non-governmental organization focused on the protection and promotion of human rights worldwide. It was founded in 1961 by Peter Benenson and has grown to become one of the most influential human rights organizations in the world.

**Information Booster:**

- **Primary Focus:** The organization works to prevent and end grave abuses of human rights, demanding justice for those whose rights have been violated. Amnesty International conducts research, advocates for policy changes, and organizes campaigns to address issues such as torture, unfair trials, freedom of expression, and the rights of refugees.
- **Impact:** The organization has won numerous awards, including the Nobel Peace Prize in 1977, for its efforts in advocating for human rights globally.

**S49. Ans.(b)** A development initiative focused on the Northeastern region of India

**Sol.** The correct answer is **(b)** A development initiative focused on the Northeastern region of India.

- **Project Ishan:** Project Ishan is an initiative by the Government of India aimed at improving the overall development of the Northeastern region of India. The project focuses on enhancing the infrastructure, education, and skill development in the eight Northeastern states, including Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura.

**Information Booster:**

- **Primary Objective:** The primary goal of Project Ishan is to integrate the Northeastern states with the rest of India, ensuring equitable development and reducing regional disparities. The initiative includes measures to improve connectivity, promote tourism, and support local industries.
- **Significance:** The project is significant in fostering inclusive growth and addressing the unique challenges faced by the Northeastern region, which has often been isolated due to geographical and infrastructural constraints.

**S50. Ans.(a)** Nicotine, Tar, Carbon Monoxide

**Sol.** The correct answer is **(a)** Nicotine, Tar, Carbon Monoxide.

- **Nicotine:** A highly addictive substance found in tobacco, nicotine is responsible for the addictive nature of smoking. It stimulates the release of dopamine, creating a temporary feeling of pleasure.
- **Tar:** Tar is a toxic residue that accumulates in the lungs when cigarette smoke is inhaled. It contains a variety of carcinogens that increase the risk of lung cancer, chronic bronchitis, and other respiratory diseases.
- **Carbon Monoxide:** Carbon monoxide is a poisonous gas that reduces the oxygen-carrying capacity of the blood. This can lead to serious cardiovascular problems, including heart disease.

**S51. Ans.(a)** Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana, Samadhi

**Sol.** The correct answer is **(a)** Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana, Samadhi.

- **Eight Limbs of Yoga:** The "Yoga Sutras" by Patanjali outlines the eight limbs of Yoga, which serve as guidelines on how to live a meaningful and purposeful life.

**Information Booster:**

**These eight limbs are:**

- **Yama:** Ethical standards and moral conduct.
- **Niyama:** Self-discipline and spiritual observances.
- **Asana:** Physical postures, commonly known as Yoga poses.
- **Pranayama:** Breath control, the regulation of the breath.
- **Pratyahara:** Withdrawal of the senses, controlling what we take in.
- **Dharana:** Concentration, focusing the mind on a single point.
- **Dhyana:** Meditation, maintaining focus and awareness.
- **Samadhi:** A state of ecstasy and union with the divine.

**S52. Ans.(c)** To offer comprehensive medical support during disasters using AI and data analytics

**Sol.** The correct answer is **(c)** To offer comprehensive medical support during disasters using AI and data analytics.

- **BHISHM Cube (Bharat Health Initiative for Sahyog, Hita and Maitri):** The BHISHM Cube is an innovative mobile hospital developed under Project Aarogya Maitri.
- It is specifically designed to provide rapid and effective medical care in disaster-stricken areas or during humanitarian crises.

**Information Booster:**

- **Technological Advancements:** The BHISHM Cube integrates advanced technologies such as Artificial Intelligence (AI) and data analytics, which facilitate real-time monitoring, coordination, and efficient management of medical services in the field.
- This ensures a swift and effective response to medical emergencies, making it a vital asset in disaster management.

**S53. Ans.(a)** 1951, New Delhi

**Sol.** The correct answer is **(a)** 1951, New Delhi.

- **First Football Asian Games:** The first football tournament during the Asian Games was held in 1951 in New Delhi, India. This event marked the debut of football as a competitive sport in the Asian Games, which has since become a regular feature in the multi-sport event.
- **Significance:** The 1951 Asian Games, also known as the first-ever Asian Games, saw the participation of various Asian nations, with football being one of the prominent sports. India won the gold medal in this inaugural football event, showcasing their dominance in the sport at that time.

