

SSC CGL (Tier-1) Exam. Practice Set

Answers with Explanation

- (c) The scientific study of Fungi is called Mycology. Similarly, the scientific study of tissue is called Histology.
- (a) Water flows continuously in the river but water remains stagnant in the pond. *শ্রুতিভঙ্গ*
- (b) Disease is cured through medicine. Similarly, injury is healed through proper care.
- (b) The sound of owl is called hoots. Similarly, the sound of hen is called clucks.
- (c) Cytology is that branch of biology which deals with cell. Similarly, Ornithology is that branch of Biology which deals with birds.
- (b) E is the son of B.
A is the brother of B.
Therefore, E is nephew of A
- (a) A is mother of B and D.
- (c)

D	E	L	H	I	C	A	L	C	U	T	T	A
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
7	3	5	4	1	8	2	5	8	9	6	6	2

Therefore,

C	A	L	I	C	U	T
↓	↓	↓	↓	↓	↓	↓
8	2	5	1	8	9	6

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- (a)

- ⇒ ÷	+ ⇒ ×
÷ ⇒ -	× ⇒ +

Option (a)
 $20 - 4 + 6 \div 9 \times 4 = 25$
 $\Rightarrow 20 \div 4 \times 6 - 9 + 4 = 25$
 $\Rightarrow 5 \times 6 - 9 + 4 = 25$
 $\Rightarrow 30 - 9 + 4 = 25$

Option (b)
 $20 + 6 - 4 \times 9 \div 6 = 32$
 $\Rightarrow 20 \times 6 \div 4 + 9 - 6 = 32$
 $\Rightarrow 30 + 9 - 6 \neq 32$

Option (c)
 $20 \div 9 \times 9 - 4 + 6 = 33$
 $\Rightarrow 20 - 9 + 9 \div 4 \times 6 = 33$

$\Rightarrow 20 - 9 + \frac{9}{4} \times 6 = 33$

$\Rightarrow 20 - 9 + \frac{27}{2} = 33$

$\Rightarrow \frac{40 - 18 + 27}{2} = 33$

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$\Rightarrow 49 \neq 2 \times 33$

Option (d)

$20 \times 4 - 6 - 4 + 9 = 20$

$\Rightarrow 20 + 4 \div 6 \div 4 \times 9 = 20$

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$\Rightarrow 20 + \frac{4}{6} \times \frac{1}{4} \times 9 = 20$

$\Rightarrow 20 + \frac{3}{2} \neq 20$

- (b)

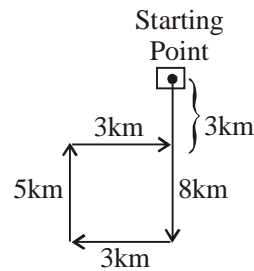
+ ⇒ -	- ⇒ ×
÷ ⇒ +	× ⇒ ÷

$15 - 3 + 10 \times 5 \div 5$

$\Rightarrow 15 \times 3 - 10 \div 5 + 5$

$\Rightarrow 45 - 2 + 5 = 48$

- (d)



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It is clear from the diagram that Ashok was in South direction from the starting point

- (b)

Z	E	B	R	A
↓	↓	↓	↓	↓
26	5	2	18	1

Position number in English Alphabet

Therefore,

C	O	B	R	A
↓	↓	↓	↓	↓
3	15	2	18	1

- (b) Today is Saturday.

Tomorrow will be Sunday.

Sunday + 4 = Thursday.

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- (d) The number 4 will lie opposite 5.

- (b) There is no 'B' letter in the given word. So, the word TABULATION cannot be formed.

R	E	C	A	P	I	T	U
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⇒ CAPTURE

R	E	C	A	P	I	T	U	L	A	T	I	O	N
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⇒ RELATION

REC A PITU LATION

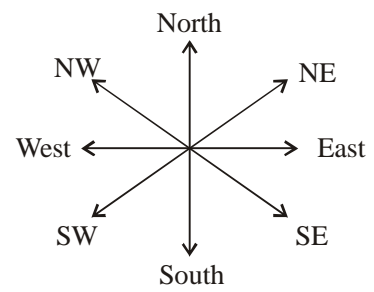
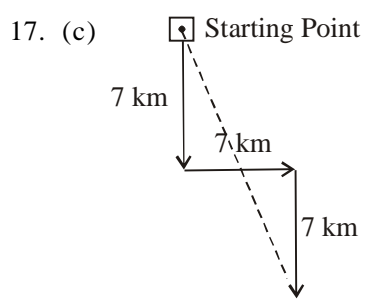
⇒ PICTURE

16. (c) There is no 'E' letter in the given word. Therefore, the word MINISTER cannot be formed.

