ANSWER SET - 41

01. (1) **02.** (3) **03.** (1) **04.** (4) **05.** (3)
06. (2) **07.** (2) **08.** (1) **09.** (1) **10.** (3)
11. (4) **12.** (3) **13.** (3) **14.** (1) **15.** (3)
16. (3) **17.** (3) **18.** (1) **19.** (4) **20.** (4)
21. (2) **22.** (1) **23.** (1) **24.** (1) **25.** (2)
26. (1) **27.** (3) **28.** (4) **29.** (3) **30.** (1)
31. (1) **32.** (1) **33.** (2) **34.** (4) **35.** (2)
36. (2) **37.** (3) **38.** (1) **39.** (2) **40.** (3)
41. (2) **42.** (2) **43.** (3) **44.** (4) **45.** (4)
46. (2) **47.** (3) **48.** (3) **49.** (3) **50.** (1)
51. (1) **52.** (4) **53.** (3) **54.** (1) **55.** (2)
56. (2) **57.** (1) **58.** (4) **59.** (3) **60.** (1)
61. (2) **62.** (4) **63.** (3) **64.** (3) **65.** (4)
66. (3) **67.** (1) **68.** (2) **69.** (2) **70.** (4)
71 (3) **72.** (4) **73.** (4) **74.** (4) **75.** (4)
76. (1) **77.** (3) **78.** (2) **79.** (2) **80.** (4)
81. (3) **82.** (3) **83.** (2) **84.** (4) **85.** (2)
86. (1) **87.** (3) **88.** (4) **89.** (2) **90.** (3)
91. (3) **92.** (4) **93.** (4) **94.** (1) **95.** (3)
96. (4) **97.** (2) **98.** (2) **99.** (4) **100.** (2)

EXPLANATION - 41

1. (1) Except option (1), all others are metals.

2. (3) 'UVWX' are four consecutive alphabet. This relationship is not found in others.

3. (1) All numbers have two prime factors, except the option (1)
(1) $12 = 2 \times 2 \times 3$
(2) $34 = 17 \times 2$
(3) $38 = 19 \times 2$
(4) $58 = 29 \times 2$

4. (4) B D A F C G E

5. (3) 6, 10, 18, 34, **66**
×2-2 ×2-2 ×2-2 ×2-2

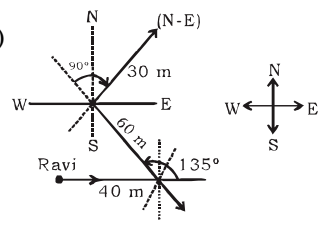
7. (2) +4 +5 +6 +7
4 E, 8 I, 13 N, 19 T, **26 A**
+4 +5 +6 +7

8. (1)

9. (1) K M Z S : HAPN : : GKTP : **KGTP**
opp opp opp opp opp opp opp opp

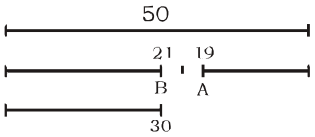
10. (3) First is opposite of second.

11. (4) The **cougar**, commonly known as the mountain lion, is found in **South America**. Similarly, the **okapi** is a giraffid artiodactly mammal found in **Central Africa**.

12. (3)


So, finally Ravi is walking in the North-East direction.

13. (3) 4th March, 1980 = Tuesday
15th March, 1984 =
4th March, 1984 + 11 days
= 4 × 365 + 1(day) + 11 days
= 4 days + 1 day + 11 days
= 16 days
[∵ Á only one leap year 1984 is taken]
Thus, 16 days after Tuesday is Thursday.

14. (1)


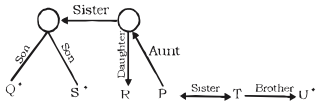
The rank of B from the top
= 51 – 21 +1 = 30
Thus, 29 people are ahead of B

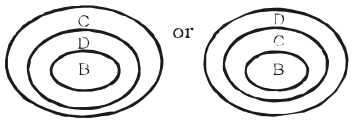
15. (3) Given,
$3 \times 2 < 4 \div 6 + 3 < 2$
After changing the signs
$3 + 2 - 4 > 6 \div 3 - 2$
$5 - 4 > 2 - 2$
$1 > 0$ (correct)

16. (3) 8 + 10 + 17 = 35
11 + **14** + 10 = 35
16 + 11 + 8 = 35

17. (3) $7 \times 4 - 3 = 25$,
$8 \times 9 - 2 = 70$
Similarly,
$6 \times 5 - x = 29$
$30 - x = 29$
$\therefore x = 30 - 29$
$= 1$

18. (1)

19. (4)


20. (4)


Conclusions.
I. ×
II. ×
III. ✓

21. (2) I - {D, B, A, C}
II - {E, E, A}
From I and II
{D, B, E, **A**, C}
So, A will be second.

