

—: SSC CGL (Tier - 1) Practice Set 2023 :—

Answers with Explanation

1. (c) Sea sickness is caused due to voyage. Similarly, Giddiness is caused when one climbs up (Heights). শ্রুতিভঙ্গ
2. (d) Violin is a musical instrument with strings. Similarly, Piano is a large musical instrument played by pressing the black or white keys of a keyboard.
3. (c) Cataract affects eye. Similarly, Pneumonia affects lungs.
4. (d) Haematology is that branch of science which deals with blood and its disorder. Similarly, Phycology is that branch of science which deals with algae.
5. (d) Etymology is the study of the origin and history of words and their meanings. Psychology is the study of mind. Anatomy is the scientific study of the structure of human or animal bodies. Archaeology is the study of antiques. Philosophy means the search for knowledge and understanding of the nature; a set of beliefs etc. but not of language. Hence it is different. শ্রুতিভঙ্গ
6. (c) C is the mother of A and B.  
A is son of C.
7. (a) The mother of A is sister of B.  
Therefore, A may be niece of B.
8. (d)  $D = \frac{4}{1} = 4$
- |    |   |   |   |
|----|---|---|---|
| R  | E | A | D |
| ↓  | ↓ | ↓ | ↓ |
| 18 | 5 | 1 | 4 |
- $18 + 5 + 1 + 4 = 28$
- $\frac{28}{4} = 7$
- Therefore,
- |   |   |   |    |
|---|---|---|----|
| H | E | A | R  |
| ↓ | ↓ | ↓ | ↓  |
| 8 | 5 | 1 | 18 |
- $8 + 5 + 1 + 18 = 32$
- $\frac{32}{4} = 8$  শ্রুতিভঙ্গ
9. (d) R A C K E T
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 8 | 1 | 3 | 5 | 2 | 4 |

Therefore,

T	R	A	C	K
↓	↓	↓	↓	↓
4	8	1	3	5

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10. (a) 

× → +	÷ → -
- → ×	+ → ÷

Given expression

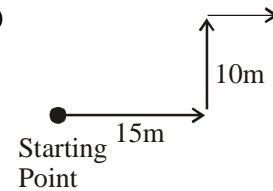
$$54 \div 16 - 3 \times 6 + 2 = ?$$

After conversion

$$? = 54 - 16 \times 3 + 6 \div 2$$

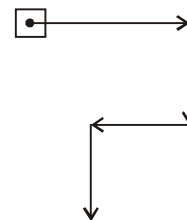
$$\text{or, } ? = 54 - 48 + 3 = \boxed{9}$$

11. (b)



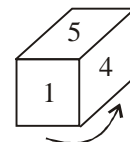
He is walking towards East.

12. (c) Starting Point



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13. (b) Number of days from September 15, 2000 to September 15, 2001  
 $= 365 + 1 = 366$   
 $366 \div 7 = 2$  odd days  
 $\therefore$  September 15, 2001  
 $\Rightarrow$  Saturday
14. (b) Clearly, the number 4 lies to the opposite of 2.



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15. (a) There is only one 'N' in the given word. Therefore, the word NATION cannot be formed.
- S E GRE G AT I O N  $\Rightarrow$  GREAT
- SEGREG A TI O N  $\Rightarrow$  GREETINGS

S E G R E G A T I O N ⇒ SEATING

16. (d) There is no 'O' letter in the given word. Therefore, the word NATIONAL cannot be formed.

ALTER NATIVE S  
⇒ ALTER; NATIVE

A L T E R N A T I V E S ⇒ TEN

17. (b) Suppose the age of mother be x years and that of daughter's age be y years.

According to question  
 $x + y = 56$  .....(i)

Again,  $x + 4 = 3(y + 4)$

or,  $x + 4 = 3y + 12$

or,  $x - 3y = 8$  .....(ii)

From equations (i) and (ii)

$y = 12$  years

∴  $x = 56 - 12 = 44$  years

18. (c) Suppose the present age of daughter = x years and, the present age of mother = y years

According to questions,

$3(x - 5) = (y - 5)$

⇒  $3x - 15 = y - 5$

⇒  $3x - y = 10$

.....(i)

$2(x + 5) = y + 5$

⇒  $2x + 10 = y + 5$

⇒  $2x - y = -5$

.....(ii)