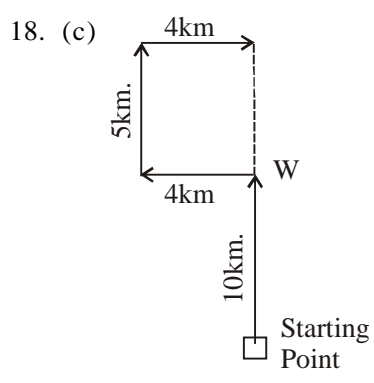
ADMINI STR ATION ⇒ STATION

ADMINIST RATION ⇒ RATION

A DMIN ISTRATION ⇒ MIND



It is clear from the diagram that the man is in South-East direction from the starting point.



Required distance = 10 + 5 = 15 km.

19. (c) Suppose the age of Johnny is x years and that of Rahul is y years.

According to question

Age of Hari = 2x = 5y

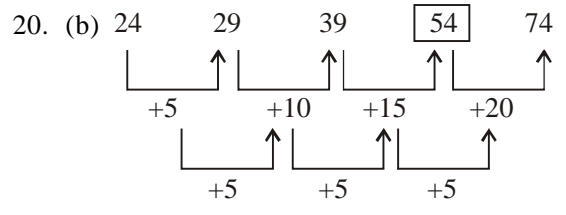
or, 2x - 5y = 0 ... (i)

Again x = 3 + y

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

On solving equations (i) and (ii), we get

y = 2
∴ Age of Johnny = 3 + y = 3 + 2 = 5 years

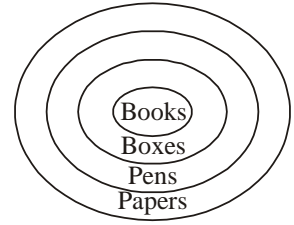


21. (b) V ⁺³ VIII ⁺³ XI ⁺³ XIV ⁺³ XVII ⁺³ XX

22. (d) 7 6 2 5 3 9

↓ ↓ ↓ ↓ ↓ ↓
A L T U J K

23. (c) All the three statements are Universal Affirmative (A-type).



24. (c) First figure
 $\sqrt{64} + \sqrt{36} + \sqrt{49}$
⇒ 8 + 6 + 7 = 21

Second figure
 $\sqrt{121} + \sqrt{81} + \sqrt{100}$
⇒ 11 + 9 + 10 = 30

25. (c) First figure
 $(8 + 7)^2 = 225$
Second figure
 $(3 + 4)^2 = 49$
Third figure

$\sqrt{121} = 11$
6 + ? = 11
∴ ? = 11 - 6 = 5

26. (a) Lothal was one of the most prominent cities of the ancient Indus valley civilization. Located

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in Bhal region of the modern state of Gujarat and dating from 2400 BCE, it was discovered in 1954. Lothal was excavated from February 13, 1955 to May 19, 1960 by the Archaeological Survey of India (ASI). Lothal's dock—the world's earliest known, connected the city to an ancient course of the Sabarmati river on the trade route between Harappan cities in Sindh and the peninsula of Saurashtra when the surrounding Kutch desert of today was a part of the Arabian Sea. It was a vital and thriving trade centre in ancient times, with its trade of beads, gems and valuable ornaments reaching the far corners of West Asia and Africa.