**Information Booster:**

**Asian Games:**

- **Inception:** The Asian Games, also known as Asiad, were first held in New Delhi, India, in 1951. The Games were created to foster unity and cooperation among Asian countries through sports.
- **Frequency:** The Asian Games are held every four years, similar to the Olympics, and are the second-largest multi-sport event in the world after the Olympic Games.
- **Governing Body:** The Asian Games are organized by the Olympic Council of Asia (OCA), which was established in 1982. Before the OCA's formation, the Games were governed by the Asian Games Federation (AGF).



**S54. Ans.(b)** Yamuna - Chambal

**Sol.** The correct answer is **(b)** Yamuna - Chambal.

- **Yamuna - Chambal:** The Chambal River is a major tributary of the Yamuna River. It originates in the Vindhya Range and flows through Madhya Pradesh, Rajasthan, and Uttar Pradesh before merging with the Yamuna in Uttar Pradesh.

**Information Booster:**

**Chambal River:**

- The Chambal River originates in the Vindhya Range in Madhya Pradesh and flows through Rajasthan and Uttar Pradesh before joining the Yamuna River near Etawah in Uttar Pradesh.
- The Chambal is known for its clean and clear waters, and the Chambal Valley is home to the National Chambal Sanctuary, which is a protected area for species like the critically endangered Gharial (a type of crocodile) and the Gangetic dolphin.
- The Chambal River basin is also significant for its historical and cultural heritage, with numerous ancient temples and forts along its banks.

**Yamuna River:**

- The Yamuna River is the largest tributary of the Ganges River. It originates from the Yamunotri Glacier in the lower Himalayas in Uttarakhand.
- The Yamuna flows through several major cities, including Delhi, Agra, and Mathura, before merging with the Ganges at Allahabad (Prayagraj), a site of religious significance known as the Triveni Sangam.
- The river holds immense cultural and religious importance in India, but it also faces significant pollution challenges, particularly in urban areas.

**S55. Ans.(a)** To guide airplanes during takeoff and landing

**Sol.** The correct answer is **(a)** To guide airplanes during takeoff and landing.

- **Air Traffic Controller (ATC):** An Air Traffic Controller is responsible for ensuring the safe and efficient movement of aircraft within the controlled airspace, on the ground, and during takeoff and landing.

**Information Booster:**

- **Key Responsibilities:** ATCs provide instructions to pilots regarding altitude, speed, and route adjustments to maintain safe distances between aircraft. They also manage aircraft movements on the ground, including taxiing and takeoff clearances.
- **Critical Role:** The role of an ATC is crucial in preventing collisions and ensuring smooth traffic flow at airports and in the skies. They use radar, radio communication, and other technologies to monitor and direct air traffic.

**S56. Ans.(c)**

**Sol.**

**Given:**

Probability of winning = 0.08

Total number of tickets = 60,000

**Concept:**

$$\text{Probability of winning} = \frac{\text{Number of tickets bought}}{\text{Total number of tickets}}$$

**Solution:**

$$\begin{aligned} \text{Number of tickets he bought} &= 0.08 \times 60,000 \\ &= 4,800 \end{aligned}$$

S57. Ans.(b)

Sol.

Let the percentage increase in the B's weight be A.

According to the question,

$$\begin{aligned} 11x \times \frac{140}{100} + \frac{8x \times (100+A)}{100} \\ = (11x + 8x) \times \frac{130}{100} \\ \Rightarrow 1540 + 8(100 + A) = 2470 \\ \Rightarrow (100 + A) = \frac{2470 - 1540}{8} \\ \Rightarrow 100 + A = \frac{930}{8} = 116.25 \\ \therefore A = 116.25 - 100 \\ = 16.25\% \end{aligned}$$

S58. Ans.(d)

Sol.

Value of the car 2 years ago

$$\begin{aligned} = 433500 \times \frac{100}{(100-15)} \times \frac{100}{(100-15)} \\ = \frac{433500 \times 100 \times 100}{85 \times 85} = \text{Rs. } 600000 \end{aligned}$$

S59. Ans.(b)

Sol.

