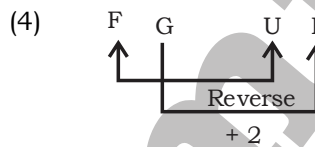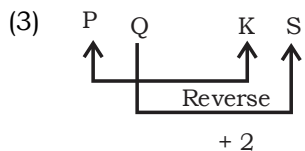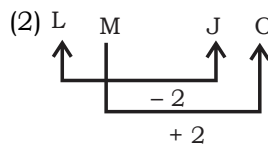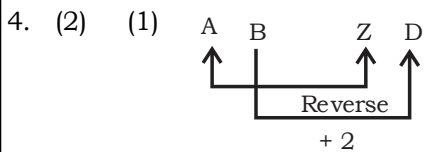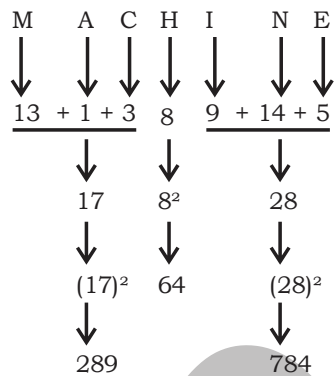## SSC MOCK TEST - 454 (SOLUTION)

1. (2) As, $\Rightarrow$ 5 + 2 + 5 = 12 $\Leftrightarrow$ 21 $\Rightarrow$ $(21)^2$ = 441

   Similarly, 435 $\Rightarrow$ 4 + 3 + 5 = 12 $\Rightarrow$ 21 $\Rightarrow$ $(21)^2$ = 441

2. (3) First is antonym of second.

3. (4) (1) 21 $\Leftrightarrow$ 12 $\Rightarrow$ $(12)^2$ = 144

   (2) 13 $\Leftrightarrow$ 31 $\Rightarrow$ $(31)^2$ = 961

   (3) 44 $\Leftrightarrow$ 44 $\Rightarrow$ $(44)^2$ = 1936

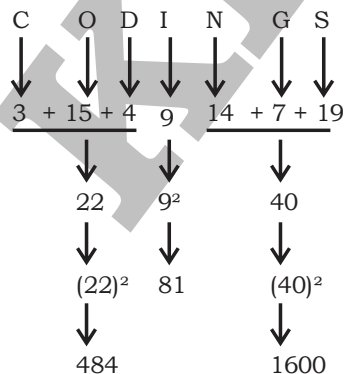   (4) 25 $\Leftrightarrow$ 52 $\Rightarrow$ $(52)^2$ = 2704 $\neq$ 625
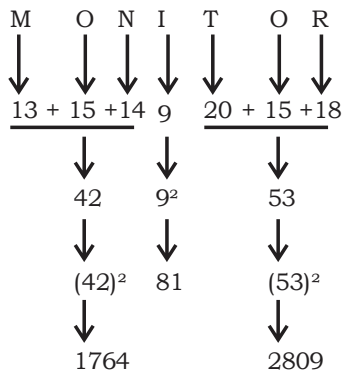
4. (2)

   (1)
   ```
   A  B      Z  D
   ↑  ↑      ↑  ↑
   └──┼──────┘  │
      └─Reverse─┘
        + 2
   ```

   (2)
   ```
   L  M      J  O
   ↑  ↑      ↑  ↑
   └──┼───┐  │  │
      └─ –2 ─┘  │
         + 2
   ```

   (3)
   ```
   P  Q      K  S
   ↑  ↑      ↑  ↑
   └──┼──────┘  │
      └─Reverse─┘
        + 2
   ```

   (4)
   ```
   F  G      U  I
   ↑  ↑      ↑  ↑
   └──┼──────┘  │
      └─Reverse─┘
        + 2
   ```

5. (3) As,

   M   A   C   H   I   N   E
   ↓   ↓   ↓   ↓   ↓   ↓   ↓
   13 + 1 + 3   8   9 + 14 + 5
   ↓   ↓   ↓
   17   8^2 28
   ↓   ↓   ↓
   $(17)^2$ 64 $(28)^2$
   ↓   ↓
   289   784

   Code $\Rightarrow$ 28964784

   And,

   C   O   D   I   N   G   S
   ↓   ↓   ↓   ↓   ↓   ↓   ↓
   3 + 15 + 4   9   14 + 7 + 19
   ↓   ↓   ↓
   22   9^2 40
   ↓   ↓   ↓
   $(22)^2$ 81 $(40)^2$
   ↓   ↓
   484   1600

   Code $\Rightarrow$ 484811600

Similarly,

M   O   N   I   T   O   R

13 + 15 + 14   9   20 + 15 + 18

42   9^2 53

$(42)^2$ 81 $(53)^2$

1764   2809

Code $\Rightarrow$ 1764812809

6. (2) $52 \times 2 = 104$

$104 + 3 = 107$

$107 \times 4 = 428$

$428 + 5 = 433$

$433 \times 6 = 2598$

7. (1)   P   R   U   Y   D

     + 2   + 3   + 4   + 5

8. (2)   After removing one-fourth milk i.e. 10 litres from 40 litres of milk and mixing with 10 litres of water.