27. (d) Abanindranath Tagore was the principal artist and creator of 'Indian Society of Oriental Art' and the first major exponent of swadeshi values in Indian art, thereby founding the influential Bengal school of art, which led to the development of modern Indian painting. He was also a noted writer, particularly for children. Popularly known as 'Aban Thakur', his books Rajkahini, Budo Angla, Nalak, and Khirer Putul are landmarks in Bengali language children's literature. Tagore sought to modernize Mughal and Rajput styles in order to counter the influence of Western models of art, as taught in Art Schools under the British Raj and developed the Indian style of painting, later known as Bengal school of art which was an influential art movement and a style of Indian painting that originated in Bengal, primarily Kolkata and Shantiniketan, and flourished throughout India during the British Raj in the early 20th century. শ্রীচিভর্ষ
28. (d) The Constituent Assembly of India was elected to write the Constitution of India. The Constituent Assembly was set up while India was still under British rule, following negotiations between Indian leaders and members of the 1946 Cabinet Mission to India from the United Kingdom.
29. (c) When the Sun is vertically above the equator, the day is of equal length all over Earth. This happens twice a year, and these are the "equinoxes" in March and in September. Between the two tropic zones, which includes the equator, the Sun is directly overhead twice per year. Outside the tropic zones, whether to the south or north, the Sun is never directly overhead. শ্রীচিভর্ষ
30. (b) Dr Vivek Lall an Indian-origin Chief Executive

Officer of General Global Corporation has been honoured with the Lifetime Achievement Award by US President Joe Biden with citation of 'With Grateful Recognition'. শ্রীচিভর্ষ

31. (c) A currency is deemed convertible on the current account if it can be freely converted into other convertible currencies for purchase and sale of commodities and services. For example, if the rupee is convertible on the current account an Indian firm should be able to freely convert rupee into Yen (JPY) to purchase from a Japanese Company. Since August 20, 1994, the rupee has been made a freely convertible currency on current account.
32. (c) Megasthenes was a Greek ethnographer and explorer in the Hellenistic period, author of the work Indica. He was born in Asia Minor (modern day Turkey) and became an ambassador of Seleucus I of the Seleucid dynasty possibly to Chandragupta Maurya in Pataliputra. Megasthenes' Indica is the first well known Western account of India and he is regarded as one of the founders of the study of Indian history in the West. He is also the first foreigner Ambassador to be mentioned in the Indian history. শ্রীচিভর্ষ
33. (c) A Money Bill can be introduced in Lok Sabha only. If any question arises whether a Bill is a Money Bill or not, the decision of Speaker thereon is final. The Speaker is under no obligation to consult any one in coming to a decision or in giving his certificate that a Bill is a Money Bill. The certificate of the Speaker to the effect that a Bill is a Money Bill, is to be endorsed and signed by him when it is transmitted to Rajya Sabha and also when it is presented to the President for his assent.
34. (c) The water gains kinetic energy as it falls down and loses its potential energy. Assuming no other losses, part of the kinetic energy gain of water is converted into heat, raising the temperature of water. শ্রীচিভর্ষ
35. (d) Sarnath is the deer park where Gautama Buddha first taught the Dharma, and where the Buddhist Sangha came into existence through the enlightenment of Kondanna. It is located to the north-east of Varanasi, in Uttar Pradesh.
36. (b) Sergio Perez recently won Formula One 2022 Singapur Grand Prix race at Marina Bay Street circuit, Singapore.
37. (c) Sound travels faster in liquids and non-porous solids than it does in air. It travels about 4.3

times as fast in water (1,484 m/s), and nearly 15 times as fast in iron (5,120 m/s), than in air at 20 degrees Celsius. Sound waves in solids are composed of compression waves (just as in gases and liquids), but also exhibit a different type of sound wave called a shear wave, which occurs only in solids. The speed of sound is the distance travelled during a unit of time by a sound wave propagating through an elastic medium. In dry air at 20 °C (68 °F), the speed of sound is 343.2 metres per second (1,126 ft/s). This is 1,236 kilometres per hour (768 mph), or about one kilometer in three seconds or approximately one mile in five seconds.