According to the question,

$$\text{Number} = 416 \times \frac{100}{65} = 640$$

Let the number increased by x%, then

$$\frac{640 \times (100+x)}{100} = 876.8$$

$$\Rightarrow 6.4 \times 100 + 6.4x = 876.8$$

$$\Rightarrow 6.4x = 876.8 - 640$$

$$\therefore x = \frac{236.8}{6.4} = 37$$

S60. Ans.(c)

Sol.

According to the question,

$$M_1 D_1 H_1 = M_2 D_2 H_2$$

$$\Rightarrow 60 \times 15 \times 8 = 72 \times 20 \times H_2$$

$$\therefore H_2 = \frac{60 \times 15 \times 8}{72 \times 20} = 5$$

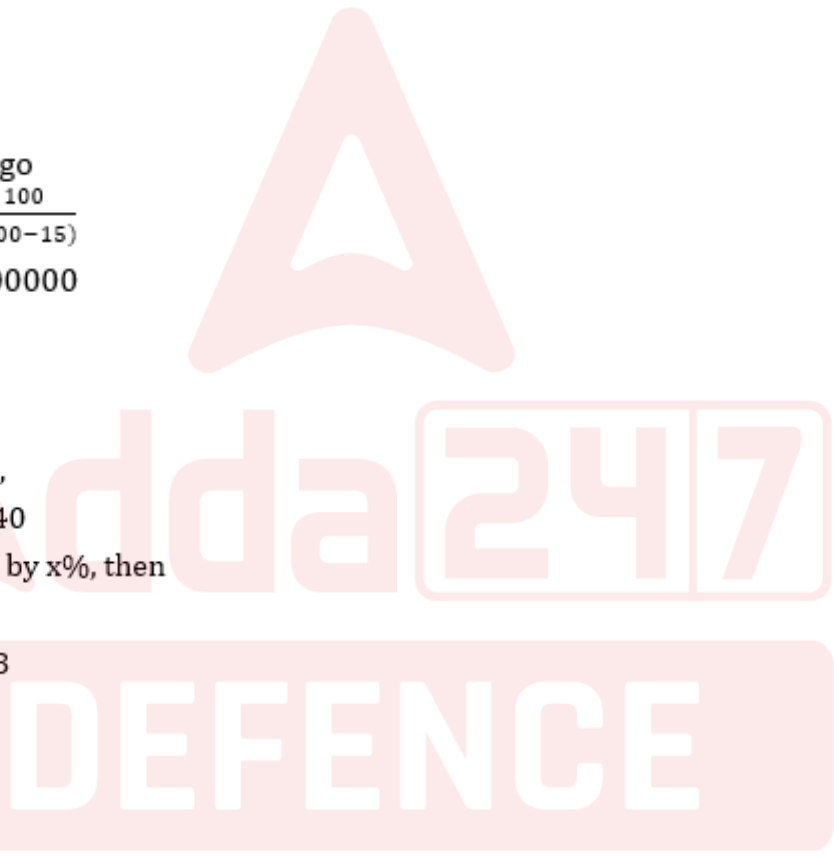
Hence, 72 boys should do a work in 20 days by working 5 hours a day.

S61. Ans.(b)

Sol.

Let the time taken to do a work by T = x days

$$\therefore \text{Time taken by S to do a work} = \frac{2x}{7} \text{ days}$$



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According to the question,

$$\frac{1}{x} + \frac{7}{2x} = \frac{1}{21} \Rightarrow \frac{1}{x} \left[ 1 + \frac{7}{2} \right] = \frac{1}{21}$$

$$\Rightarrow \frac{1}{x} = \frac{1}{21} \times \frac{2}{9}$$

$$\therefore x = 189$$

$$\text{Hence, time taken by S} = \frac{2 \times 189}{7 \times 2} = 27 \text{ days}$$