Final mixture = 30 litres of milk and 10 litres of water

2nd case: Removing half the mixture, i.e. 20 litres out of 40 litres mixtures, 15 litres of milk and 5 litres of water will be removed and 20 litres of water will be added.

Final mixture now: 15 litres milk and 25 litres water

9. (4)   As, $(85 - 25) = 60 \Rightarrow 60 \times 2 = 120$

Similarly,

$(90 - 35) = 55 \Rightarrow 55 \times 2 = 110$

10. (3)   **d** m k **r** j / d **m** k r j / **d** m **k** r j

11. (1)

12. (2)   **In the first row,**

$(18 + 17) - 15 = 20 \Rightarrow (20)^2 = 400$

In the second row,

$(21 + 35) - 26 = 30 \Rightarrow (30)^2 = 900$

In the third row,

$(44 + 32) - 24 = 52 \Rightarrow (52)^2 = 2704$

13. (4) $256 \div 16 + 4 \times 3 - 14 = 53$

Change $\times$ and $+$ each other,

$256 \div 16 \times 4 + 3 - 14 = 53$

$16 \times 4 + 3 - 14 = 53$

$64 + 3 - 14 = 53$

$67 - 14 = 53$

$53 = 53$

14. (3)   B > D > A   ....(i)

C > B > D > A > E   ....(ii)

Hence, D is the third tallest.

15. (1)

- K $\Longleftrightarrow$ H+
|
- S $\Longleftrightarrow$ R+
|
- Z

Z is the daughter of R.

16. (2)   3. Infancy $\rightarrow$ 1. Childhood $\rightarrow$ 4. Adolescence $\rightarrow$ 2. Adulthood $\rightarrow$ 5. Senility

17. (3)
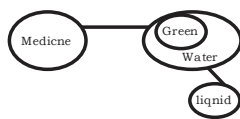
I. True   II. False   III. True

Hence, conclusions I and III follow.

18. (1)   19. (1)

20. (1)   As, $4 \times 6 + (3 + 8) = 35$

Similarly, $3 \times 4 + (7 + 8) = 27$

21. (3)   The word 'Solve' cannot be formed using the letters of the given word because the word ABSOLUTE' does not have letter 'V'.

22. (1)   23. (4)   24. (3)   25. (4)

26. (3)   Paddy is a tropical crop and grown where the average temperature during the growing season is between 22°C and 27°C.Abundant sunshine is essential during its four months of growth. The minimum temperature should not go below 15°C as germination cannot take place below that temperature. o The temperature required for wheat during growing season is around 15.5°C. The weather should be warm and moist during the early stage of growth and sunny and dry in the later stages. The average temperature of the hottest month should not exceed 20°C. A frostfree period of 100 days is usually required but some fast-ripening varieties may mature only in 90 days. o Maize is grown in temperatures between 26°C and 27°C during the day and around 14°C during the night. But the most important factor is the 140 frost-free days. The crop is very susceptible to frost; therefore, its cultivation in temperate latitudes is limited. o Groundnuts grow well in warm areas, below 1500m above sea level. The best temperature requirement is about 30° C. They do not grow below 15° C.

27. (3)   Five-year-old Teghbir Singh from Ropar, Punjab, climbed Mount Kilimanjaro, the highest peak in Africa. He started the trek on August 18 and reached the Uhuru peak on August 23. Mount Kilimanjaro stands at over 19,340 feet (5895 meters) in Tanzani

28. (3)   The Kesavananda Bharathi judgment or His Holiness Kesavananda Bharati Sripadagalvru v/s State of Kerala is a landmark decision of the Supreme Court of India that outlined the Basic Structure doctrine of the Constitution.

29. (1)   The Committee on Investor Awareness and Protection, chaired by Mr D. Swaroop from Pensions Fund Regulatory Authority of India (PFRDA), on the need for minimum standards for financial advisers and financial education. The paper states that the twin goals of regulation and making the populace financially able are essential for the healthy growth of the financial service industry.

