

AFCAT

Solved Paper

2013

Directions (Q. Nos. 1-5) *Read the following passage carefully and answer the questions given below.*

Passage

We shall go on to the end, we shall fight in France, we shall fight on the seas and oceans, we shall fight with the growing confidence and strength in the air, we shall defend our island whatever the cost may be, we shall fight on the beaches, we shall fight on the landing grounds we shall fight in the fields and in the streets, we shall fight in the hills. We shall never surrender and even if this island or a large part of it were subjugated and starving, then our empire beyond the seas would carry on the struggle, until the New World steps forth to the rescue and the liberation of the old.

1. On the basis of the passage which of the following statements may be said to be correct?
(a) The speaker is encouraging his men for the conquest of France (b) The speaker is an aggressive and maniacal war-monger
(c) The speaker is not satisfied with the conquest of the island (d) The speaker is a patriot urging the defence of his motherland
2. The speaker in the passage wants to go on fighting because
(a) he is a raving lunatic (b) he is in a state of utter despair
(c) he expects help from other quarters (d) he is the leader of a suicide squad
3. Which of the following pair of the phrases helps best to bring out the intention of the speaker?
(a) "Go on to the end", "shall never surrender" (b) "Growing confidence", "subjugated and starving"
(c) "Subjugated and starving", "fighting on the landing ground" (d) "Fighting in the streets", "subjugated and starving"
4. The passage consists of repetitive patterns in syntax and vocabulary. The effect of this style is that it
(a) reveals the speaker's defects in giving a speech (b) produces the impression of bad poetry
(c) conveys the speaker's helpless situation (d) reinforces the speaker's basic intention
5. The tone of the speaker is
(a) pleading and urging (b) inspiring and encouraging (c) discouraging and gloomy (d) menacing and bullying

Directions (Q. Nos. 6-8) *In each of the following, choose the word most similar in meaning to the word given in capitals.*

6. MEDDLE

- (a) Disregard (b) Overlook (c) Interfere (d) Free

7. ABJURE

- (a) Renounce (b) Run off secretly (c) Abide (d) Discuss

8. ESTRANGE

- (a) Endanger (b) To become puzzling (c) Miscalculate (d) Alienate

Directions (Q. Nos. 9 and 10) *In each of the following, choose the word most nearly opposite in meaning to the word given in capitals.*

9. DEROGATORY

- (a) Conferred (b) Immediate (c) Praising (d) Private

10. WANE

- (a) Widen (b) Poor (c) Swell (d) Tight

Directions (Q. Nos. 11-15) *In each of the following questions, find out which part has an error?*

11. The police has (a)/arrested the thief (b)/who broke into my house (c)/last night. (d)
12. The man who (a)/they thought to be (b)/a gentleman turned out (c)/to be a rogue. (d)
13. I told him on his face (a)/that he could not hope (b)/to pass the stringent (c)/medical examination of the Services Selection Board. (d)
14. Mohan is one of those boys (a)/who has expressed (b)/willingness for joining (c)/the educational tour. (d)
15. I may spend (a)/this summer vacations (b)/ with one of my friends (c)/in the back waters of Kerala. (d)

Directions (Q. Nos. 16-20) *Pick up the most effective word from the given words to fill in the blanks to make the sentence meaningfully complete.*

16. According to the weather it is going to be cloudy today.
(a) announcement (b) indication
(c) prediction (d) forecast
17. The villagers the murder of their leader by burning the police van.
(a) protested (b) avenged
(c) mourned (d) consoled
18. While on a routine flight, the aircraft was hit by a missile and into flames.
(a) fired (b) burst (c) caught (d) engulfed
19. Hari got the company car for a price as he was the senior most employee in the company.
(a) reduced (b) discounted
(c) fixed (d) nominal
20. The unruly behaviour of the soldiers their commander.
(a) clashed (b) aggrieved
(c) incensed (d) impeached

Directions (Q. Nos. 21-40) *Choose the correct answer.*

21. Who accorded the title 'Mahatma' to MK Gandhi?
(a) Sardar Patel (b) Jawaharlal Nehru
(c) Sarojini Naidu (d) Rabindranath Tagore
22. The Non-Cooperation Movement started in which year?
(a) 1900 (b) 1921 (c) 1940 (d) 1935
23. During the Middle Ages education was confined only to
(a) kshatriyas (b) brahmins
(c) peasants (d) shudras