**S62. Ans.(c)**

**Sol.**

Total distance covered by girl

$$= 2 \times \left( 7 + \frac{30}{60} \right) = 2 \times \left( 7 + \frac{1}{2} \right)$$

$$= 2 \times \frac{15}{2} = 15 \text{ km}$$

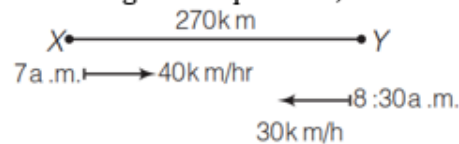
Hence, speed of a cycle

$$= \frac{15}{5} = 3 \text{ km/hr}$$

**S63. Ans.(c)**

**Sol.**

According to the question,



Let both the trains meet each other after  $t$  hours of 8:30 a.m., then Distance covered by first

$$\text{train in } 1\frac{1}{2} \text{ hours} = 40 \times \frac{3}{2} = 60 \text{ km}$$

$$\text{Remaining distance} = 270 - 60 = 210 \text{ km}$$

$$\therefore 40t + 30t = 210$$

$$\Rightarrow 70t = 210$$

$$\therefore t = \frac{210}{70} = 3 \text{ hours}$$

Hence, time of meeting both trains = 8 : 30 a.m. + 3 hours

= 11:30 a.m.

**S64. Ans.(a)**

**Sol.** Let the speeds of boat in downstream and upstream are  $u$  and  $v$  respectively, then

According to the question,

$$\frac{14}{v} + \frac{16}{u} = 9 \quad \dots(i) \times 10$$

$$\text{and } \frac{12}{v} + \frac{40}{u} = 11 \quad \dots(ii) \times 4$$

$$\therefore \frac{140}{v} + \frac{160}{u} = 90$$

$$\frac{48}{v} + \frac{160}{u} = 44$$

$$\begin{array}{r} \frac{48}{v} + \frac{160}{u} = 44 \\ - \quad \quad \quad - \\ \hline \frac{92}{v} = 46 \end{array}$$

$$\therefore v = 2 \text{ km/h and } u = 8 \text{ km/h}$$

Hence, the speed of boat in still water

$$= \frac{u+v}{2} = \frac{8+2}{2} = \frac{10}{2} = 5 \text{ km/h}$$

**S65. Ans.(c)**

**Sol.**

Area of trapezium field

$$= \frac{1}{2} (2.56 + 3.44) \times 1.44$$

$$= 4.32 \text{ square yard}$$

$$\text{Hence, the cost of ploughing the entire land} = 4.32 \times 1800 = \text{Rs. } 7776$$

**S66. Ans.(c)**

**Sol.**

Let the first diagonal of the rhombus =  $x$

The second diagonal of the rhombus

$$= x \times \frac{70}{100} = \frac{7x}{10}$$

According to the question,

Area of rhombus

$$= \frac{1}{2} \times x \times \frac{7x}{10} = \frac{7x^2}{20}$$

Hence, required ratio

$$= \frac{7x^2}{20} : x^2 = 7 : 20$$

**S67. Ans.(d)**

**Sol.** Let total paint and oil in the bucket are  $7x$  and  $5x$  respectively, then

According to the question,

$$\text{Remaining paint} = 7x \times \frac{24}{12x} = 14 \text{ litres}$$

$$\text{and oil} = 5x \times \frac{24}{12x} = 10 \text{ litres}$$

$$\therefore \frac{7x-14}{5x+24-10} = \frac{1}{1}$$

$$\Rightarrow 7x - 14 = 5x + 14$$

$$\Rightarrow 2x = 28$$

$$\therefore x = \frac{28}{2} = 14$$

$$\text{Hence, required paint} = 14 \times 7 = 98 \text{ litres}$$

**S68. Ans.(a)**

**Sol.**

Let the cost price of first shirt = Rs.  $x$

$$\therefore \text{Selling price of first shirt} = x \times \frac{130}{100} = \text{Rs. } \frac{13}{10}x$$

and selling price of second shirt = Rs.  $x$

$\therefore$  Cost price of second shirt

$$= \frac{x}{70} \times 100 = \text{Rs. } \frac{10}{7}x$$

$\therefore$   $\frac{\text{Selling price of first shirt}}{\text{Cost price of second shirt}}$

$$= \frac{\frac{13}{10}x}{\frac{10}{7}x} = \frac{13 \times 7}{10 \times 10} = \frac{91}{100}$$