From equations (i) and (ii)

$3x - 2x = 10 - (-5) ⇒ x = 15$  years

19. (d) Age of son = 6 years

Age of father =  $6 × 5 = 30$  years

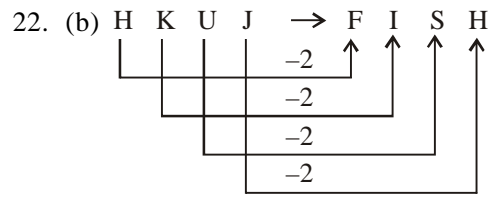
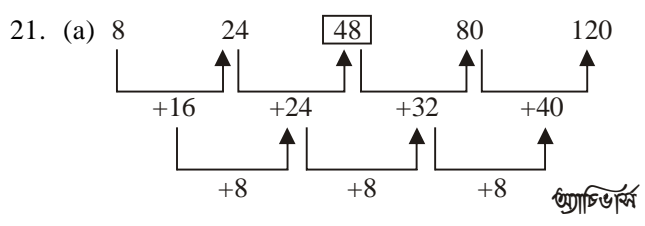
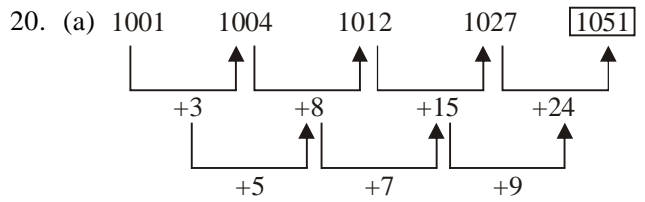
Let after x years father will be 4 times of son.

⇒  $30 + x = 4(6 + x)$

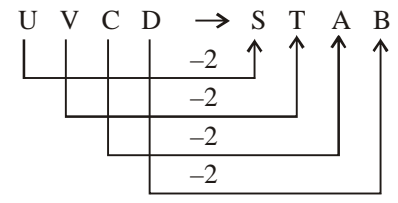
⇒  $4x - x = 30 - 24$

⇒  $3x = 6$

⇒  $x = 2$  years



Similarly,



23. (b) Both the Premises are Particular Affirmative (I-type). No Conclusion follows from the two Particular Premises.

Conclusion II is Converse of the first statement. Conclusion IV is Converse of the second statement.

Conclusions I and III form Complementary Pair. Therefore, either I or III follows.

24. (d)  $5 + 4 = 9$  and  $9 × 2 = 18$   
 $6 + 3 = 9$  and  $9 × 3 = 27$   
 $12 + 4 = 16$  and ?

$= \frac{96}{16} = 6$

25. (b)  $18 × 3 + 6 = 54 + 6 = 60$   
 $60 × 3 + 6 = 180 + 6 = 186$   
 $186 × 3 + 6 = 558 + 6 = 564$   
 $564 × 3 + 6 = 1692 + 6 = 1698$   
 $1698 × 3 + 6 = 5094 + 6 = 5100$

26. (d) Pawapuri is a holy site for Jains located in the Nalanda district in Bihar. Around 500 BC, Lord Mahavira, the last of the 24 Tirthankaras achieved Moksha or Nirvana. He was cremated at Pawapuri, also known as Apapuri (the sinless town).

27. (b) Mallika Sarabhai is an activist and Indian Classical Dancer from Ahmedabad, Gujarat, India. Daughter of Classical Dancer Mrinalini Sarabhai and renowned Space Scientist Vikram Sarabhai, Mallika is an accomplished Kuchipudi and Bharatanatyam dancer.

28. (c) Independence of judiciary means a fair and neutral judicial system of a country. Article 50 in the Constitution Of India, belonging to the Directive Principles of State Policy, deals with separation of judiciary from executive. It says that the State shall take steps to separate the judiciary from the executive in the public services of the State.