24. Who among the following was responsible for the spread of Buddhism in Sri Lanka?
(a) Ashoka
(b) Mahavira
(c) Parsavanath
(d) Chandra Gupta Maurya
25. The elements which have low value of ionization potential are strong
(a) oxidising agents
(b) reducing agents
(c) oxidising and reducing agents depending upon the reactants
(d) None of the above
26. Wayne Rooney, the famous footballer, hails from which country?
(a) Italy (b) Brazil (c) Argentina (d) England
27. The official song 'WakaWaka' of FIFA World Cup held in the year 2010 at South Africa was sung by which popular singer?
(a) Madonna (b) Destiny child
(c) Shakira (d) Rehana
28. In the year 2011, the ace badminton player Saina Nehwal was honoured with which sports award?
(a) Dronacharya Award
(b) Rajiv Gandhi Khel Ratna Award
(c) Arjun Award
(d) None of the above
29. Term 'Visible Horizon' in astronomy is defined as
(a) the circle of contact of the Earth and the cone of visual rays passing through the meridian of the place
(b) the circle of contact of the Earth and the cone of visual rays not passing through the meridian of the place
(c) the circle of contact of the Earth and the cone of visual rays passing through the point of observation
(d) the circle of contact of the Earth and the cone of visual rays not passing through the point of observation
30. NREGA stands for
(a) National Revenue Engagement Guarantee Association
(b) National Revenue Employment Guarantee Act
(c) National Rural Employment Guarantee Association
(d) National Rural Employment Guarantee Act
31. River Satluj originates from
(a) Northern slopes of the Kailash range
(b) Spring at Verinag
(c) Rakas lake
(d) Amarkantak plateau
32. Limonitic ore is the ore of which metal?
(a) Iron (b) Aluminium (c) Zinc (d) Cobalt
33. Black revolution relates to which of the following?
(a) Self-dependence in foodgrains production
(b) Self-dependence in milk production
(c) Self-dependence in petroleum/crude oil
(d) None of the above

34. Karrar is the unmanned bomber aircraft of
 (a) Iraq (b) Iran
 (c) Turkey (d) Pakistan
35. Who is the author of book 'Keeping the Faith: Memoirs of a Parliamentarian'?
 (a) David Omand (b) Raja Shehadeh
 (c) Raghav Bahl (d) Somnath Chatterjee
36. is a thyroid hormone which controls the balance of calcium in the body.
 (a) Calcitonin (b) Thyroxine
 (c) Calmodulin (d) All of these
37. The cell wall in plants is interrupted by narrow pores carrying fine strands of cytoplasm which interlink the contents of the cells. These strands are called
 (a) plasmahole (b) microvilli
 (c) plasmodesmata (d) plasmalemma
38. Who is the cricketer bestowed with an honorary commission in the Territorial Army?
 (a) Sachin Tendulkar (b) Kapil Dev
 (c) Virendra Sehwag (d) Harbhajan Singh
39. The transport phenomenon occurs only in state of a gas and is
 (a) non-equilibrium, irreversible
 (b) non-equilibrium, reversible
 (c) equilibrium, irreversible
 (d) equilibrium, reversible
40. Which of the following compounds form nitrites with nitrous acid?
 (a) Primary amines (b) Secondary amines
 (c) Tertiary amines (d) All of these
41. The number whose square is equal to the difference of the squares of 37 and 23 is
 (a) 45.09 (b) 28.98 (c) 47.09 (d) 28
42. The average age of 8 men is increased by 4 yr when one of them whose ages is 30 yr is replaced by a new man. What is the age of new man?
 (a) 55 yr (b) 62 yr (c) 42 yr (d) 69 yr
43. A vessel, full of water, weight 24 kg. When the vessel is $\frac{1}{4}$ full, it weight 9 kg. Find the weight of empty vessel.
 (a) 4 kg (b) 5 kg (c) 8 kg (d) 3 kg
44. If $a - b = 4$ and $ab = 45$, find the value of $a^3 - b^3$.
 (a) 604 (b) 370 (c) 253 (d) 199
45. If $a / (a + b) = 15 / 21$, what is $(a + b) / (a - b)$ equal to?
 (a) 13/9 (b) 23/11
 (c) 14/5 (d) 21/9
46. $\frac{(798 + 579)^2 - (798 - 579)^2}{(798 \times 579)}$ is equal to
 (a) 2 (b) 6 (c) 4 (d) 8
47. A man's average monthly expenditure for the first 4 months of the year was ₹ 231.25. For the next 5 months, the average monthly expenditure was ₹ 22.75 more than what it was during the first 4 months. If the person spent ₹ 605 in all during the remaining 3 months of the year, find what percentage of his annual income of ₹ 3500 did he save in the year?
 (a) 10 (b) 15 (c) 20 (d) 25
48. The average age of students of a class is 15.8 yr. The average age of boys in the class is 16.4 yr and that of the girls is 15.4 yr. The ratio of the number of boys to the number of girls in the class is
 (a) 1 : 2 (b) 2 : 3 (c) 3 : 4 (d) 3 : 5
49. 18 buckets of water fill a tank when the capacity of each bucket is 18 L. How many buckets will be needed to fill the same tank, if the capacity of the bucket is 12 L?
 (a) 12 (b) 13.5
 (c) 24 (d) Cannot be determined due to insufficient data
50. Srinivasan invests two equal amounts in two banks giving 8% and 12% rate of interest respectively. At the end of year, the interest earned is ₹ 1500. Find the sum invested in each.
 (a) ₹ 8500 (b) ₹ 15000 (c) ₹ 7500 (d) ₹ 17000
51. The simple interest accrued on a sum of money at the end of 4 yr is $\frac{1}{5}$ th of its principal. What is the rate of interest per annum?
 (a) 4% (b) 5%
 (c) 6% (d) Inadequate data
52. A sum of ₹ 2600 is lent out into parts, one at 9% and another at 7%. If the total annual income is ₹ 206, find the money lent at 7%.
 (a) ₹ 1400 (b) ₹ 900 (c) ₹ 1600 (d) ₹ 1200
53. In an election between two candidates, 70% of the voters cast their votes. Out of which 2% of the votes were declared invalid. A candidate got 7203 votes which was 60% of the total valid votes. Find the total number of voters enrolled in that election.
 (a) 18050 (b) 17500 (c) 17000 (d) 7203
54. If the price of kerosene be raised by 11%, find by how much per cent a house holder must reduce his consumption of kerosene, so as not to increase his expenditure?
 (a) 11 (b) 9.9 (c) 11.09 (d) 8.25
55. 75 pupils from a school appeared for an examination and 80% of them passed. Another school entered 10 more pupils than the first school and 5 pupils less than the first school passed. The pass percentage of in the second school was
 (a) 75 (b) 84 (c) 72 (d) 64.7