38. (c) Some fundamental rights apply for persons of any nationality whereas others are available only to the citizens of India. The right to life and personal liberty is available to all people and so is the right to freedom of religion. On the other hand, freedoms of speech and expression and freedom to reside and settle in any part of the country are reserved to citizens alone, including non-resident Indian citizens. Article 15 prohibits discrimination on the grounds only of religion, race, caste, sex, place of birth, or any of them. Article 16 guarantees equality of opportunity in matters of public employment and prevents the State from discriminating against anyone in matters of employment on the grounds only of religion, race, caste, sex, descent, place of birth, place of residence or any of them. প্র্যাচিডর্স
39. (c) Malik Kafur was a slave who became a head general in the army of Alauddin Khilji, ruler of the Delhi sultanate from 1296 to 1316 AD. Between 1309 and 1311, Malik Kafur led two campaigns in South India. The first was against Warangal and other against Dwar samudra, Mabar and Madurai. প্র্যাচিডর্স
40. (c) The word “Metamorphism” comes from the Greek: Meta = change, Morph = form, so metamorphism means to change form. The process of metamorphism is one that changes or alters either the mineralogy (structure) or the texture, but typically both, of some pre-existing rock. Metamorphic rocks are consequently rocks that have undergone a change or “metamorphosis” from a previous state as a sedimentary, igneous or even another metamorphic rock. প্র্যাচিডর্স
41. (c) Most of us think as glass as a solid material, but it is actually a super cooled liquid. Molecular

units have a disordered arrangement yet still have sufficient cohesion that mechanical rigidity is produced. Glass was first made in the Middle East, approximately during the third millennium BC. Early uses were primarily for vessels or decoration. Glass did not come into use for windows until the first century AD, and was made at that time by casting or hand blowing the glass. Today, glass is a highly engineered material with many different varieties and countless uses. There is float glass, annealed glass, wired glass, tempered glass, safety or laminated glass, leaded glass, heat absorbing glass, low e glass, etc. Supercooling is the process of chilling a liquid below its freezing point, without it becoming solid. প্র্যাচিডর্স

42. (b) The Total Fixed Cost Curve is a curve that graphically represents the relation between total fixed cost incurred by a firm in the short-run product of a good or service and the quantity produced. This curve is constructed to capture the relation between total fixed cost and the level of output, holding other variables, like technology and resource prices, constant. Because total fixed cost are, in fact, fixed, the total fixed cost curve is, in fact, a horizontal line. প্র্যাচিডর্স
43. (b) The Raman Magsaysay Award winning author-journalist Palagummi Sainath authored a new book named “**The Last Heros**”.
44. (c) Argon is the third most common gas in the Earth’s atmosphere, at 0.93% (9,300 ppm), making it approximately 23.8 times as abundant as next most common atmospheric gas, carbon dioxide (390 ppm), and more than 500 times as abundant as the next most common noble gas, neon (18 ppm). Nearly all of this argon is radiogenic argon-40 derived from the decay of potassium-40 in the Earth’s crust. In the universe, argon-36 is by far the most common argon isotope, being the preferred argon isotope produced by stellar nucleosynthesis in supernovas. We find the inert gases argon (9,340 ppmv), neon (18.18 ppmv) and helium (5.24 ppmv) in the earth’s atmosphere. Note that we use ppmv here to mean parts per million by volume. Argon is produced industrially by the fractional distillation of liquid air. Argon is mostly used as an inert shielding gas in welding and other high temperature industrial processes where ordinarily non-reactive substances become reactive. প্র্যাচিডর্স

45. (b) Lord Dalhousie asked Nawab Wajid Ali Shah to sign the abdication. On his refusal, the state of Awadh was annexed by a proclamation on February 13, 1856. প্র্যাচিভার্স
46. (c) Heer Ranjha is one of the four popular tragic romances of the Punjab. The other three are Mirza Sahiba, Sassi Punnun and Sohni Mahiwal. There are several poetic narrations of the story, the most famous being 'Heer' by Waris Shah written in 1766. Bhatiali song is related to West Bengal and modern day Bangladesh. Garba is an Indian form of dance that originated in the Gujarat region. The name is derived from the Sanskrit term Garbha ("womb"). Raas or Dandiya Raas is the traditional folk dance form of Vrindavan, India, where it is performed depicting scenes of Holi, and lila of Krishna and Radha. প্র্যাচিভার্স
47. (a) The source of oxygen produced during photosynthesis is the splitting of water molecule into hydrogen and oxygen. Photosynthesis uses carbon dioxide and water, releasing oxygen as a waste product. Although photosynthesis can happen in different ways in different species, some features are always the same. For example, the process always begins when energy from light is absorbed by proteins called photosynthetic reaction centers that contain chlorophylls. In plants, these proteins are held inside organelles called chloroplasts, while in bacteria they are embedded in the plasma membrane. Some of the light energy gathered by chlorophylls is stored in the form of adenosine triphosphate (ATP). The rest of the energy is used to remove electrons from a substance such as water. These electrons are then used in the reactions that turn carbon dioxide into organic compounds. প্র্যাচিভার্স
48. (d) Anish Dayal Singh, IPS officer of 1988 batch. Manipur cadre, was appointed as the 32nd Director General of Indo-Tibetan Border Police till December 2024. He succeeded S L Thaosen.
49. (c) The Pong Dam, also known as the Beas Dam, is an earth-fill embankment dam on the Beas River just upstream of Talwara in the state of Himachal Pradesh. The purpose of the dam is water storage for irrigation and hydroelectric power generation. At the time of its completion, the Pong Dam was the tallest of its type in India. প্র্যাচিভার্স
50. (d) Members of Parliaments are directly elected by citizens of India on the basis of Universal Adult franchise, except two who are appointed by

