

SSC CGL (Tier – I) Exam. Practice Set

Answers with Explanation

1. (d) 'Nurse' receives instructions from 'Doctor' and follows. Similarly, 'Follower' receives instructions from 'Leader' and follows.

2. (d) 'Umpire' gives decision in the 'Match'. Similarly, 'Judge' gives decision in the 'Lawsuit'.

3. (d) $24 : 126 :: 48 : 344$
 $\downarrow \qquad \downarrow \qquad \downarrow \qquad \downarrow$
 $5^2-1 \quad 5^3+1 \quad 7^2-1 \quad 7^3+1$ *শ্রুতিভঙ্গ*

4. (c) $DARE : ADER :: REEK : ERKE$

5. (c) The study of 'Brain' is called 'Neurology'. Similarly, the study of 'Body' is called 'Physiology'.

6. (b) As, 22 April is celebrated as World Earth Day. Similarly, 24 April is celebrated as **National Women's Political Empowerment Day**.

7. (a) $4 : 32 :: 7 : 98$
 $\downarrow \qquad \downarrow \qquad \downarrow \qquad \downarrow$
 $4^2+4^2 \quad 7^2+7^2$

8. (b) Sun is warm by nature. Similarly, Moon is **cool** by nature.

9. (b) $513 : 730 :: 1001 : 1332$
 $\downarrow \qquad \downarrow \qquad \downarrow \qquad \downarrow$
 $8^3+1 \quad 9^3+1 \quad 10^3+1 \quad 11^3+1$

10. (d) $123 : 36 :: 221 : 25$
 $\downarrow \qquad \downarrow \qquad \downarrow \qquad \downarrow$
 $(1+2+3) = 6 = 6^2 \quad (2+2+1) = 5 = 5^2$

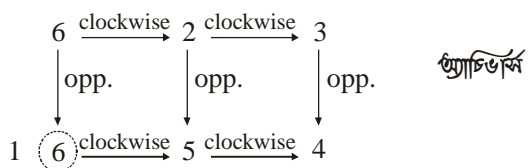
11. (c) $1, 2, 5, 16, 65, 326$
 $\downarrow \qquad \downarrow \qquad \downarrow \qquad \downarrow \qquad \downarrow \qquad \downarrow$
 $0 \times 0 + 1 \quad 1 \times 1 + 1 \quad 2 \times 2 + 1 \quad 5 \times 3 + 1 \quad 16 \times 4 + 1 \quad 65 \times 5 + 1$

12. (c) $M N L O K P J Q I R H S$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $+1 \quad -1 \quad +1 \quad -1 \quad +1 \quad -1 \quad +1 \quad -1$
 $\uparrow \quad \uparrow \quad \uparrow \quad \uparrow \quad \uparrow \quad \uparrow \quad \uparrow \quad \uparrow$
 $+1 \quad -1 \quad +1 \quad -1 \quad +1 \quad -1 \quad +1 \quad -1$ *শ্রুতিভঙ্গ*

13. (d) $2 \quad 5 \quad 10 \quad 50 \quad 500 \quad 2500$
 $\downarrow \qquad \downarrow \qquad \downarrow \qquad \downarrow \qquad \downarrow$
 $(2 \times 5) \quad 10 \times 50 \quad 500 \times 50$

14. (b) a a a b / a a b c / a a c d / a a d e

15. (c) According to dice I and III



16. (a) Rule \Rightarrow Minute $= \frac{2}{11}(H_1 \times 30 \pm A^\circ)$

Here $H_1 = 8$ and $A^\circ = 0$

(When both the hands meet each other then 0° angle is made)

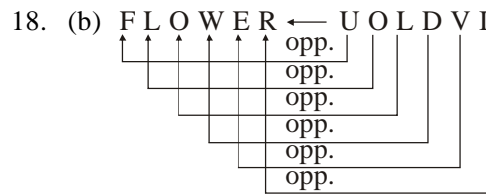
$= \frac{2}{11}(8 \times 30 \pm 0)$ *শ্রুতিভঙ্গ*

$= \frac{2}{11}(240 \pm 0)$

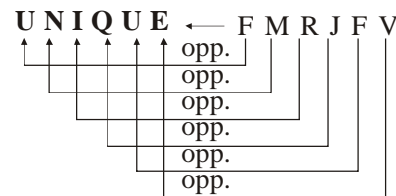
$= \frac{480}{11} = 43 \frac{7}{11}$ Minute

So, at 8 O'clock $43 \frac{7}{11}$ minutes both the hands will meet each other.