30. (2)   The Appointment Committee of the Union Cabinet approved the appointment of senior IPS officer B. Srinivasan as the new Director General of the National Security Guard (NSG) on August 27, 2024.

31. (2) Naujawan Bharat Sabha was a leftwing Indian association that sought to foment revolution against the British Raj by gathering together worker and peasant youths. It was founded by Bhagat Singh in March 1926 and was a more public face of the Hindustan Republican Association.

33. (3) Hygrometers is instruments used for measuring humidity. A simple form of a hygrometer is specifically known as a "psychomotor" and consists of two thermometers, one of which includes a dry bulb and the other of which includes a bulb that is kept wet to measure wet-bulb temperature. 36. (3) Muller's work contributed to the developing interest in Aryan culture, which often set Indo-European ('Aryan') traditions in opposition to Semitic religions. For Müller the discovery of common Indian and European ancestry was a powerful argument against racism, arguing that "an ethnologist who speaks of Aryan race, Aryan blood, Aryan eyes and hair, is as great a sinner as a linguist who speaks of a dolichocephalic dictionary or a brachycephalic grammar" and that "the blackest Hindus represent an earlier stage of Aryan speech and thought than the fairest Scandinavians".

37. (4) Rajasthan and Madhya Pradesh Chief Ministers announced the development of a new religious circuit named the 'Shri Krishna Gaman Path'. The initiative is aimed at boosting religious tourism and preserving cultural heritage. The circuit will connect Mathura, the birthplace of Lord Krishna, with Ujjain, a sacred city in Madhya Pradesh. This project will trace the footsteps of Lord Krishna, one of the most revered deities in Hinduism. The 'Shri Krishna Gaman Path' is expected to enhance cultural ties and attract pilgrims and tourists to these significant religious sites.

38. (4) Article 75(3) of the Indian Constitution makes the council of ministers collectively responsible to the house of people or the Lok Sabha. This means that if the Ministry loses the confidence of the "Lok Sabha", all ministers including those who are from Rajya Sabha have to go. The entire ministry is obliged to resign. This means that ministers fall and stand together. This is called "Rule of Collective Responsibility".

40. (2) In India, at present, there are 6 Zonal Council. Originally five councils were created as per the States Reorganization Act 1956 as follows: Northern Zonal Council, Central Zonal Council, Eastern Zonal Council, Southern Zonal Council, and Western Zonal Council. The North East Council was set up in 1971.

42. (1) National Programme of Nutritional Support to Primary Education, popularly known as the Mid-Day Meal Scheme (MDM) was started in 1995. The Midday Meal Scheme is covered by the National Food Security Act, 2013.

43. (2) India Ace shuttler PV Sindhu defeated China's Wang Zhi Yi in the final match of women's singles at the Singapore Open 2022.

45. (1) Rank Country Uranium Reserves (metric tons) 1. Australia 1,706,100 2. Kazakhstan 679,300 3. Russian Fed 505,900 4. Canada 493,900

46. (2) In chemistry, the term transition metal (or transition element) has three possible meanings; o The IUPAC definition defines a transition metal as "an element whose atom has a partially filled d sub-shell, or which can give rise to cations with an incomplete d sub-shell" o Many scientist describe a "transition metal" as any element in the d-block of the periodic table, which includes groups 3 to 12 on the periodic table. In actual practice, the f-block lanthanide and actinide series are also considered transition metals and are called "inner transition metals". o Cotton and Wilkinson expand the brief IUPAC definition by specifying which elements are included. As well as the elements of groups 4 to 11, they add scandium and yttrium in group 3 which have a partially filled d sub shell in the metallic state. These last two elements are included even though they do not (so far) seem to possess the catalytic properties which are so characteristic of the transition metals in general. Lanthanum and actinium in Group 3 are however classified as lanthanides respectively.

47. (4) The hepatic portal vein is a blood vessel that carries blood from the gastrointestinal tract and spleen to the liver. This blood is rich in nutrients that have been extracted from food.

48. (1) A Tamil Nadu-based start-up launched India's first reusable hybrid rocket, "RHUMI 1". The launch took place from a mobile platform in Thiruvidandhai, Chennai. The rocket aims to advance research on global warming and climate change. RHUMI 1 is powered by a hybrid motor and has an electrically triggered parachute deployer. It carried three CUBE satellites to monitor cosmic radiation, UV radiation, and air quality. It also deployed 50 Pico satellites to study accelerometer readings, altitude, and ozone levels to understand environmental dynamics better.