the President of India. The President of India is elected, from an Electoral College comprising a group of nominees, by the elected members of the Parliament of India (Lok Sabha and Rajya Sabha) as well as of the state legislatures (Vidhan Sabhas). The Vice President is elected indirectly by an electoral college consisting members of both houses of the Parliament. Members of the Lok Sabha elect their Speaker in the first meeting of the House after a general election.

51. (d) LCM of 3, 2 and 6 = 6 প্র্যাচিভার্স
- $$\therefore (3)^{\frac{1}{3}} = (3^2)^{\frac{1}{6}} = (9)^{\frac{1}{6}}$$
- $$2^{\frac{1}{2}} = (2^3)^{\frac{1}{6}} = (8)^{\frac{1}{6}}$$
- $$(1)^{\frac{1}{6}} = 1; (6)^{\frac{1}{6}} = (6)^{\frac{1}{6}}$$
52. (d) Let the required number of persons be x. According to the question,
- $$2x^2 = 3042$$
- $$\text{or } x^2 = \frac{3042}{2} = 1521$$
- $$\text{or } x = \sqrt{1521} = 39$$
- প্র্যাচিভার্স
53. (a) Let the length of bamboo be x metres. \therefore Length of bamboo above water
- $$= x - \frac{x}{10} - \frac{5x}{8}$$
- $$= \frac{40x - 4x - 25x}{40} = \frac{11x}{40}$$
- According to the question,
- $$\frac{11x}{40} = 2.75$$
- $$\Rightarrow x = \frac{2.75 \times 40}{11} = 10 \text{ metres.}$$
- প্র্যাচিভার্স
54. (c) Let the number be 15x and 15y, where x and y are co-prime. $\therefore 15x \times 15y = 6300$
- $$\Rightarrow xy = \frac{6300}{15 \times 15} = 28$$
- So, two pairs are (7, 4) and (14, 2)
55. (d) We find LCM of 5, 6 and 8
- $$5 = 5$$

6 = 3 × 2

8 = 2³

= 2³ × 3 × 5 = 8 × 15 = 120

Required number = 120K + 3

∴ when K = 2, 120 × 2 + 3 = 243 required no.

56. (c) Expression

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It is completely divisible by 9

= 25 - 5 [2 + 3 {2 - 2(5 - 3) + 5} - 10] ÷ 4

= 25 - 5 [2 + 3 {2 - 2 × 2 + 5} - 10] ÷ 4

= 25 - 5 [2 + 9 - 10] ÷ 4

= 25 - 5 ÷ 4 = 25 - $\frac{5}{4}$

= $\frac{100 - 5}{4} = \frac{95}{4} = 23.75$

57. (a) $\frac{5}{15} \times \frac{10}{4} \times \frac{21}{7}$ of $\frac{5}{8} \times \frac{3}{2}$

= $5 \times \frac{2}{5} \times \frac{21}{10} \times \frac{2}{7} \times \frac{5}{4}$

= $\frac{3}{2} = 1\frac{1}{2}$

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58. (c) [0.9 - {2.3 - 3.2 - (7.1 - 8.9)}]

= [0.9 - {2.3 - 3.2 + 1.8}]

= [0.9 - 0.9] = 0

59. (c) Total expenditure of the year

= ₹(3 × 2200 + 4 × 2550 + 5 × 3120)