22. (1)

23. (1) a **b** c/ b c **a** /c a **b**/ a b **c** /b c a/ **c** a b

24. (1) 542, 349, 248, 348, 548, 746,

25. (2) R = **59**, 68, 77, 86, 95
U = 56, 65, 78, 87, **99**
D = 01, 10, 23, **34**, 42
E = 02, **11**, 20, 23, 44

26. (1) ATQ,
$$\text{Depth of water} = \frac{\frac{2}{3}\pi r_1^3}{\pi r_2^2}$$
$$= \frac{2 \times \left(\frac{13.5}{2}\right)^3}{3 \times \left(\frac{9}{2}\right)^2}$$
$$= \frac{2 \times 13.5 \times 13.5 \times 13.5 \times 2 \times 2}{3 \times 2 \times 2 \times 9 \times 9}$$
$$= 10\frac{1}{8}\text{cm}$$

27. (3) Area of base = 21 sq. cm
Area of faces = 30 sq. cm
So, length = HCF of (area of base & area of faces)
= 3 cm
So, volume of cuboidal box
$$= \frac{21 \times 30}{3}$$
$= 210\ \text{cm}^3$

28. (4) $\frac{a^{1/2} + a^{-1/2}}{1-a} + \frac{1 - a^{-1/2}}{1+\sqrt{a}}$
$$\frac{a+1}{\sqrt{a}(1-a)} + \frac{\sqrt{a}-1}{\sqrt{a}1+\sqrt{a}}$$
$$= \frac{a+1+a\sqrt{a}+\sqrt{a}+\sqrt{a}-1-a\sqrt{a}+a}{\sqrt{a}1+\sqrt{a}(1-a)}$$
$$= \frac{2\sqrt{a}1+\sqrt{a}}{\sqrt{a}1+\sqrt{a}(1-a)} = \frac{2}{1-a}$$

29. (3) $\frac{5a+3b}{4a+7b} = \frac{3}{4}$
20a + 12b = 12a + 21b
8a = 9b
a : b = 9 : 8

30. (1) $\frac{x+\sqrt{x^2-1}}{x-\sqrt{x^2-1}} + \frac{x-\sqrt{x^2-1}}{x+\sqrt{x^2-1}} = 14$
$$\frac{x^2+(x^2-1)+2x\sqrt{x^2-1}+x^2+(x^2-1)-2x\sqrt{x^2-1}}{x^2-x^2-1}$$
$$\frac{2\,2x^2-1}{1} = 14$$
$2x^2 = 8$
$x = \pm 2$

31. (1) Average runs in 15 matches = 33
Average runs in the first 10 matches = 45
So, average run in the last 5 matches
$$= \frac{33 \times 15 - 45 \times 10}{5}$$
= 9

32. (1)

33. (2) Present population of the City = 4840000
ATQ,
2 years ago, the population of the City

$= 4840000 \times \left(\frac{100}{110}\right)^2$

$= 4000000$

34. (D $P_1(\uparrow)$ $20 \longrightarrow 3$

$P_1 + P_2$ $30 \longrightarrow 60 \longrightarrow \frac{2}{1}$

So, the time taken by the leak to empty the full tank

$= \frac{60}{1} = 60$ minutes

35. (2) ATQ,

Distance covered in half minute

$= 84 \times 2 \times \frac{22}{7} \times \frac{3}{4}$

$= 396$ m

So, the speed of the bus

$= \frac{396 \times 2 \times 60}{1000} = 47.52$ km/hr.