17. (d)



Similarly,



19. (a) 2 [5] (6) \rightarrow You (are) [good](I)

(6) [3] 7 \rightarrow We (are) [bad](II)

[3] [5] 8 \rightarrow [Good] and [bad](III)

According to equation (iii), and = 8.

20. (d) $5 \times 4 \times 3 \times 2 = 120 \div 10 = 12$

$6 \times 5 \times 3 \times 2 = 180 \div 10 = 18$

Similarly,

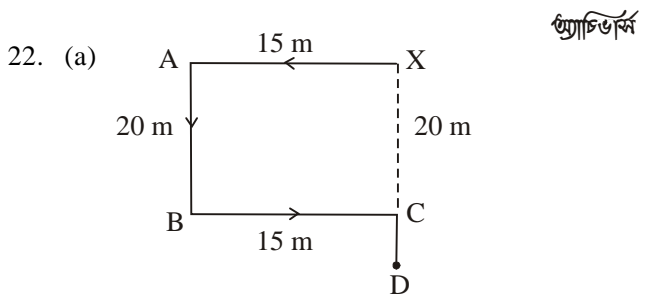
$9 \times 5 \times 2 \times 2 = 180 \div 10 = 18$ *শ্রুতিভঙ্গ*

21. (b) $45 + 25 + 30 + 25 = \frac{125}{5} = 25$

$20 + 40 + 30 + 60 = \frac{150}{5} = 30$

Similarly,

$$40 + 25 + 65 + 25 = \frac{155}{5} = 31$$



Required Distance = 20 + 12
= 32 m in South Direction

23. (a) $10 \div 5 + 3 \times 2 - 3$
= $2 + 3 \times 2 - 3$
= $2 + 6 - 3$
= $8 - 3$
= 5
24. (d)
25. (d)
26. (b) The Ajanta Caves are the treasure house of delicate paintings that portray scenes from Jataka tales and from the life of Lord Buddha. Celebrated for its archaic wonder and laced with the series of carved artistry, Ajanta Cave paintings echo the quality of Indian creativity in perhaps the subtlest way. In the Ajanta wall-paintings, there is a profound modification from the art of early Buddhism. The Ajanta paintings stresses on religious romanticism with lyric quality, a reflection of the view that every aspect of life has an equal value in the spiritual sense and as an aspect of the divine.
27. (c) Ratha Yatra is a huge Hindu festival associated with Lord Jagannath held at Puri in the state of Odisha. This annual festival is celebrated on Ashad Shukla Dwitiya (second day in bright fortnight of Ashad month).
28. (d) On 29 August, 1947, the Drafting Committee was appointed, with Dr B. R. Ambedkar as the Chairman along with six other members assisted by a constitutional advisor. These members were Kanaiyalal Maneklal Munshi (K M Munshi, Ex- Home Minister, Bombay), Alladi Krishnaswamy Iyer (Ex-Advocate General, Madras State), N Gopalaswami Ayengar (Ex-Prime Minister, J&K and later member of Nehru Cabinet), B L Mitter (Ex-Advocate General, India), Md. Saadullah (Ex- Chief

- Minister of Assam, Muslim League member) and D P Khaitan (Scion of Khaitan Business family and a renowned lawyer). The constitutional advisor was Sir Benegal Narsing Rau (who became First Indian Judge in International Court of Justice, 1950–54).
29. (c) Mars is the fourth planet from the Sun and the seventh largest. The planet probably got this name due to its red color; Mars is sometimes referred to as the Red Planet as the iron oxide prevalent on its surface gives it a reddish appearance.
30. (d) Justice Jitendra Kumar Maheshwari was sworn in as the new Chief Justice of Sikkim High Court.
31. (a) The principal source of States own tax revenues is sales tax which accounts for about 60 per cent of the total. The other major components of States own tax revenues according to their revenue share are State excise, registration and stamp duty, motor vehicle and passenger tax, electricity duty, land revenues, profession tax, entertainment taxes and other sundry taxes. In the wake of economic reforms, several States competitively announced various tax concessions, especially sales tax concessions, to attract private investments. These tax wars resulted in considerable reduction in the buoyancy of growth of tax revenues of the States without commensurate gains in terms of private investment.
32. (a) The word Buddha is a title for the first awakened being in an era. "Buddha" is also sometimes translated as "The Enlightened One". As Gautam fully comprehended the Four Noble Truths and as he arose from the slumbers of ignorance he is called a Buddha. Before His Enlightenment he was a bodhisattva which means one who is aspiring to attain Buddhahood. He was not born a Buddha, but became a Buddha by his own efforts. Every aspirant to Buddhahood passes through the bodhisattva period — a period comprising many lives over a vast period of time.
33. (c) A Draft Constitution was prepared by the committee and submitted to the Assembly on 4 November 1947. Draft constitution was debated and over 2000 amendments were moved over a period of two years. Finally on 26 November, 1949, the process was

completed and Constituent assembly adopted the constitution. 284 members signed the document and the process of constitution making was complete. শ্রীচিভর্ষ