= ₹(6600 + 10200 + 15600) = ₹32400

∴ Total income of the year = ₹(32400 + 1260)

= ₹33660

∴ Average monthly income

= $\frac{₹33660}{12} = ₹2,805$

60. (c) M + T + W + TH = 4 × 37 = 148°C (i)

TH + F + S + S = 4 × 41 = 164°C (ii)

M + T + ... + S + S = 7 × 39 = 273°C (iii)

∴ The temperature of the fourth day

= 148 + 164 - 273 = 39°C

61. (a) $\frac{W_1}{W_2} = \frac{2}{3}$

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⇒ $\frac{W_2}{W_1} = \frac{3}{2}$ and $\frac{W_1}{W_3} = \frac{1}{2}$

∴ $\frac{W_2}{W_1} \times \frac{W_1}{W_3} = \frac{W_2}{W_3} = \frac{3}{2} \times \frac{1}{2} = \frac{3}{4} = 3 : 4$

62. (a) A : B = 3 : 7

B : C = 6 : 5

A : B : C = 3×6 : 7×6 : 7×5

= 18 : 42 : 35

Sum of the ratios

= 18 + 42 + 35 = 95

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∴ B's share = ₹($\frac{42}{95} \times 33630$) = ₹14,868

63. (d) Required percentage

= $\frac{70}{3.5 \times 1000} \times 100 = 2\%$

64. (c) Let the number be x. According to the question

80% of x + 80 = x

⇒ $\frac{80x}{100} + 80 = x$

⇒ $\frac{4x}{5} + 80 = x$

⇒ $\frac{x}{5} = 80 \Rightarrow x = 400$

65. (a) Expression = $\frac{4 + 3\sqrt{3}}{7 + 4\sqrt{3}}$

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Rationalising the denominator,

= $\frac{(4 + 3\sqrt{3})(7 - 4\sqrt{3})}{(7 + 4\sqrt{3})(7 - 4\sqrt{3})}$

= $\frac{28 - 16\sqrt{3} + 21\sqrt{3} - 12 \times 3}{49 - 48}$

= 28 + 5√3 - 36 = 5√3 - 8

66. (c) $x + \frac{1}{x} = 99$

∴ $\frac{100x}{2x^2 + 102x + 2}$

= $\frac{100x}{2x^2 + 2 + 102x}$

On dividing by x,

= $\frac{100}{2x + \frac{2}{x} + 102}$

= $\frac{100}{2\left(x + \frac{1}{x}\right) + 102}$

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$$= \frac{100}{2 \times 99 + 102} = \frac{100}{300} = \frac{1}{3}$$

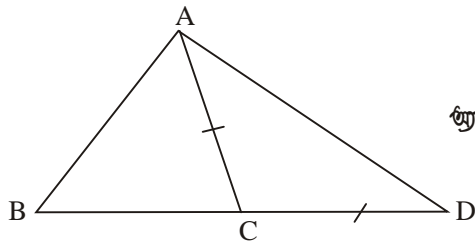
67. (d) Expression

$$\begin{aligned} &= \sqrt{\frac{1+\sin\theta}{1-\sin\theta}} + \sqrt{\frac{1-\sin\theta}{1+\sin\theta}} && \text{শ্রুটিভঙ্গি} \\ &= \sqrt{\frac{(1+\sin\theta)(1+\sin\theta)}{(1-\sin\theta)(1+\sin\theta)}} + \sqrt{\frac{(1-\sin\theta)(1-\sin\theta)}{(1+\sin\theta)(1-\sin\theta)}} \\ &= \sqrt{\frac{(1+\sin\theta)^2}{1-\sin^2\theta}} + \sqrt{\frac{(1-\sin\theta)^2}{1-\sin^2\theta}} \\ &= \sqrt{\frac{(1+\sin\theta)^2}{\cos^2\theta}} + \sqrt{\frac{(1-\sin\theta)^2}{\cos^2\theta}} \\ &= \frac{1+\sin\theta}{\cos\theta} + \frac{1-\sin\theta}{\cos\theta} \\ &= \frac{1+\sin\theta+1-\sin\theta}{\cos\theta} = \frac{2}{\cos\theta} = 2\sec\theta \end{aligned}$$