29. (c) The outer bank (called a cut bank) has the greatest erosion because the water is flowing faster along the outer bank than the inner bank. The slower water allows sediment to be deposited (called a point bar). **पुस्तक**
30. (a) The School Health Program was launched recently by the Urban Development Department and Lucknow Smart City. This initiative makes Uttar Pradesh the first state in the country to provide digital health cards for children.
31. (d) Fourth Five-Year Plan was from 1969 to 1974. At this time Indira Gandhi was the Prime Minister. The Indira Gandhi government nationalised 14 major Indian banks and the Green Revolution in India advanced agriculture.
32. (d) Hiuen Tsang was a Chinese pilgrim who came to India in the first half of the seventh century A.D. during the time of Harshavardhan in order to visit the places of pilgrimage associated with Buddha. His object was to secure authentic Buddhist scriptures and visit places of Buddhist interest. On returning to China, he put down all his impressions in a book called Si- yu-ki or 'The Records of the Western World' which proved to be an invaluable source of information to historians about Harsha and the political, social, economic and religious conditions in India during his reign.
33. (c) The Fundamental Duties of citizens were added to the Constitution by the 42nd Amendment in 1976, upon the recommendations of the Swaran Singh Committee that was constituted by the government earlier that year.
34. (c) Blizzards are characterized by low temperatures (usually below 20 degrees Fahrenheit) and accompanied by winds that are at least 35 mph or greater. Blizzards also have sufficient falling and/or blowing snow that reduces visibility to 1/4 mile or less at least three hours and is main feature of Antarctic region.
35. (b) Kumara Gupta
36. (d) The 36th CISO Deep-Dive training programme was organized by the National e-Governance Division (NeGD). **पुस्तक**  
Cyber Surakshit Bharat is the initiative of Ministry of Electronics and Information Technology (MeitY). It was conceptualised with the mission to spread awareness about cyber-crime and build capacities of Chief Information Security Officers (CISOs)
37. (c) A rectifier is an electrical device that converts alternating current (AC), which periodically reverses direction, to direct current (DC), which flows in only one direction. The process is known as rectification. Physically, rectifiers take a number of forms, including vacuum tube diodes, mercury-arc valves, solid-state diodes, silicon-controlled rectifiers and other silicon-based semiconductor switches. Rectifiers have many uses, but are often found serving as components of DC power supplies and high-voltage direct current power transmission systems. Rectification may serve in roles other than to generate direct current for use as a source of power. As noted, detectors of radio signals serve as rectifiers.
38. (a) Civil rights include the ensuring of peoples' physical and mental integrity, life and safety; protection from discrimination on grounds such as physical or mental disability, gender, religion, race, national origin, age, status as a member of the uniformed services, sexual orientation, or gender identity; and individual rights such as privacy, the freedoms of thought and conscience, speech and expression, religion, the press, and movement. Right to public offices means that no citizen should be prohibited to hold any public office under the State on the grounds of religion, caste, race, sex or language or any of them. It is a civil right. **पुस्तक**
39. (a) An inam is a gift of land or land revenue. It was given to scholars and religious persons as recognition of their invaluable contributions to the state and society. The title of inamdar was bestowed upon to the person who received in grant or as gift (Inam) the lands for the extraordinary service rendered to the ruler or the country or the kingdom. **पुस्तक**
40. (c) Rihand Dam is a concrete gravity dam located at Pipri in Sonbhadra District in Uttar Pradesh, India. It is on the border of Chhattisgarh and Uttar Pradesh. It is on the Rihand River which is the tributary of the Son River. The Rihand River flows through the Indian states of Chhattisgarh and Uttar Pradesh. The Rihand rises from Matiranga hills, in the region south west of the Mainpat plateau, which is about 2,100 meters above mean sea level. The river flows north roughly through the central part of Surguja district for 160 kilometres. The

Rihand and its tributaries form a fertile plain in the central part of the district stretching from around Ambikapur to Lakhanpur and Pratappur. Thereafter, it flows north into Sonbhadra district of Uttar Pradesh via Singrauli district of Madhya Pradesh, where it is called Rhed and finally joins the Son.