36. (2) ATQ,

Electric Bill $= \frac{54 \times 100}{18} =$ ₹ 360

37. (3) Selling price of the machine = ₹ 6480

ATQ,

Marked price of the machine

$= ₹\left(6480 \times \frac{100}{80} \times \frac{100}{90} \times \frac{100}{90}\right)$

= ₹ 10000

38. (1) Cost price of the article

= ₹ 937.50

So, marked price of the article

$= ₹\left(937.50 \times \frac{100}{75} \times \frac{125}{100}\right)$

= ₹ 1562.50

39. (2) C.I for 2 years of 4% = ₹ 102

Let principal = ₹ P

$P + 102 = P\left(1 + \frac{4}{100}\right)^2$

$P + 102 = P + \frac{51}{625}P$

P = ₹ 1250

So, S.I. $= \frac{1250 \times 2 \times 4}{100}$

= ₹ 100

40. (3) $P_1(\uparrow)$ $17 \longrightarrow 20$

$P_1 + P_2$ $20 \longrightarrow 340 \longrightarrow \frac{17}{3}$

So, the time taken by leakage to empty the tank

$= \frac{340}{3} = 113\frac{1}{3}$ hr

41. (2) Distance between Chennai and Mumbai

= 560 km

Train A from Mumbai to Chennai starts at 6 am. at a speed of 40 km/hr, so the distance covered till 7 a.m. = 40 km

Train B from Chennai to Mumbai starts at 7 a.m. at a speed = 60 km/hr

So, trains will cross each other in

$= \frac{560 - 40}{40 + 60} = 5\frac{1}{5}$ hrs

Distance from Mumbai when they cross each other

$= 40 + \frac{26}{5} \times 40$

= 40 + 208

= 248 km

42. (2) ATQ,

Inner radius of pipe

$= \sqrt{\frac{440}{10 \times \frac{22}{7} \times 7}}$

$= \sqrt{2}$ m

43. (3) $(a^2 - b^2)\sin\theta + 2ab\cos\theta = a^2 + b^2$

dividing by $(a^2 + b^2)$

$\frac{(a^2 - b^2)}{(a^2 + b^2)}\sin\theta + \frac{2ab}{(a^2 + b^2)}\cos\theta = 1$ ...(i)

As we know, $\sin^2\theta + \cos^2\theta = 1$

$\Rightarrow \sin\theta.\sin\theta + \cos\theta.\cos\theta = 1$ ...(ii)

On comparing (i) and (ii)

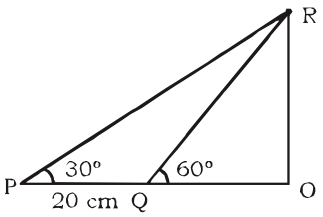
$\sin\theta = \frac{a^2 - b^2}{a^2 + b^2}, \cos\theta = \frac{2ab}{a^2 + b^2}$

$\therefore \tan\theta = \frac{\sin\theta}{\cos\theta}$

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

44. (4)

45. (4)



ATQ,

PQ = 20 m

In ΔORQ

$\frac{OR}{OQ} = \tan 60°$

$OR = \sqrt{3}\ OQ$

$OQ = \frac{OR}{\sqrt{3}}$

In ΔRPO

$\frac{OR}{OP} = \tan 30°$

$OR = (OQ + 20) \times \frac{1}{\sqrt{3}}$

$OR = \left(\frac{OR}{\sqrt{3}} + 20\right) \times \frac{1}{\sqrt{3}}$

$\sqrt{3}OR - \frac{OR}{\sqrt{3}} = 20$

$OR\left(\frac{3-1}{\sqrt{3}}\right) = 20$

$OR = 10\sqrt{3}$ m

46. (2) $\Delta ABC \cong \Delta FDE$

AB = FD = 5 cm

$\angle A = 80°$

$\angle B = 40°$

$\angle C = \angle E = 180° - 80° - 40°$

$= 60°$

47. (3)

48. (3) Saving of family

$= \frac{12.5}{100} \times 100000 = 12500$

49. (3) Food

50. (1) Housing

76. (1) Change 'of' into 'with'. 'Wrong **with** something' is the correct expression.

77. (3) Change 'of' into 'into'. An inquiry is made **'into'** something (a formal investigation).

79. (2) Of the given options, option (2) is the right answer. To **read between the lines** means to discover a meaning that is implied rather than explicitly stated. To **have a double meaning** means to have more than one meaning.

80. (4) This refers to the proverb – "**Those who live in glass houses should not throw stones at others**", which means that one should not criticize others if one has similar weaknesses. So, the option (4) is the right answer.

82. (3) 'If' should replace the underlined part, as none of the other options will make a grammtically correct sentence. 'In case of' and 'If' should not be used together, as both are almost same in their meanings.

83. (2) 'Fewer' should replace the underlined part. 'Fewer' is used for countable things, while 'less' is used for singular mass nouns.