68. (c) $\frac{\cos^3\theta + \sin^3\theta}{\cos\theta + \sin\theta} + \frac{\cos^3\theta - \sin^3\theta}{\cos\theta - \sin\theta}$

$$\begin{aligned} &= \frac{(\cos\theta + \sin\theta)(\cos^2\theta + \sin^2\theta - \cos\theta \cdot \sin\theta)}{\cos\theta + \sin\theta} && \text{শ্রুটিভঙ্গি} \\ &+ \frac{(\cos\theta - \sin\theta)(\cos^2\theta + \sin^2\theta + \cos\theta \cdot \sin\theta)}{(\cos\theta - \sin\theta)} \\ &= \cos^2\theta + \sin^2\theta - \cos\theta \cdot \sin\theta + \cos^2\theta + \sin^2\theta + \cos\theta \cdot \sin\theta \\ &= 1 + 1 = 2 \end{aligned}$$

69. (a)

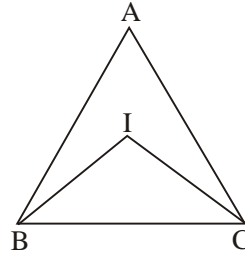


$$\begin{aligned} \angle ACD &= 180^\circ - \angle ACB \text{ (Linear Pair)} \\ &= 180^\circ - 72^\circ = 108^\circ \end{aligned}$$

$$\angle CAD = \angle ADC = \frac{72}{2} = 36^\circ$$

$$\therefore \angle ABC = 180^\circ - 109^\circ - 36^\circ = 35^\circ$$

70. (b)



$$\angle B + \angle C = 180 - 50 = 130^\circ$$

In $\triangle BIC$,

$$\angle IBC + \angle ICB + \angle BIC = 180^\circ$$

$$\Rightarrow \frac{\angle B}{2} + \frac{\angle C}{2} + \angle BIC = 180^\circ$$

$$\Rightarrow \angle BIC = 180^\circ - \frac{1}{2}(\angle B + \angle C)$$

$$= 180^\circ - \frac{130}{2}$$

$$= 180^\circ - 65^\circ = 115^\circ$$

71. (b) Let the sides of parallelogram be $5x$ and $4x$.

Base \times Height

= Area of parallelogram

$$\therefore 5x \times 20 = 1000$$

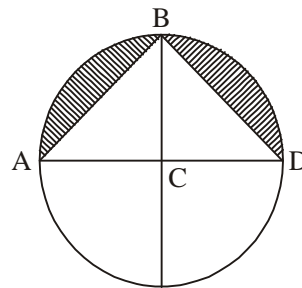
$$\Rightarrow x = \frac{1000}{5 \times 20} = 10$$

\Rightarrow Sides = 50 and 40 units

$$\therefore 40 \times h = 1000$$

$$\Rightarrow h = \frac{1000}{40} = 25 \text{ units}$$

72. (c)



Let Radius of circle = a units

$$\therefore \text{Area of semi circle} = \frac{\pi a^2}{2} \text{ sq.units}$$

Both triangles $\triangle ABC$ and $\triangle BCD$ are isosceles and equal.

$$\therefore \text{Area of each triangle} = \frac{1}{2} a^2$$

\Rightarrow Area of both triangles

$$= 2 \times \frac{1}{2} a^2 = a^2 \text{ sq.units}$$

\therefore Area of shaded region

$$= \frac{\pi a^2}{2} - a^2 = a^2 \left(\frac{\pi}{2} - 1 \right) \text{ sq.units}$$

72 নম্বর প্রশ্নের সঠিক উত্তর 'c' হবে কিন্তু অ্যাচিভার্সের উত্তরপত্রে 'a' করা হয়েছে। অনিচ্ছাকৃত ভুলের জন্য ক্ষমাপ্রার্থী।

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

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

On cubing both sides,

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

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

$$\Rightarrow x^6 + 1 = 0$$

$$\therefore x^{206} + x^{200} + x^{90} + x^{84} + x^{16} + x^{12} + x^6 + 1 = x^{200}(x^6+1) + x^{84}(x^6+1) + x^{12}(x^6+1) + (x^6+1) = 0$$