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41. (d) Nichrome is a non-magnetic alloy of nickel, chromium, and often iron, usually used as a resistance wire. Patented in 1905, it is the oldest documented form of resistance heating alloy. A common alloy is 80% nickel and 20% chromium, by mass, but there are many others to accommodate various applications. It is silvery-grey in colour, is corrosion-resistant, and has a high melting point of about 1400 degree C (2552 degree F). Due to its relatively high electrical resistivity and resistance to oxidation at high temperatures, it is widely used in electric heating elements, such as in hair dryers, electric ovens, soldering iron, toasters, and even electronic cigarettes. Typically, Nichrome is wound in coils to a certain electrical resistance, and current is passed through to produce heat.
42. (d) In a bilateral monopoly there is both a monopoly (a single seller) and monopsony (a single buyer) in the same market. The one supplier tends to act as a monopoly power, and looks to charge high prices to the one buyer. The lone buyer looks towards paying a price that is as low as possible. Since both parties have conflicting goals, the two sides negotiate based on the relative bargaining power of each, with a final price settling in between the two sides' points of maximum profit.
43. (d) YugeYugeen Bharat National Museum is a new museum that will be set up at North/South Block as part of the Central Vista project. It will display India's rich civilisational culture spanning over 5,000 years. The initiative has been undertaken to commemorate the 47th International Museum Day on May 18.
44. (c) Liquefied petroleum gas, also called LPG, GPL, LP Gas, liquid petroleum gas or simply propane or butane, is a flammable mixture of hydrocarbon gases used as a fuel in heating appliances and vehicles. It is increasingly used as an aerosol propellant and a refrigerant, replacing chlorofluorocarbons in an effort to reduce damage to the ozone layer. When

specifically used as a vehicle fuel it is often referred to as autogas. LPG can be used as a power source for combined heat and power technologies (CHP). CHP is the process of generating both electrical power and useful heat from a single fuel source. This technology has allowed LPG to be used not just as fuel for heating and cooking, but also for de-centralised generation of electricity. LPG can be stored in a variety of ways. LPG, as with other fossil fuels, can be combined with renewable power sources to provide greater reliability while still achieving some reduction in CO<sub>2</sub> emissions.

45. (d) The Salt March which began with the Dandi March on March 12, 1930, was a direct action campaign of tax resistance and nonviolent protest against the British salt monopoly in colonial India. It triggered the wider Civil Disobedience Movement.
46. (a) The Gavari dance-drama of Bhils has its origin in the story of Shiva and Bhasmasur.
47. (b) The ostrich is the largest and heaviest bird that is alive today. Although it cannot fly, the ostrich is also the fastest-running bird today; it can run up to about 43 mph (70 kph). It can outrun most predators, but can also kick to protect itself; another strategy against threats is to crouch close to the ground to camouflage itself. The ostrich can grow up to 9 feet (2.7 m) tall and weighs up to 345 pounds (156 kg). The ostrich also has the biggest eyeballs of any bird alive today; each eyeball is 2 inches (5 cm) across. It has a long neck that allows it to see predators from far away.
48. (c) The Assam state government launched the AyushmanAsom-MukhyaMantri Jan Arogya Yojanarecently. It is a family-floater health assurance scheme that provides cashless medical treatment for up to Rs 5 lakh per family per year, aimed at promoting accessible and affordable healthcare.
49. (c) Shivanasamudra Falls is on the Kaveri River after the river has wound its way through the rocks and ravines of the Deccan Plateau and drops off to form waterfalls. The island town of Shivanasamudra divides the river into twin waterfalls. This creates the fourth largest island in the rivers course. Asia's second hydro-electric power station after Sidrapong is located at the waterfall and is still functional. This station was commissioned by the Diwan of Mysore, Sir K. Seshadri Iyer.

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50. (a) The amenities provided to the members of parliament relate to salaries and allowances, travelling facilities, medical facilities, accommodation, telephones, etc. These are governed by the Salary, Allowances and Pension of Members of Parliament Act, 1954 and the rules made there under.

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**Note :** last time in 2010 the legislation was passed by voice vote to raise MPs' salaries from Rs. 16,000 to Rs. 50,000.

51. (d) If the first divisor be a multiple of the second divisor, then required remainder = remainder obtained by dividing the first remainder (36) by the second divisor (17) = 2

52. (c)  $3^1 = 3$ ;  $3^2 = 9$ ;  $3^3 = 27$ ;  $3^4 = 81$ ;  $3^5 = 243$   
i.e. unit's digit is repeated after index 4.  
Remainder after dividing 21 by 4 = 1  
 $\therefore$  Unit's digit in the expansion of  $(3)^{21} = 3$   
 $\therefore$  Remainder after dividing by 5 = 3

53. (c) Decimal equivalent of :

$$\frac{3}{4} = 0.75 \text{ and } \frac{5}{6} = 0.833$$

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$$\text{Now, } \frac{2}{3} = 0.66, \frac{1}{2} = 0.5, \frac{4}{5} = 0.8 \text{ and } \frac{9}{10} = 0.9$$

Clearly,  $\frac{4}{5}$  lies between  $\frac{3}{4}$  and  $\frac{5}{6}$ .