56. Divide ₹ 80 in the proportion of 3 : 6 : 7.
 (a) ₹ 10, ₹ 35, ₹ 40 (b) ₹ 15, ₹ 30, ₹ 35
 (c) ₹ 15, ₹ 35, ₹ 30 (d) ₹ 10, ₹ 40, ₹ 35
57. Calculate the amount on ₹ 1875 for 2 yr at 4% per annum, compounded yearly.
 (a) ₹ 676 (b) ₹ 776 (c) ₹ 1778 (d) ₹ 2028
58. If x varies as y and $x = 8$ when $y = 15$, then the value of x when $y = 10$ is
 (a) 5 (b) $15/8$ (c) $8/15$ (d) $16/3$

59. In a mixture of 60 L, the ratio of milk and water is 2 : 1. What amount of water must be added to make the ratio of milk and water as 1 : 2?
 (a) 42 L (b) 56 L (c) 60 L (d) 77 L
60. A sum of ₹ 10000 is lent partly at 6% and the remaining at 10% per annum. If the yearly interest on the average is 9.2%, the money lent at 10% is
 (a) ₹ 8000 (b) ₹ 8500
 (c) ₹ 5000 (d) ₹ 2000

Directions (Q. Nos. 61-65) Choose the word which is unlike the other words in the group.

61. (a) Garo (b) Khasi (c) Kangra (d) Jayantia
 62. (a) Virgo (b) Pisces (c) Cancer (d) Orion
 63. (a) Shoulder (b) Foot (c) Finger (d) Elbow
 64. (a) Canoe (b) Dingy (c) Yacht (d) Igloo
 65. (a) Inn (b) Club (c) Motel (d) Hostel

Directions (Q. Nos. 66-70) The following questions consist of two words that have a certain relationship to each other, followed by four alternatives. Select the best alternative that has the same relationship as the original pair of words.

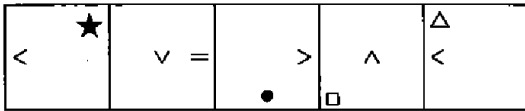
66. Liquor : Drink :: ?
 (a) Bread : Butter (b) Tea : Beverage
 (c) Sniff : Inhale (d) Water : Sip
67. Evaporation : Cloud :: ?
 (a) Mountain : Snow
 (b) Book : Pages
 (c) Pressure : Atmosphere
 (d) Tension : Breakdown
68. Barrel : Vial :: ?
 (a) Book : Pamphlet (b) Book : Reader
 (c) Brochure : Compiler (d) Length : Height
69. Cream : Cosmetics :: ?
 (a) Tiger : Forest (b) Mountain : Valley
 (c) Magazine : Editor (d) Teak : Wood
70. Carnivore : Herbivore :: ?
 (a) Flesh : Plant (b) Horse : Lion
 (c) Camel : Giraffe (d) Animal : Bird

Directions (Q. Nos. 71-80) Three words in **bold letters** are given in each question, which have something in common among themselves. Out of the four given alternatives, choose the most appropriate description about these three words.