50. (3) Megasthenes was an ancient Greek historian, diplomat and Indian ethnography and explorer in the Hellenistic period, author of the work Indicia. He was born in Asia Minor and became an ambassador of Seleucus Nicator of the Seleucid dynasty possibly to Chandragupta Maurya in Pataliputra, India.

51. (4) Total of 4 terms = 40 × 4 = 160

Let the first term = x

Sum of the remaining terms = 3x

ATQ,

x + 3x = 160

4x = 160

$x = \dfrac{160}{4} = 40$

52. (1) Let the distance travelled on the bicycle be x km.

Distance travelled on foot = (50 – x) km

ATQ,

$\dfrac{x}{10} + \dfrac{50 - x}{5} = 9$

$\dfrac{x + 100 - 2x}{10} = 9$

– x + 100 = 90

x = 10 km

53. (2) Let n = 7, then condition satisfied.

Hence, 7n = 7 × 7 = 49

Now, 49 ÷ 5, then remainder is 4.

Let the number be 5x.

Then, The integer n = 5x + 2

Take x = 1

Then, n = 7

The value of 7n = 49

49 divided by 5 leaves the remainder 4

∴ 4 is the remainder, if 7n is divided by 5.

54. (1) a + b = 9 and ab = 8

(a + b)³ = a³ + b³ + 3ab (a + b)

9³ = a³ + b³ + 3 × 8 (9)

729 = a³ + b³ + 216

∴ a³ + b³ = 729 – 216 = 513

55. (2) (cosec 60° – tan 45°) cot 30° tan 60°
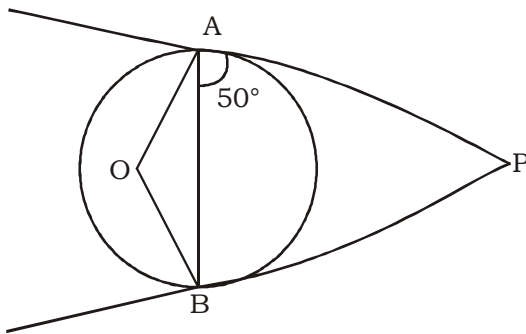
$$= \left(\frac{2}{\sqrt{3}} - 1\right)\sqrt{3} \times \sqrt{3}$$

$$= \frac{2 - \sqrt{3}}{\sqrt{3}} \times 3 = \frac{6 - 3\sqrt{3}}{\sqrt{3}} = 2\sqrt{3} - 3$$

56. (3) (26 – 13 × 2) ÷ 2 + 1 × 4 + 5 ÷ 15 + 4

$$= 0 \div 2 + 1 \times 4 + \frac{5}{15} \times 4$$

$$= 4 + \frac{4}{3} = \frac{16}{3}$$

57. (1)

PA = PB and ∠PAB = 50°

∠PBA = ∠PAB   (Angle opposite sides are equal)

∠PBA = 50°

In ∆PAB,

∠PBA + ∠PAB + ∠APB = 180°   (Angle sum property of triangle)

∠APB = 180° – 100°

∠APB = 80°

∠AOB + ∠APB = 180°   (Supplementary angles)

∠AOB = 180° – 80°

∴   ∠AOB = 100°

58. (3) 12 men can complete in 12 days.

1 work 1 man can complete in 1 day $\frac{1}{12 \times 12}$ part of the work.

Men can complete in 6 days $\frac{6 \times 6}{12 \times 12}$ part of work = $\frac{1}{4}$ th of the work

Number of remaining men = 6

Remaining work = $\frac{3}{4}$

12 men can complete 1 work in 12 days

6 men can complete $\frac{3}{4}$ work in $\frac{12 \times 12 \times 3}{6 \times 4}$ = 18 days

∴   Number of extra days = 18 – 6 = 12 days

59. (4) Let the two numbers are x and (25 – x).