54. (c) Here, Divisor - remainder = 1  
e.g.,  $10 - 9 = 1$ ,  $9 - 8 = 1$ ,  $8 - 7 = 1$   
 $\therefore$  Required number  
= (L.C.M. of 10, 9, 8) - 1  
=  $360 - 1 = 359$

55. (a) The LCM of 5, 6, 8 and 9  
= 360 seconds = 6 minutes

56. (d) The given expression

$$= \frac{11}{11} \div \frac{7}{8} \left( \frac{4+3}{12} \right) + \frac{5}{7} \div \frac{3}{4} \text{ of } \frac{3}{7}$$

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$$= \left( \frac{11}{4} \times \frac{6}{11} \right) \div \frac{7}{8} \times \frac{7}{12} + \frac{5}{7} \div \left( \frac{3}{4} \times \frac{3}{7} \right)$$

$$= \frac{3}{2} \div \frac{7}{8} \times \frac{7}{12} + \frac{5}{7} \div \frac{9}{28}$$

$$= \frac{3}{2} \times \frac{8}{7} \times \frac{7}{12} + \frac{5}{7} \times \frac{28}{9}$$

$$= 1 + \frac{20}{9} = \frac{9+20}{9} = \frac{29}{9} = 3\frac{2}{9}$$

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57. (c) Expression

$$\begin{aligned} &= 8.7 - [7.6 - \{6.5 - (5.4 - \overline{4.3-2})\}] \\ &= 8.7 - [7.6 - \{6.5 - (5.4 - 2.3)\}] \\ &= 8.7 - [7.6 - \{6.5 - 3.1\}] \\ &= 8.7 - [7.6 - 3.4] \\ &= 8.7 - 4.2 = 4.5 \end{aligned}$$

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58. (a) Expression

$$\begin{aligned} &= \frac{4}{15} \text{ of } \frac{5}{8} \times 6 + 15 - 10 \\ &= 1 + 15 - 10 = 16 - 10 = 6 \end{aligned}$$

59. (b) Seventh observation

$$\begin{aligned} &= 65 \times 7 + 7 \times 75 - 13 \times 70 \\ &= 455 + 525 - 910 \\ &= 980 - 910 = 70 \end{aligned}$$

60. (b) Average of 7 consecutive numbers = 20

$$\begin{aligned} \therefore \text{Fourth number} &= 20 \\ \therefore \text{Largest number} &= 20 + 3 = 23 \end{aligned}$$

61. (d)  $A = B \times \frac{2}{3}$

$$\Rightarrow A : B = 2 : 3 = 8 : 12$$

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$$B = C \times \frac{4}{5}$$

$$\Rightarrow B : C = 4 : 5 = 12 : 15$$

$$\therefore A : B : C = 8 : 12 : 15$$

62. (b) Boys : Girls = 9 : 7,

$$\begin{aligned} \text{Sum of the terms of the ratio} &= 9 + 7 = 16 \\ \text{Number of students} &= 256 \end{aligned}$$

$$\therefore \text{Number of girls} = \frac{256 \times 7}{16} = 112$$

63. (c) Let the number be x.

According to the question,

$$\frac{x \times 50}{100} + 50 = x$$

$$\Rightarrow \frac{x}{2} + 50 = x$$

$$\Rightarrow x - \frac{x}{2} = 50$$

$$\Rightarrow \frac{x}{2} = 50$$

$$\Rightarrow x = 100$$

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64. (b) Let the number be x

$$\text{then, } x \times \frac{90}{100} = 30$$

$$\Rightarrow x = \frac{3000}{90} = \frac{100}{3} = 33\frac{1}{3}$$

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65. (d)  $x = 3 + 2\sqrt{2}$   
 $\therefore \frac{1}{x} = \frac{1}{3 + 2\sqrt{2}}$   
 $= \frac{1}{3 + 2\sqrt{2}} \times \frac{3 - 2\sqrt{2}}{3 - 2\sqrt{2}}$   
 $= \frac{3 - 2\sqrt{2}}{9 - 8}$   
 $= 3 - 2\sqrt{2}$   
 $x + \frac{1}{x} = 3 + 2\sqrt{2} + 3 - 2\sqrt{2} = 6$