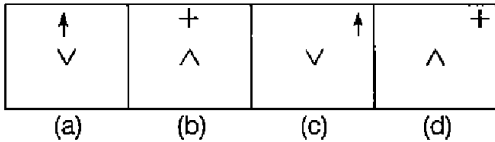
71. **Hamlet** : **Macbeth** : **Faustus**
 (a) They were Princes
 (b) They are plays by Shakespeare
 (c) They are characters from various dramas
 (d) They were romantic heroes
72. **Vesuvius** : **Etna** : **Kilimanjaro**
 (a) These are sites of volcanoes
 (b) These are island countries
 (c) These are hills of Italy
 (d) These lie in polar region
73. **Knot** : **Watt** : **Fathom**
 (a) The terms are used by sailors
 (b) The terms are used for installing electricity
 (c) The terms are connected with rope
 (d) They are units of measurement
74. **Barauni** : **Digboi** : **Ankleshwar**
 (a) They are famous for oil fields
 (b) They are famous religious places
 (c) They are tourist places of South India
 (d) They are famous for handlooms
75. **Knight** : **Rook** : **Bishop**
 (a) These are missionaries (b) These are churchmen
 (c) These are chessmen (d) These are ranks of military
76. **Abhi Bhattacharya** : **Utpal Dutt** : **Satyajit Ray**
 (a) They are character actors
 (b) They are directors of Bengali movies
 (c) They are famous poets and writers
 (d) These personalities belong to Bengal
77. **Voodoo** : **Sorcery** : **Necromancy**
 (a) They are ancient arts found in sculptures
 (b) They are terms connected with black magic
 (c) They are ancient scripts
 (d) They are means of communication of pre-historic age
78. **Rourkela** : **Bokaro** : **Durgapur**
 (a) They are steel plants
 (b) They have coal mines
 (c) They have atomic power plants
 (d) They are on the sea coast
79. **Spinach** : **Fenugreek** : **Celery**
 (a) These are cactus plants (b) These are wild plants
 (c) These are wild flowers (d) These are leafy vegetables
80. **Yeats** : **Ghalib** : **Kabir**
 (a) They were social reformers (b) They were famous poets
 (c) They were saints (d) They were yoga instructors

Directions (Q. Nos. 81-85) There are two sets of figures namely the question figures containing five figures and answer figures containing four figures. You have to select one figure from the answer figures which will continue the same series as given in the question figures.

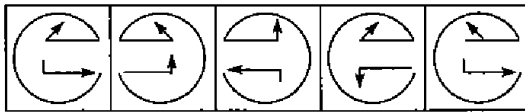
81. Question Figures



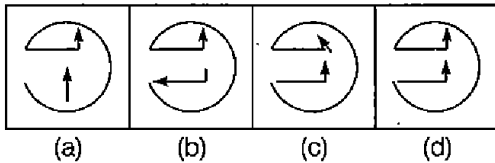
Answer Figures



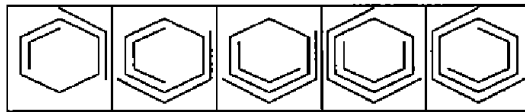
82. Question Figures



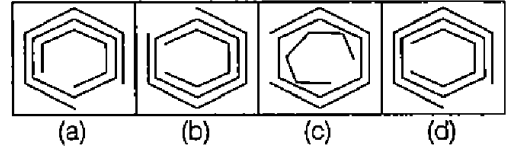
Answer Figures



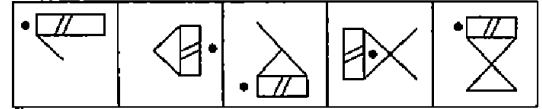
83. Question Figures



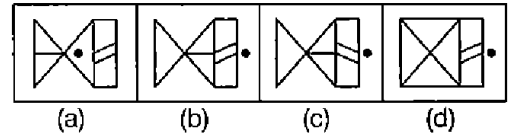
Answer Figures



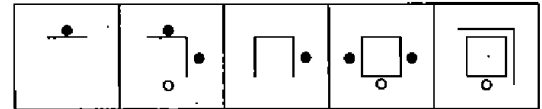
84. Question Figures



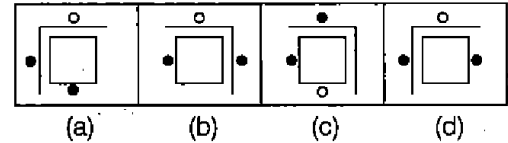
Answer Figures



85. Question Figures

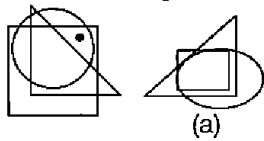


Answer Figures

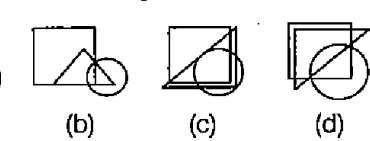


Directions (Q. Nos. 86-90) The following situations involve a cluster of three or more geometrical figures, having one or more dots placed at any point inside the cluster. This cluster is followed by a set of four alternative figures each composed of a cluster of the same type of figures. Now, for each dot we have to observe the region in which it is enclosed i.e., in which of the geometrical figure this region is common. From amongst the figures marked (a), (b), (c) and (d). Select the figure which satisfies the same conditions of placement of the dot as in question figure.