$\therefore$  Required ratio = 91 : 100

**S69. Ans.(d)**

**Sol.**

According to the question,

$$\text{Total loss} = 60 \times \frac{50}{100} = 30$$

$$\text{and total profit} = 40 \times \frac{50}{100} = 20$$

$$\therefore \text{Equivalent loss percentage} = 30 - 20 = 10\%$$

**S70. Ans.(c)**

**Sol.** Total decrement in age =  $24 \times 1 = 24$  months = 2 years

$$\therefore \text{Age of new student} = 18 - 2 = 16 \text{ years}$$

**S71. Ans.(b)**

**Sol.** Age of a teacher

$$= 16 \times 10 - 19 \times 4 - 5 \times 10$$

$$= 160 - 76 - 50 = 34 \text{ years}$$

**S72. Ans.(a)**

**Sol.**

According to the question,

$$X : Y = 171000 : 243000$$

$$= 171 : 243 = 19 : 27$$

$$\therefore \text{Profit of X} = \text{Rs. } 3800$$

$$\therefore \text{Total profit} = \frac{3800}{19} \times (19 + 27)$$

$$= 200 \times 46 = \text{Rs. } 9200$$

**S73. Ans.(c)**

**Sol.**

$$\text{Rate 1st year} = 12\frac{1}{2}\% = \frac{1}{8}$$

$$\text{Rate for 2nd \& 3rd year} = 12\% \rightarrow \frac{3}{25}$$

Principal	Amount
8	9
25	28
<u>25</u>	<u>28</u>
5000	7056

$240000 \leftarrow 48$        $\times 48 \rightarrow 338688$

**S74. Ans.(b)**

**Sol.**

No. of student and amount donate by each student is equal

Let No. of Student = x

each Student donates = x

$$x^2 = 3481$$

$$x = \sqrt{3481}$$

$$x = 59$$

**S75. Ans.(a)**

**Sol.**

Let total capacity of pond = 16 unit  
On 42<sup>th</sup> day, water in pond = 16 unit  
On 41<sup>th</sup> day, water in pond = 8 unit  
On 40<sup>th</sup> day, water in pond = 4 unit  
On 39<sup>th</sup> day, water in pond = 2 unit  
On 38<sup>th</sup> day, water in pond = 1 unit  
On 38<sup>th</sup> day pond is filled with  $\frac{1}{16}$  of total capacity.

**S76. Ans.(c)**

**Sol.** Stable is a living place of horse. Similarly, sty is living place of pig.

**S77. Ans.(a)**

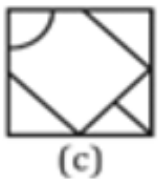
**Sol.** All except commander are ranks of army.

**S78. Ans.(b)**

**Sol.** Except triumph, tri stand for three in all the other terms.

**S79. Ans.(c)**

**Sol.**



this fig. will complete the pattern.