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$\therefore x^2 + \frac{1}{x^2} = \left(x + \frac{1}{x}\right)^2 - 2$   
 $= (6)^2 - 2 = 36 - 2 = 34$

66. (b)  $\frac{d}{c} = a - b$

$\Rightarrow \frac{c}{d} = \frac{1}{a - b} = \frac{a + b}{a - b}$

$\Rightarrow \frac{c + d}{c - d} = \frac{a + b + a - b}{a + b - a + b} = \frac{a}{b}$

(By componendo and dividendo)

$\Rightarrow \frac{1}{c - d} = \frac{a}{b}$

$\Rightarrow (c - d) = \frac{b}{a}$

$\Rightarrow c^2 - d^2 = (c + d)(c - d) = \frac{b}{a}$

67. (c)  $\sec\theta - \cos\theta = \frac{3}{2}$

$\Rightarrow \sec\theta - \frac{1}{\sec\theta} = \frac{3}{2}$

$\Rightarrow \frac{\sec^2\theta - 1}{\sec\theta} = \frac{3}{2}$

$\Rightarrow 2\sec^2\theta - 2 = 3\sec\theta$

$\Rightarrow 2\sec^2\theta - 3\sec\theta - 2 = 0$

$\Rightarrow 2\sec^2\theta - 4\sec\theta + \sec\theta - 2 = 0$

$\Rightarrow 2\sec\theta(\sec\theta - 2) + 1(\sec\theta - 2) = 0$

$\Rightarrow (2\sec\theta + 1)(\sec\theta - 2) = 0$

$\Rightarrow \sec\theta = 2$  because  $2\sec\theta + 1 \neq 0$

$\Rightarrow \theta$  is positive acute angle.

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68. (b) Expression

$= \sin^4\theta + \cos^4\theta$

$= (\sin^2\theta)^2 + (\cos^2\theta)^2$

$= (\sin^2\theta + \cos^2\theta)^2 - 2\sin^2\theta \cdot \cos^2\theta$

$= 1 - 2\sin^2\theta \cdot \cos^2\theta$

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$= 1 - \frac{4\sin^2\theta \cdot \cos^2\theta}{2}$   
 $[\because \sin^2\theta = 2\sin\theta \cdot \cos\theta]$

$= 1 - \frac{\sin^2 2\theta}{2}$

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$= 1 - \frac{1 - \cos 4\theta}{4}$

$[\because 1 - \cos^2\theta = 2\cos^2\theta]$

$= 1 - \frac{1}{4} + \frac{\cos 4\theta}{4}$

$= 1 - \frac{1}{4} + \frac{1}{4} = 1$

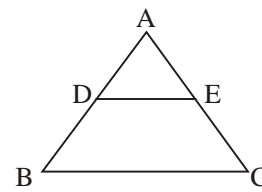
$(\cos 4\theta \leq 1)$

OR

The value of  $\sin^4\theta + \cos^4\theta$  will be maximum if  $\theta = 0^\circ$

$\therefore$  Required value  $= (\sin 0^\circ)^4 + (\cos 0^\circ)^4 = 0 + 1 = 1$

69. (a)



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$DE \parallel BC \therefore \frac{AD}{AB} = \frac{AE}{AC}$

$\frac{AD}{BD} = \frac{3}{5} \Rightarrow \frac{BD}{AD} = \frac{5}{3}$

$\Rightarrow \frac{BD}{AD} + 1 = \frac{5}{3} + 1$

$\Rightarrow \frac{BD + AD}{AD} = \frac{5 + 3}{3}$

$\Rightarrow \frac{AB}{AD} = \frac{8}{3}$

$\Rightarrow \frac{AD}{AB} = \frac{3}{8}$

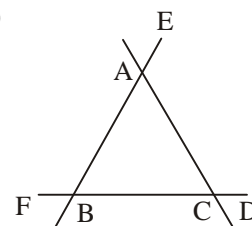
$\therefore \frac{AD}{AB} = \frac{AE}{AC}$

$\Rightarrow \frac{3}{8} = \frac{AE}{4} \Rightarrow AE = \frac{3 \times 4}{8}$

$= 1.5 \text{ cm.}$

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70. (c)