34. (b) A great circle, also known as an orthodrome or Riemannian circle, of a sphere is the intersection of the sphere and a plane which passes through the center point of the sphere, as opposed to a general circle of a sphere where the plane is not required to pass through the center. The equator is the circle that is equidistant from the North Pole and South Pole. It divides the Earth into the Northern Hemisphere and the Southern Hemisphere. Of the parallels or circles of latitude, it is the longest, and the only 'great circle' (in that it is a circle on the surface of the earth, centered on the center of the earth). All the other parallels are smaller and centered only on the earth's axis. শ্রীচিভর্ষ
35. (c) Nalanda was an ancient center of higher learning in Bihar which was a religious center of learning from the fifth or sixth century CE to 1197 CE. At its peak, the university attracted scholars and students from as far away as Tibet, China, Greece, and Persia. Nalanda was ransacked and destroyed by an army under Bakhtiyar Khilji in 1193.
36. (c) A general manager at RBI, R Giridharan has authored his debut book "Right Under our Nose". শ্রীচিভর্ষ
37. (c) Sound is a sequence of waves of pressure that propagates through compressible media such as air or water. (Sound can propagate through solids as well, but there are additional modes of propagation). Sound that is perceptible by humans has frequencies from about 20 Hz to 20,000 Hz. In air at standard temperature and pressure, the corresponding wavelengths of sound waves range from 17 m to 17 mm. During propagation, waves can be reflected, refracted, or attenuated by the medium. Now if we consider these cases, then the train which is arriving towards us having whistles of higher pitch because it propagates through a medium which is coming towards us but the train which is leaving propagating through a medium moving further away from the listener and thus produced whistle of lower pitch.
38. (d) The right to property, also known as the right to protection of property, is a human right and is understood to establish an entitlement to private property. Right to property was originally a fundamental right, but is now a legal right. শ্রীচিভর্ষ
39. (d) The Chittagong armoury raid was an attempt on April 18, 1930 to raid the armoury of police and auxiliary forces from the Chittagong (in present-day Bangladesh) armoury in Bengal province of British India, by armed revolutionaries led by Surya Sen. The group was led by Masterda Surya Sen, and included Ganesh Ghosh, Lokenath Bal, Nirmal Sen, Ambika Chakrobarty, Naresh Roy, Sasanka Datta, Ardhendu Dastidar, Harigopal Bal (Tegra), Tarakeswar Dastidar, Ananta Singh, Jiban Ghoshal, Anand Gupta, Pritilata Waddedar and Kalpana Dutta. শ্রীচিভর্ষ
40. (a) Sea breezes and all other winds blow from more atmospheric pressure to less atmospheric pressure. Water heats up and cools down slower than land. During the day, the land is heated up and is less dense than the water while at night, the water is less dense than the land. The more denser it is, the more the atmospheric pressure there is. Therefore, sea breezes occur during the day but not at night.
41. (c) Milk contains a sugar called lactose, a disaccharide (compound sugar) made by the glycosidic bonding between glucose and galactose (monosaccharides). When milk is heated to a temperature of 30-40 degrees centigrade and a small amount of old curd added to it, the lactobacillus in that curd sample gets activated and multiplies. These convert the lactose into lactic acid, which imparts the sour taste to curd. শ্রীচিভর্ষ
42. (b) In terms of Section 22 of the Reserve Bank of India Act, the RBI has been given the statutory function of note issue on a monopoly basis. The note issue in India was originally based upon "Proportional Reserve System". When it became difficult to maintain the reserve proportionately, it was replaced by "Minimum Reserve System". According to the RBI Amendment Act of 1957, the bank should now maintain a minimum reserve of Rs.200 crore worth of gold coins, gold bullion and foreign securities of which the value of gold coin and bullion should be not less than Rs.115 crore.
43. (b) Australia's Claire Polosak is set to become the first female match official in a men's Test