74. (d) $x^2 + 1 = 2x$ (Given)

$$\Rightarrow x + \frac{1}{x} = 2 \quad \dots(i)$$

Expression

$$\frac{x^4 + \frac{1}{x^2}}{x^2 - 3x + 1} = \frac{\frac{x^6 + 1}{x^2}}{(x^2 - 3x + 1)}$$

$$= \frac{x^6 + 1}{(x^2 + 1 - 3x) \cdot x^2}$$

$$= \frac{x^6 + 1}{(2x - 3x)x^2} = \frac{x^6 + 1}{-x^3}$$

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

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

$$= - \left[\left(x + \frac{1}{x} \right)^3 - 3 \left(x + \frac{1}{x} \right) \right]$$

$$= - [2^3 - 3 \times 2]$$

$$= - 2$$

75 (a) $\frac{1}{a} - \frac{1}{b} = \frac{1}{a-b}$

$$\Rightarrow \frac{b-a}{ab} = \frac{1}{a-b}$$

$$\Rightarrow (a-b)(a-b) = -ab$$

$$\Rightarrow a^2 - 2ab + b^2 = -ab$$

$$\Rightarrow a^2 - ab + b^2 = 0$$

$$\therefore a^3 + b^3 = (a+b)(a^2 - ab + b^2) = 0$$

76. (b) Here, **subject it (Africa) is singular**. Hence, **singular Verb** i.e., **and it contains about one fifth** is the right usage

77. (d) **No error**

78. (b) Here, use of **I enjoy** (repetition) is superfluous. Hence, **I enjoy jogging and playing the piano** is the right usage.

79. (a) Here, **friendly (Adjective)** : is the right usage.

80. (c) Here, **nor** is the right usage.

Neither ... nor are **Correlatives**.

81. (d) Here **to (Prep.)** is the right usage.

82. (a) Here, **at (Prep.)** is the right usage.

83. (d) Here, **was perfected' (Passive Voice)** is the right usage.

84. (c) **roam**

wander (V.) : to walk around a place without any purpose; roam

85. (c) **awareness**

consciousness (N.) : awareness; the state of being aware of something ; the state of being able to use senses

86. (b) **coax**

persuade (V.): to make somebody do something by giving them good reasons for doing it; convince; coax.

87. (c) **gift of the gab** : the ability to speak easily

- My brother really has the **gift of gab**. He can convince anyone of anything.

The best option is **talent for speaking**.

88. (c) **cope with** : to deal successfully with something difficult; manage

- I don't think I can **cope with** any more trouble.
The best option is **handle**
89. (a) **cool as a cucumber** : very calm and controlled, especially in a difficult situation শ্রদ্ধাচিহ্ন
- The politician kept **cool as a cucumber** throughout the interview with the aggressive journalist.
The best option is **not nervous or emotional**.
90. (c) **a close shave** : a narrow escape
- The car passed so close to us; it was really a **close shave**.
The best option is **narrow escape from danger**.
91. (d) **skimp (V.)** : to try to spend less time, money on something than is really needed.
squander (V.) : to waste money, time etc. in a stupid way.
slander (V.) : to make a false spoken statement about somebody that is intended to damage the good opinion that people have of them শ্রদ্ধাচিহ্ন
92. (c) **confident (Adj.)** : feeling sure about your own ability to do things and be successful
diffident (Adj.) : not having much confidence in yourself; shy; not wanting to talk about yourself.
93. (c) **surrender (V.)** : to admit that you have been defeated and want to stop fighting; give in.
vanquish (V.) : to defeat somebody completely in a competition, war etc. শ্রদ্ধাচিহ্ন
94. (a) **bankrupt** শ্রদ্ধাচিহ্ন
bankrupt (N.) : without enough money to pay what you own; insolvent
bank roll (V.) : to support by giving money; finance
extravagant : to spending more than is needed
borrower (N.) : a person/organisation that borrows money from a bank
95. (b) **botany**
botany (N.) : the study of plant life
zoology (N.) : the study of animal life
geography (N.) : the study of earth's surface, physical features, divisions, products population, etc.
geology (N.) : the study of earth, including the origin and history of the rocks and soil of which the earth is made. শ্রদ্ধাচিহ্ন
96. (a) **look (Verb)**
97. (a) **key (Noun)**
98. (d) **bleak (Adj.)** : gloomy; hopeless
99. (d) **has (Aux. V.)**
100. (a) **issue (Noun)**