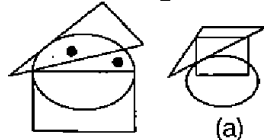
86. Question Figure



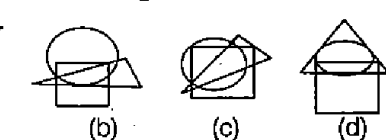
Answer Figures



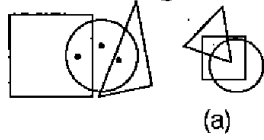
87. Question Figure



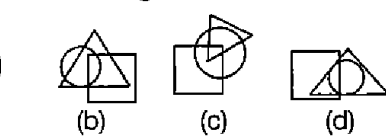
Answer Figures



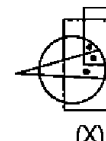
88. Question Figure



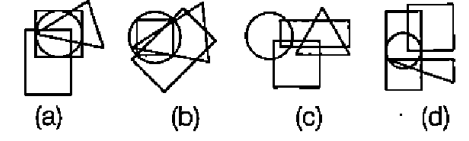
Answer Figures



89. Question Figure



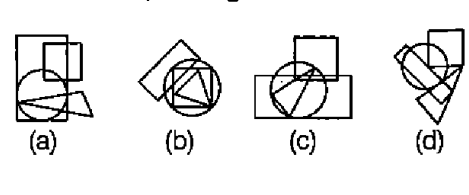
Answer Figures



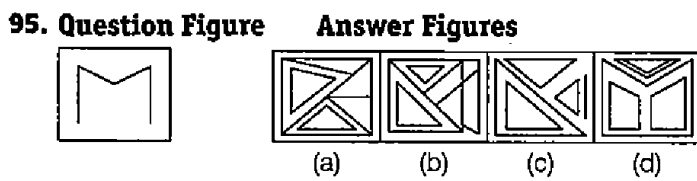
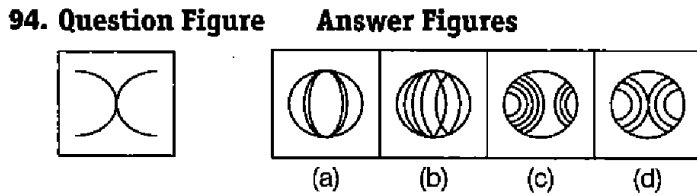
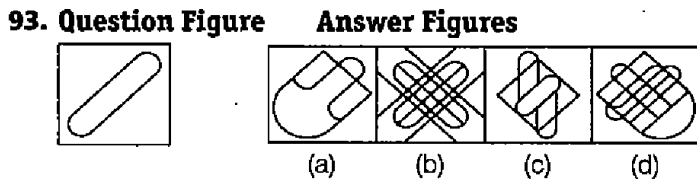
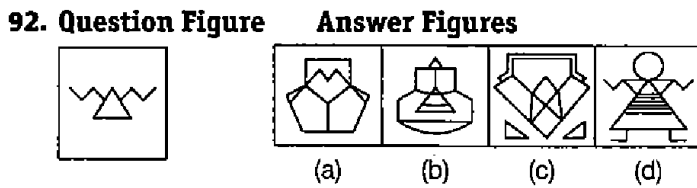
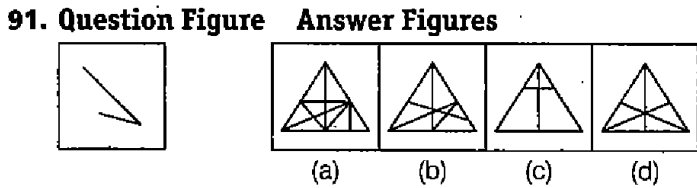
90. Question Figure