**S80. Ans.(c)**

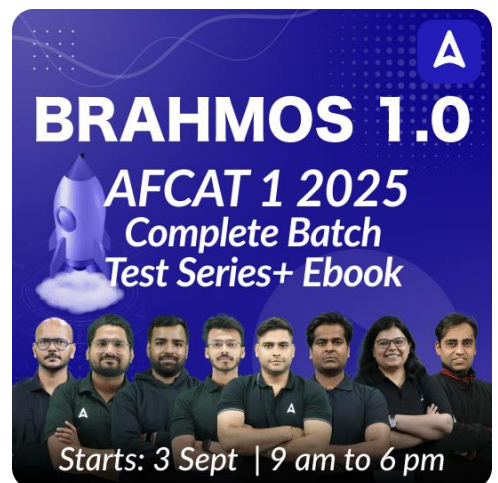
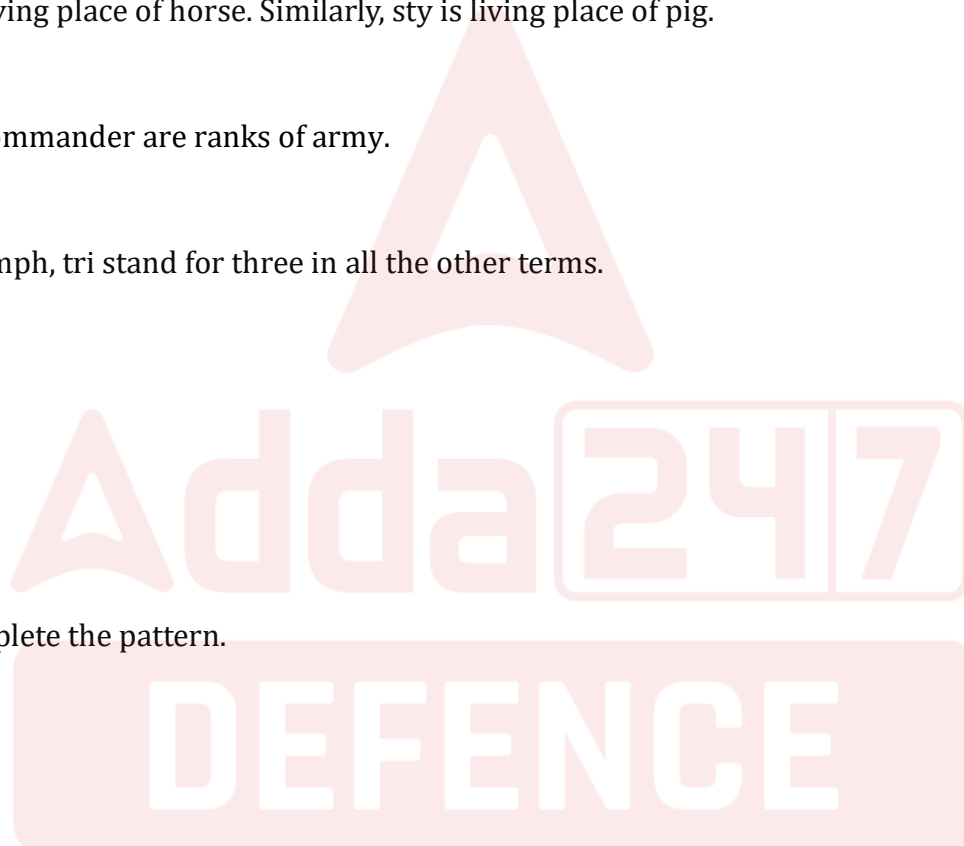
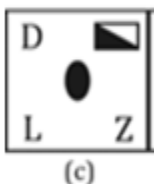
**Sol.**



This fig. will complete the Pattern.

**S81. Ans.(c)**

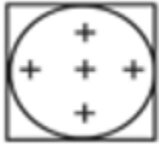
**Sol.**



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S82. Ans.(b)

Sol.



will complete the figure.

S83. Ans.(c)

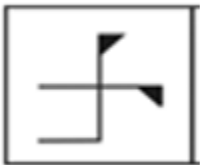
Sol.



this fig. is different from others because five corners and 4 sticks.

S84. Ans.(a)

Sol.



is different from others.

S85. Ans.(b)

Sol.



Mammal is a category of animals.

Cat is a specific type of mammal.

Parrot is a type of bird, not a mammal.

S86. Ans.(d)

Sol.



**World** is the largest entity, encompassing all continents and countries.

**Asia** is a continent within the **World**.

**Nepal** is a country located within the continent of **Asia**.



**S87. Ans.(a)**

**Sol.** Question figure is embedded in answer figure (a).

**S88. Ans.(d)**

**Sol.**

As,

$$4 \times 3 + 3 \times 7 + 7 \times 5 + 5 \times 4 \\ = 12 + 21 + 35 + 20 = 88$$

$$\text{and } 2 \times 5 + 5 \times 6 + 6 \times 8 + 8 \times 2 \\ = 10 + 30 + 48 + 16 = 104$$

Similarly,

$$7 \times 5 + 5 \times 8 + 8 \times 3 + 3 \times 7 \\ = 35 + 40 + 24 + 21 = \boxed{120}$$

**S89. Ans.(c)**

**Sol.** Let P's present age =  $9x$  yr

Q's present age =  $4x$  yr

According to the question,

$$9x - 4x = 20 \Rightarrow 5x = 20$$

$$x = 4$$

The sum of their ages after 10 yr

$$= 9x + 10 + 4x + 10$$

$$= 13x + 20 = 13 \times 4 + 20$$

$$= 52 + 20 = 72 \text{ yr}$$

**S90. Ans.(d)**

**Sol.**

$$80 + 2 \div 25 + 5 - 10 = ?$$

+	-	×	÷
×	+	÷	-

$$\Rightarrow 80 \times 2 - 25 \times 5 + 10 = ?$$

$$\Rightarrow 160 - 125 + 10 = ?$$

$$\Rightarrow 170 - 125 = ?$$

$$\therefore ? = \boxed{45}$$

**S91. Ans.(d)**

**Sol.**

$$72 \times 9 - 14 + 2 = ?$$

+	-	×	÷
×	+	÷	-

Changing signs according the question,

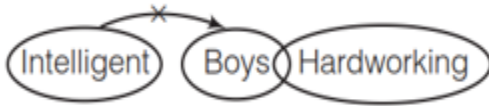
$$\Rightarrow 72 \div 9 + 14 \times 2 = ?$$