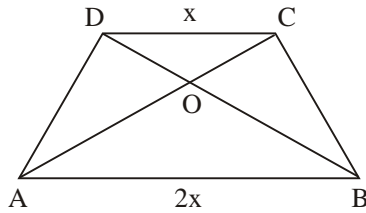


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$\angle ABC + \angle BCA + \angle BAC = 180^\circ$   
 Again,  $\angle ACB + \angle ACD = 180^\circ$   
 $\angle ABC + \angle ABF = 180^\circ$   
 $\angle BAC + \angle EAC = 180^\circ$   
 $\therefore \angle ACD + \angle ABF + \angle CAE$   
 $= 540 - 180^\circ = 360^\circ$   
 $\therefore$  Required answer  
 $= 2 \times 360^\circ = 720^\circ$

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71. (a)

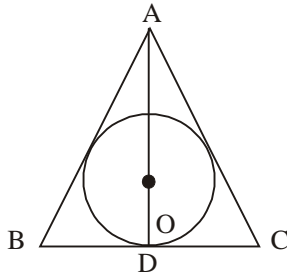


Let  $CD = x$   
 $\Rightarrow AB = 2x$ .  $\triangle COD \sim \triangle AOB$   
 because  $CD \parallel AB$  and take  $BD$  and  $AC$  as transversals.

$\therefore \frac{\text{ar}(\triangle COD)}{\text{ar}(\triangle AOB)} = \frac{CD^2}{AB^2} = \frac{x^2}{4x^2} = \frac{1}{4}$   
 $\Rightarrow \triangle ABD - \triangle AOD$   
 $= \triangle ACB - \triangle BOC$   
 $\Rightarrow \triangle AOB = \triangle AOB$   
 $\Rightarrow \frac{\triangle AOB}{\triangle COD} = \frac{1}{1}$  or 1 : 1

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72. (c)



$BD = DC = 7\sqrt{3}$  cm  
 $AD = \sqrt{AB^2 - BD^2}$   
 $= \sqrt{(14\sqrt{3})^2 - (7\sqrt{3})^2}$   
 $= \sqrt{(14\sqrt{3} + 7\sqrt{3})(14\sqrt{3} - 7\sqrt{3})}$   
 $= \sqrt{21\sqrt{3} \times 7\sqrt{3}} = 21$  cm  
 $\therefore OD =$  Radius of circle  
 $= \frac{1}{3} \times 21 = 7$  cm  
 $\therefore$  Area of circle  $= \pi r^2$   
 $= \frac{22}{7} \times 7 \times 7 = 154$  sq.cm.

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73. (c) Expression  $= \frac{2x^2 - 3x - 2}{3x^2 - 4x - 3}$

$= \frac{2(\sqrt{5} + 2)^2 - 3(\sqrt{5} + 2) - 2}{3(\sqrt{5} + 2)^2 - 4(\sqrt{5} + 2) - 3}$   
 $= \frac{2(5 + 4 + 4\sqrt{5}) - 3(\sqrt{5} + 2) - 2}{3(5 + 4 + 4\sqrt{5}) - 4(\sqrt{5} + 2) - 3}$   
 $= \frac{18 + 8\sqrt{5} - 3\sqrt{5} - 6 - 2}{27 + 12\sqrt{5} - 4\sqrt{5} - 8 - 3}$   
 $= \frac{10 + 5\sqrt{5}}{16 + 8\sqrt{5}} = \frac{5(2 + \sqrt{5})}{8(2 + \sqrt{5})} = \frac{5}{8}$   
 $= 0.625$

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74. (d)  $x + \frac{1}{x} = \sqrt{3}$

On cubing both sides,

$x^3 + \frac{1}{x^3} + 3\left(x + \frac{1}{x}\right) = 3\sqrt{3}$

$\Rightarrow x^3 + \frac{1}{x^3} + 3\sqrt{3} = 3\sqrt{3}$

$\Rightarrow x^3 + \frac{1}{x^3} = 0$

$\therefore$  Expression  $= x^{30} + x^{24} + x^{18} + x^{12} + x^6 + 1$   
 $= x^{24}(x^6 + 1) + x^{12}(x^6 + 1) + 1(x^6 + 1)$   
 $= (x^6 + 1)(x^{24} + x^{12} + 1)$