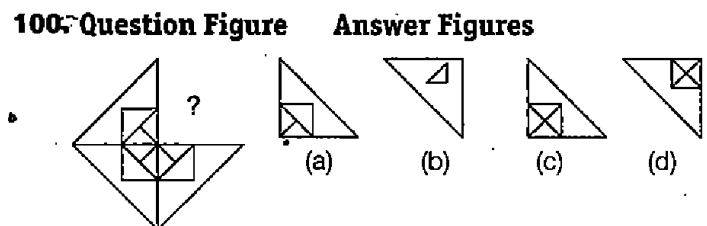
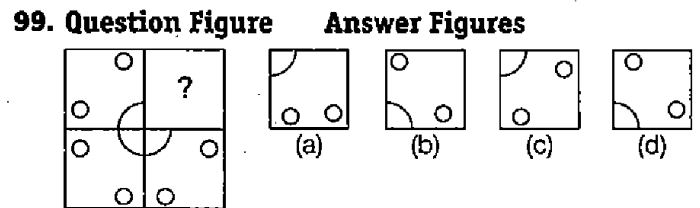
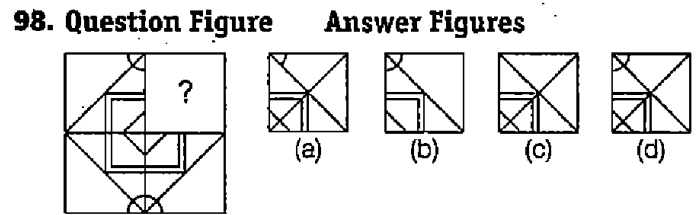
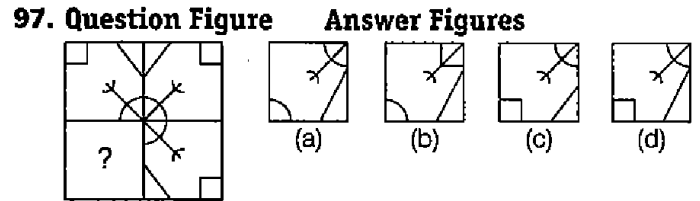
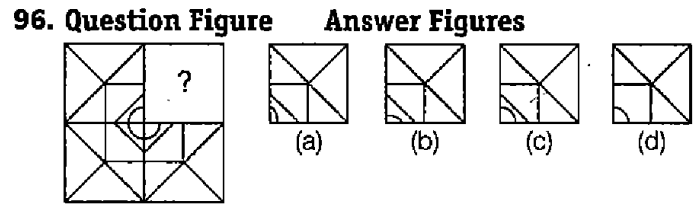
Answer Figures



Directions (Q. Nos. 91-95) In this portion, a figure is given as question figure followed by four answer figures. The answer figure is embedded or hidden in one of the answer figures (a), (b), (c) and (d). Select the alternative that carries the correct figure which clearly shows the embedded portion of the question figure.



Directions (Q. Nos. 96 -100) In each of the following questions, a part of the figure is missing. Find out from the given options (a), (b), (c) and (d), the right figure to fit in the missing question figure.



Answers

- | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| 1. (d) | 2. (b) | 3. (a) | 4. (d) | 5. (b) | 6. (c) | 7. (a) | 8. (d) | 9. (c) | 10. (c) |
| 11. (a) | 12. (d) | 13. (b) | 14. (b) | 15. (b) | 16. (d) | 17. (a) | 18. (d) | 19. (b) | 20. (c) |
| 21. (d) | 22. (b) | 23. (b) | 24. (a) | 25. (b) | 26. (d) | 27. (c) | 28. (b) | 29. (c) | 30. (d) |
| 31. (c) | 32. (a) | 33. (c) | 34. (b) | 35. (d) | 36. (d) | 37. (c) | 38. (b) | 39. (b) | 40. (d) |
| 41. (b) | 42. (b) | 43. (a) | 44. (a) | 45. (d) | 46. (c) | 47. (c) | 48. (b) | 49. (a) | 50. (c) |
| 51. (b) | 52. (a) | 53. (b) | 54. (b) | 55. (d) | 56. (b) | 57. (d) | 58. (d) | 59. (c) | 60. (d) |
| 61. (c) | 62. (d) | 63. (c) | 64. (d) | 65. (b) | 66. (d) | 67. (d) | 68. (a) | 69. (d) | 70. (a) |
| 71. (c) | 72. (a) | 73. (d) | 74. (a) | 75. (c) | 76. (d) | 77. (b) | 78. (a) | 79. (d) | 80. (b) |
| 81. (a) | 82. (d) | 83. (d) | 84. (b) | 85. (a) | 86. (d) | 87. (b) | 88. (c) | 89. (a) | 90. (d) |
| 91. (d) | 92. (d) | 93. (b) | 94. (d) | 95. (d) | 96. (c) | 97. (c) | 98. (b) | 99. (b) | 100. (a) |

Hints and Solutions

41. Let the number = x

$$\begin{aligned}x^2 &= (37)^2 - (23)^2 = (37 + 23)(37 - 23) \\ \Rightarrow x^2 &= 60 \times 14 \\ \Rightarrow x^2 &= 840 \Rightarrow x = \sqrt{840} = 28.98\end{aligned}$$