$$\Rightarrow 8 + 28 = ?$$

$$\therefore ? = \boxed{36}$$

**S92. Ans.(a)**

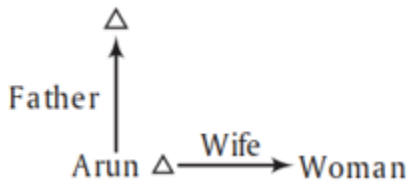
**Sol.** According to the statements,



Hence, only conclusion I is true

**S93. Ans.(a)**

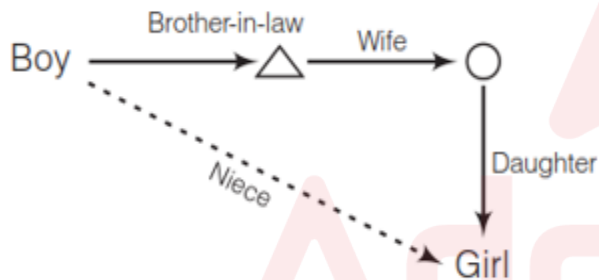
**Sol.** According to the question, the relation diagram is as follows



Hence, that woman is wife of Arun.

**S94. Ans.(d)**

**Sol.** According to the question, the relation diagram is as follows



Hence, the girl is the niece of the boy.

**S95. Ans.(b)**

**Sol.**



Total girls in the row = 74

Palak's position from the left end =  $27 + 7 = 34$  th

and Palak's position from the right end

=  $74 - 34 + 1 = 41$ th

**S96. Ans.(b)**

**Sol.** According to the question,

$P > Q$

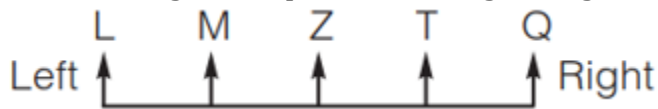
$R > -$

and  $S > T > P$

Hence, the marks of Q is minimum.

**S97. Ans.(d)**

**Sol.** According to the question, Sitting arrangement of students is as follows:



Hence, L is sitting first from the left.

**S98. Ans.(a)**

**Sol.** Number of days from 10th March to 25th September

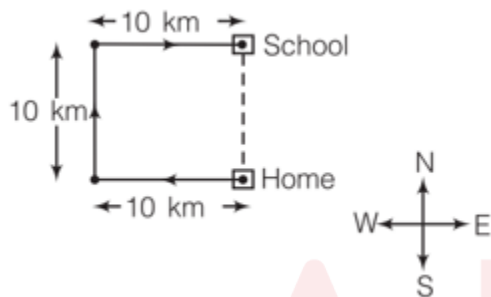
$$= 21 + 30 + 31 + 30 + 31 + 31 + 25 = 199$$

$$\text{Number of odd days} = 199 \div 7 = 3$$

$$\therefore \text{Required day} = \text{Friday} + 3 = \text{Monday}$$

**S99. Ans.(a)**

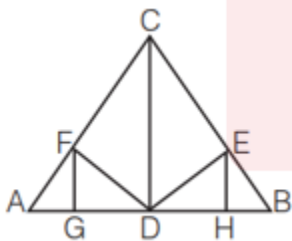
**Sol.** According to the question,



Hence, Kamal is in 10 km North from his home.

**S100. Ans.(b)**

**Sol.**



Triangles are as follow

- |                     |                     |                    |
|---------------------|---------------------|--------------------|
| 1. $\triangle AFG$  | 2. $\triangle FGD$  | 3. $\triangle ADF$ |
| 4. $\triangle EBH$  | 5. $\triangle EHD$  | 6. $\triangle BED$ |
| 7. $\triangle FCD$  | 8. $\triangle CDE$  | 9. $\triangle ACD$ |
| 10. $\triangle BDC$ | 11. $\triangle ABC$ |                    |

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