$= x^3 \left(x^3 + \frac{1}{x^3}\right) (x^{24} + x^{12} + 1) = 0$

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75. (c)  $\left(x - \frac{1}{x}\right)^2 = 3$

$\Rightarrow x^2 + \frac{1}{x^2} - 2 = 3$

$\Rightarrow x^2 + \frac{1}{x^2} = 5$

On cubing both sides,

$\left(x^2 + \frac{1}{x^2}\right)^3 = (5)^3$

$\Rightarrow x^6 + \frac{1}{x^6} + 3\left(x^2 + \frac{1}{x^2}\right) = 125$

$\Rightarrow x^6 + \frac{1}{x^6} + 3 \times 5 = 125$

$\Rightarrow x^6 + \frac{1}{x^6} = 125 - 15 = 110$

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76. (a) . . . . **The teachers, whom I worked with** is the right usage.  
**Whom** is used in-stead of **who** as the **Object** of a **Verb** or **Preposition** প্র্যাচিভর্স
77. (b) **One of** is followed by a **Plural Noun/Pronoun**.  
Hence, **versatile writers ever lived** is the right usage.
78. (b) **Each of the girls** is a **Singular Subject**. Hence, **Singular Verb-sings well** is the right usage.
79. (b) **indeed** : used to emphasize a positive statement or answer.  
Here, **indeed** is the right usage.
80. (b) **come to the conclusion** : something that you decide.  
Here, **came to the conclusion** is the right usage.
81. (c) **made-up (Adj.)** : invented; not true/real  
**make off (Phr.V.)** : to hurry away, especially in order to escape  
**made off** → **Past Tense** of **make off** প্র্যাচিভর্স  
**make up (Phr.V.)** : to form something  
Here, **made up** is the right usage.
82. (b) Here, **before** is the right usage.  
It is a quote by Shakespeare.
83. (d) **comply with (Phr. V.)** : to obey a rule, an order etc. প্র্যাচিভর্স  
**cope with (Phr.V.)** : to manage; to deal success fully with something difficult  
**conduce to (Phr.V.)** : to lead/ contribute (to a result)  
**side with (Phr.V.)** : to support one person/group in an argument against somebody else  
Here, **comply with** is the right usage.
84. (b) blend  
**merge (Verb)** : to combine or make two or more things combine to form a single thing.
85. (a) clear  
**limpid (Adjective)** : transparent.
86. (b) occupation  
**vocation (Noun)** : a type of work or way of life; profession. প্র্যাচিভর্স
87. (c) **too fond of her own voice** : to like talking a lot or too much, usually without wanting to listen to other people
- Akshita is **too fond of her own voice**.  
The best option is **does not listen properly to anyone else**.
88. (c) **heart – to – heart talk** : candid talk; speaking honestly and frankly. প্র্যাচিভর্স  
● We sat down and had a nice **heart-to-heart talk** for about an hour.  
The best option is **frank talk**.
89. (a) **a hard nut to crack** : a difficult problem or situation to deal with.  
● This assignment is a **hard nut to crack**.  
The best option is **difficult task**.
90. (c) **come to grief** : suffer  
● In the end, he **came to grief** because he did not follow instructions.  
The best option is **suffer**. প্র্যাচিভর্স
91. (c) legal  
**illicit (Adjective)** : not allowed by the law; illegal; not approved of the normal rules of society.
92. (b) **supply (Noun)** : an amount of something that is provided or available to be used.  
**demand (Noun)** : a very firm request for something.
93. (d) **reputed (Adjective)** : known; generally thought to be something. প্র্যাচিভর্স  
**notorious (Adjective)** : well known for being bad; infamous.
94. (d) **lexicographer**  
**lexicographer (N.)** : a person who writes and edits dictionaries  
**lexicon (N.)** : all the words/ phrases used in a particular language/subject  
**lexical (Adj.)** : connected with the words of a language  
**lexicography (N.)** : the theory and practice of writing dictionaries
95. (b) **accomplice**.
96. (b) a place where accessibility is possible.
97. (c) A public body, an institution, a corporation or an individual প্র্যাচিভর্স
98. (a) Any one
99. (c) a few shelves of books to several million items.
100. (c) There is privacy in a library.