2	840	28.98
	4	
48	440	
	384	
569	5600	
	5121	
	47900	
	46304	
	1596	

42. Let the average age of 8 men be x yr.

$$\text{Sum of ages of 8 men} = 8x \text{ yr}$$

$$\text{Age of 7 men} + 30 \text{ yr} = 8x \text{ yr}$$

In the second case,

$$\text{Average age of 8 men} = (x + 4) \text{ yr}$$

$$\text{Total age of 8 men} = 8(x + 4)$$

$$\Rightarrow \text{Age of 7 men} + \text{Age of new man} = 8x + 32$$

Subtract Eq. (i) from Eq. (ii), we get

$$\begin{aligned}7 \text{ men} + \text{Age of new man} - 7 \text{ men} - 30 \\ = 8x + 32 - 8x\end{aligned}$$

$$\therefore \text{Age of new man} = 32 + 30 = 62 \text{ yr}$$

43. Let weight of empty vessel = y kg

According to the question,

$$x + y = 24$$

$$\frac{1}{4}(x) + y = 9$$

$$x + y = 24$$

$$x + 4y = 36$$

Solving Eqs. (i) and (ii), we get $y = 4$ and $x = 20$

\therefore Weight of empty vessel = 4 kg

44. We have, $a - b = 4$ and $ab = 45$

$$\begin{aligned}\text{Then, value of } a^3 - b^3 &= (a - b)^3 + 3ab(a + b) \\ &= (4)^3 + 3(45)(4) \\ &= 64 + 540 = 604\end{aligned}$$

$$45. \frac{a}{a+b} = \frac{15}{21} \Rightarrow 21a = 15a + 15b$$

$$\Rightarrow 6a = 15b$$

$$\Rightarrow a = \frac{15b}{6}$$

$$\begin{aligned}\Rightarrow \frac{a+b}{a-b} &= \frac{\frac{15b}{6} + b}{\frac{15b}{6} - b} = \frac{15b + 6b}{15b - 6b} \\ &= \frac{21b}{9b} = \frac{7}{3}\end{aligned}$$

46. Let $798 = a$ and $579 = b$

$$\begin{aligned}\therefore \frac{(a+b)^2 - (a-b)^2}{a \times b} \\ = \frac{a^2 + 2ab + b^2 - a^2 - b^2 + 2ab}{ab} \\ = \frac{4ab}{ab} = 4\end{aligned}$$

47. Expenditure for the first 4 months

$$= 4 \times 231.25 = ₹ 925$$

Expenditure for the next 5 months

$$= 5 \times 254 = ₹ 1270$$

Expenditure remaining 3 months = ₹ 605

$$\begin{aligned}\text{Total expenditure} &= 925 + 1270 + 605 \\ &= ₹ 2800\end{aligned}$$

$$\text{Saving} = 3500 - 2800 = ₹ 700$$

$$\text{Percentage saving} = \frac{700}{3500} \times 100 = 20\%$$

48. Let number of boys = x

and number of girls = y

Total age of the students = $158(x + y)$ yr

Total age of boys = $16.4x$ yr

and total age of girls = $15.4y$ yr

$$\therefore 16.4x + 15.4y = 158(x + y)$$

$$\Rightarrow 16.4x + 15.4y = 158x + 15.8y$$

$$\Rightarrow 16.4x - 15.8x = 15.8y - 15.4y$$

$$6x = .4y \Rightarrow 6x = 4y$$

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

$$\Rightarrow x : y = 2 : 3$$

Hence, ratio of boys : girls = 2 : 3

$$49. \text{Number of bucket} = \frac{18 \times 8}{12} = 12$$

50. Let $P = ₹ 100$

$$\text{In 1st case, SI} = \frac{100 \times 8 \times 1}{100} = ₹ 8$$

$$\text{In 2nd case, SI} = \frac{100 \times 12 \times 1}{100} = ₹ 12$$

Total interest = $8 + 12 = ₹ 20$

When interest ₹ 20, then $P = ₹ 100$

$$\begin{aligned}\text{When interest ₹ 1500, then } P &= \frac{100}{20} \times 1500 \\ &= ₹ 7500\end{aligned}$$

51. Let $P = ₹ 100$

$$\text{SI} = \frac{P \times r \times t}{100} = \frac{100 \times 4 \times r}{100} = 4r$$

$$\Rightarrow 4r = \frac{1}{5}(P) = \frac{1}{5} \times 100 = 20$$

$$\Rightarrow r = \frac{20}{4} = 5\%$$

\therefore Rate of interest = 5% per annum

52. Let

$$\begin{aligned} I \\ P &= ₹ x \\ r &= 9\% \\ t &= 1 \text{ yr} \end{aligned}$$

$$\begin{aligned} SI &= \frac{P \times r \times t}{100} \\ &= \frac{x \times 9 \times 1}{100} \\ SI &= ₹ \frac{9x}{100} \end{aligned}$$

$$\begin{aligned} II \\ P &= ₹ (2600 - x) \\ r &= 7\% \\ t &= 1 \text{ yr} \end{aligned}$$

$$\begin{aligned} SI &= \frac{P \times r \times t}{100} \\ &= \frac{(2600 - x) \times 7 \times 1}{100} \end{aligned}$$