LCM × HCF = Multiplication of two numbers

30 × 5 = x × (25 – x)

30 × 5 = 25x – x²

$x^2 - 25x + 150 = 0$

$x^2 - 10x - 15x + 150 = 0$

$x(x - 10) - 15(x - 10) = 0$
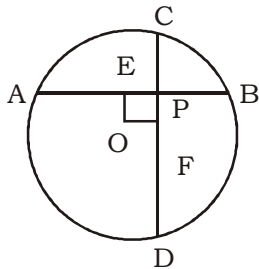
(x – 10) (x – 15) = 0

x = 10 and 15

∴ Required difference = 15 – 10 = 5

60. (3)

As we can see from the diagram

$OE^2 = OA^2 - AE^2$

Here, OA = 15 cm and AE = $\dfrac{AB}{2}$ = $\dfrac{20}{2}$ = 10 cm

$OE^2 = 15^2 - 10^2 = 125$ cm

Similarly, $OF^2 = OD^2 - DF^2$

= 225 – 144 = 81 cm²

Since, OEFP forms a rectangle

∴ OP = $\sqrt{125 + 81}$ = $\sqrt{206}$ cm

61. (2) Let the cost price of TV be ₹ 100.

Marked price = $100 \times \dfrac{130}{100}$ = ₹ 130

Selling price = $130 \times \dfrac{75}{100}$ = ₹ 97.50

Loss = 100 – 97.50 = ₹ 2.50

∴ Loss% = $\left(\dfrac{2.50}{100} \times 100 \right)\%$ = 2.5%

62. (4) Perimeter of rectangular plot = 2 × (40 + 25) = 2 × 65 = 130 m

Perimeter of square plot = 4 × side

4 × side = 130

∴ Side = $\dfrac{130}{4}$ = 32.5 m

63. (1) Side of a cube = HCF of 6, 42, 45 = 3 cm

$\therefore$ Least possible number of cubes = $\dfrac{6 \times 42 \times 45}{3 \times 3 \times 3}$ = 420

64. (3) Filling Pipe   6 $\diagdown$ 42   7
Filling Pipe + leakage 7 $\diagup$ $\dfrac{6}{1}$

$\therefore$ Time taken by leakage to empty the tank = $\dfrac{42}{1}$ = 42 hours

65. (4) Percentage discount = $\left(\dfrac{MP - SP}{MP} \times 100 \right)\%$

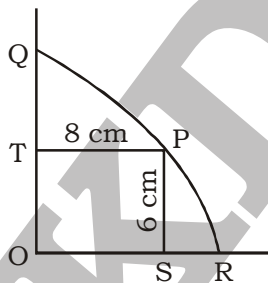= $\left(\dfrac{700 - 625}{700} \times 100 \right)\%$ = 10.71%

66. (4) Required speed = $\left(\dfrac{100 + 120}{40} \right) m/s$

= $\left(\dfrac{220}{40} \times \dfrac{18}{5} \right) km/h$ = 19.8 km/h

67. (4) Average age of the family = $\dfrac{67 \times 2 + 35 \times 2 + 6 \times 3}{2 + 2 + 3}$
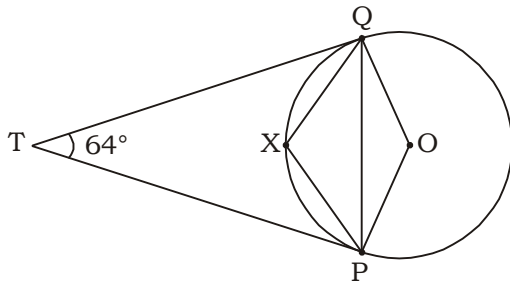
= $\dfrac{222}{7}$ = $31\dfrac{5}{7}$ years

68. (2)

From the figure,

OP = $\sqrt{6^2 + 8^2}$ = 10 cm

Length of the Arc OR = $\dfrac{\pi r \theta}{180}$ = $\dfrac{\pi \times 10 \times 90}{180}$ = 5π cm

69. (1)

$\angle PTQ + \angle POQ = 180°$

$\angle POQ = 180 - 64 = 116°$

$\therefore \quad \angle PXQ = 180° - \dfrac{1}{2} \angle POQ$

$= 180° - \dfrac{1}{2} \times 116° = 122°$

70. (3)

$\dfrac{a}{b} = \dfrac{\sqrt{5}+1}{\sqrt{5}-1} \times \dfrac{\sqrt{5}+1}{\sqrt{5}-1}$

$\dfrac{a}{b} = \dfrac{(\sqrt{5}+1)^2}{(\sqrt{5}-1)^2}$

$\dfrac{a}{b} = \dfrac{5+1+2\sqrt{5}}{5+1-2\sqrt{5}}$

$\dfrac{a}{b} = \dfrac{6+2\sqrt{5}}{6-2\sqrt{5}}$

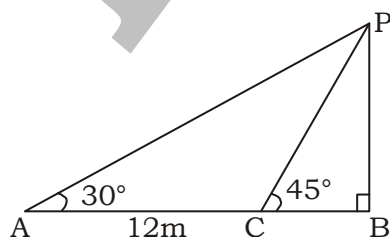$\dfrac{a}{b} = \dfrac{3+\sqrt{5}}{3-\sqrt{5}}$