According to the question,

$$\frac{9x}{100} + \frac{(2600 - x)7}{100} = 206$$

$$\Rightarrow 9x + 2600 + 7 - 7x = 206 \times 100$$

$$\Rightarrow 2x + 18200 = 20600$$

$$\Rightarrow 2x = 20600 - 18200 = 2400$$

$$\Rightarrow x = \frac{2400}{2} = 1200$$

$$\therefore \text{Money lent at } 7\% = 2600 - 1200 = ₹ 1400$$

53. Let total number of voters = x

Number of votes polled = 70% of x

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

$$\text{Number of invalid votes} = \frac{7x}{10} \times \frac{2}{100} = \frac{7x}{500}$$

$$\begin{aligned} \text{Number of valid votes} &= \frac{7x}{10} - \frac{7x}{500} \\ &= \frac{350x - 7x}{500} = \frac{343x}{500} \end{aligned}$$

According to the question,

$$\frac{343x}{500} \times \frac{60}{100} = 7203$$

$$\Rightarrow x = \frac{500 \times 100 \times 7203}{343 \times 60} = 17500$$

$$\therefore \text{Total number of voters} = 17500$$

54. Enhanced price of kerosene is $\frac{111}{100}$ of the original price.

$$\text{Hence, the consumption should become } \frac{100}{111}$$

of the original consumption, so as to keep the expenditure at the previous level.

$$\therefore \text{Reduction in consumption} = \left[1 - \frac{100}{111} \right] \text{ of original}$$

consumption

$$= \frac{11}{111} \text{ of original consumption}$$

$$\therefore \text{Required percentage} = \frac{11}{111} \times 100$$

$$= \frac{1100}{111} = 9.9\%$$

55. Number of passed students = 80% of 75

$$= \frac{80}{100} \times 75 = 60$$

$$\text{Now, total number of pupils} = 75 + 10 = 85$$

$$\text{Number of passed students} = 60 - 5 = 55$$

$$\text{Percentage pass} = \frac{55}{85} \times 100 = \frac{1100}{17} = 64.7\% = 64\%$$

56. 3 : 6 : 7 $\therefore 3 + 6 + 7 = 16$

$$\frac{3}{16} \times ₹ 80 = ₹ 15$$

$$\frac{6}{16} \times ₹ 80 = ₹ 30$$

$$\frac{7}{16} \times ₹ 80 = ₹ 35$$

$$\begin{aligned} 57. A &= P \left(1 + \frac{r}{100} \right)^t = 1875 \left(1 + \frac{4}{100} \right)^2 \\ &= 1875 \times \frac{26}{25} \times \frac{26}{25} = 3 \times 676 = ₹ 2028 \end{aligned}$$

58. $\therefore x \propto y$

$$\text{When } y = 15, \text{ then } x = 8$$

$$\text{When } y = 10, \text{ then } x = \frac{8}{15} \times 10 \Rightarrow x = \frac{16}{3}$$

59. \therefore Milk : Water = 2 : 1

$$\text{Amount of milk} = \frac{2}{3} \times 60 = 40 \text{ L}$$

$$\text{Amount of water} = \frac{1}{3} \times 60 = 20 \text{ L}$$

Let x L water be added.

$$\therefore \frac{40}{20 + x} = \frac{1}{2}$$

$$\Rightarrow 20 + x = 40 \times 2 = 80$$

$$\Rightarrow x = 80 - 20 = 60$$

Hence, 60 L of water should be added to make the ratio of milk and water as 1 : 2.

81. The symbol ('<') moves along the x-axis and rotating along anti-clockwise direction. Another symbol is rotating in clockwise direction in a way $45^\circ, 90^\circ, 45^\circ, 90^\circ, \dots$ and so on. And in every move, new symbol replaces previous one.

83. Number of sides inside incomplete symbol is increased by one and resultant symbol is shifted anti-clockwise by one place in every alternate figure. While in outer incomplete symbol increases in number of sides and shifting towards clockwise by one position taking place simultaneously and alternatively.

86. In, the question figure dot confined in the common region of circle and rectangle only. Hence, correct option is (d).

87. One dot is confined in the common region of triangle and circle and another one is inside circle only.

88. Three dots are in circle-rectangle, circle-triangle and circle respectively. Figure given in option (c) satisfies the same conditions of placement of the dots.



Right figure to fit in the question figure will be like this. Correct the figure given in option (b).