Applying componendo and dividendo, we have

$\dfrac{a+b}{a-b} = \dfrac{3+\sqrt{5}+3-\sqrt{5}}{(3+\sqrt{5})-(3-\sqrt{5})}$

$\dfrac{a+b}{a-b} = \dfrac{6}{2\sqrt{5}} = \dfrac{3}{\sqrt{5}}$

$\left(\dfrac{a-b}{a+b}\right)^2 = \left(\dfrac{\sqrt{5}}{3}\right)^2 = \dfrac{5}{9}$

71. (1)

In ΔPBC,

$\tan 45° = \dfrac{PB}{BC}$

PB = BC

In $\triangle$ PBA,

$\tan 30° = \dfrac{PB}{AB}$

$\dfrac{PB}{AC + CB} = \dfrac{1}{\sqrt{3}}$

$\dfrac{PB}{12 + PB} = \dfrac{1}{\sqrt{3}}$

$\therefore$ PB $= \dfrac{12}{\sqrt{3} - 1} = 6\,(\sqrt{3} + 1)$

= 6 × 2.732 = 16.392 m

72. (3)   Expenditure on materials and taxes together = (22 + 36)% of 500 = 58% of 500

= 0.58 × 500 = ₹ 290 crores

73. (3)   Required angle = $\left(\dfrac{36}{100} \times 360°\right)° = 129.6°$

74. (3)   Total number of boys in Banking and SSC = 45 + 186 + 220 + 200 + 65 + 32 + 55 + 25 = 828

Total number of girls in Banking and SSC = 35 + 33 + 45 + 24 + 25 + 20 + 15 + 30 = 227

$\therefore$ Required % $= \left[\dfrac{\left(828 \times \dfrac{60}{100} + 227 \times \dfrac{70}{100}\right)}{828 + 227} \times 100\right]\% = \left[\dfrac{(496.80 + 158.90)}{1055} \times 100\right]\%$

$= \left(\dfrac{655.7}{1055} \times 100\right)\% = 62.15\ \% \approx 62\%$

75. (3)   Number of students in

Maths = 35 + 45 + 25 + 65 = 170

Computer = 33 + 186 + 20 + 32 + 271

Reasoning = 45 + 220 + 15 + 55 = 335

English = 24 + 200 + 30 + 35 + 289

$\therefore$ Required answer is Reasoning

MEANINGS IN ALPHABETICAL ORDER

Adamant	refusing to be persuaded or to change one's mind	अटल
Attic	a space or room just below the roof of a building	अटारी
Avert	turn away (one's eyes or thoughts)	टालना
Coffin	a long, narrow box, typically of wood, in which a corpse is buried or cremated	ताबूत
Condemn	express complete disapproval of, typically in public; censure	निंदा करना
Deliverance	the action of being rescued or set free	मुक्ति
Eloquent	fluent or persuasive in speaking or writing	सुबक्ता
Hanger	a person who hangs something	कांटा
Insist	demand something forcefully, not accepting refusal	जोर देना
Nuisance	a person, thing, or circumstance causing inconvenience or annoyance	बाधा
Optimist	hopeful and confident about the future	आशावादी
Optimum	most conducive to a favorable outcome; best	अनुकूलतम
Pierce	(of a sharp pointed object) go into or through	प्रवेश करना
Piteous	deserving or arousing pity	दयनीय
Provoke	stimulate or give rise to (a reaction or emotion, typically a strong or unwelcome one) in someone	उकसाना
Pursue	follow (someone or something) in order to catch or attack them	पाने की कोशिश करना
Reticent	not revealing one's thoughts or feelings readily	मौन रहने वाला
Revere	deep respect for someone or something	श्रद्धा
Wardrobe	a large, tall cabinet in which clothes may be hung or stored	अलमारी

SSC MOCK TEST - 454 (ANSWER KEY)

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

76. (1) Replace 'quarter results' with 'quarterly results'.

77. (2) If the second event occurs immediately after the first, we can express that idea using the structure no sooner ... than. / hardly or scarcely...when./ As soon as , Here in the part (2) 'when' should be replaced with than.

90. (1) The correct spelling of 'Negociate' is 'Negotiate'.

91. (2) The correct spelling of 'Patrner' is 'Partner'.