- match when she takes up the fourth umpire's role in the third Test between India and Australia. প্র্যাচিভর্স
44. (a) Virus particles (known as virions) consist of two or three parts: the genetic material made from either DNA or RNA, long molecules that carry genetic information, a protein coat that protects these genes, and in some cases an envelope of lipids that surrounds the protein coat when they are outside a cell. The shapes of viruses range from simple helical and icosahedral forms to more complex structures.
45. (b) The Salt Satyagraha started on March 12, 1930, with the undertaking of the Dandi Yatra (Dandi March). It was the next significant non-violent protest against the British, after the Non-Cooperation movement of 1920-22 and India's First War of Independence 1857. The triggering factor for this movement was the British monopoly of salt trade in India and the imposition of a salt tax.
46. (a) Sun Temple is a 13th-century AD temple situated at Konark in Odisha. It was built by king Narasimhadeva I of Eastern Ganga Dynasty in 1255 AD. The temple complex is in the shape of a gigantic chariot, having elaborately carved stone wheels, pillars and walls. The temple is a UNESCO World Heritage Site. প্র্যাচিভর্স
47. (b) The Laws of Heredity are few; their implications for life are vast. The simplest genetic characteristics are those whose presence depends on the genotype at a single locus; i.e., one gene controls the expression of one characteristic. Such characters are known as Mendelian, after their original discoverer, the Austrian botanist Gregor Mendel. Over 10,000 Mendelian characters have been identified in humans. Mendelian laws of inheritance are statements about the way certain characteristics are transmitted from one generation to another in an organism.
48. (a) The theme of 16th Pravasi Bharatiya Divas Convention 2021 is "Contributing to Aatmanirbhar Bharat". প্র্যাচিভর্স
49. (d) The Pachmarhi Biosphere Reserve is a non-use conservation area and biosphere reserve in the Satpura Range of Madhya Pradesh. It is located within Hoshangabad, Betul, and Chhindwara districts of Madhya Pradesh. UNESCO designated it as a biosphere reserve in 2009.
50. (c) The Supreme Court, the highest in the country, may issue writs under Article 32 of the Constitution for enforcement of Fundamental Rights and under Articles 139 for enforcement of rights other than Fundamental Rights, while High Courts, the superior courts of the States, may issue writs under Articles 226. The Constitution broadly provides for five kinds of "prerogative" writs: habeas corpus, certiorari, mandamus, quo warranto and prohibition.
51. (b) On making denominators equal, প্র্যাচিভর্স
- $$\frac{3}{5} = \frac{3 \times 3}{5 \times 3} = \frac{9}{15}$$
- $$\frac{2}{3} = \frac{2 \times 5}{3 \times 5} = \frac{10}{15}$$
- $$\frac{11}{15} = \frac{11}{15}$$
- $$\therefore \frac{9}{15} < \frac{10}{15} < \frac{11}{15}$$
- $$\Rightarrow \frac{3}{5} < \frac{2}{3} < \frac{11}{15}$$
- প্র্যাচিভর্স
52. (b) $2^{31} = (2^8)^4 \div 2 = (256)^4 \div 2 = \frac{\dots 6}{2} = \dots 3$
Clearly, the remainder will be 3 when divided by 5.
Illustration :
 $23 \div 5$ gives remainder = 3
 $83 \div 5$ gives remainder = 3
53. (c) $\therefore x + x + 2 + x + 4 = 147$
 $\Rightarrow 3x + 6 = 147$
 $\Rightarrow 3x = 147 - 6 = 141$
 $\Rightarrow x = \frac{141}{3} = 47$
 \therefore Middle Number
 $= x + 2 = 47 + 2 = 49$
54. (b) HCF of $\frac{2}{3}, \frac{4}{5}$ and $\frac{6}{7}$
 $= \frac{\text{HCF of } 2, 4 \text{ and } 6}{\text{LCM of } 3, 5 \text{ and } 7} = \frac{2}{105}$
55. (d) Let the numbers be x and $(x + 2)$.
 \therefore Product of numbers
 $= \text{HCF} \times \text{LCM}$ প্র্যাচিভর্স
 $\Rightarrow x(x + 2) = 24$
 $\Rightarrow x^2 + 2x - 24 = 0$
 $\Rightarrow x^2 + 6x - 4x - 24 = 0$
 $\Rightarrow x(x + 6) - 4(x + 6) = 0$
 $\Rightarrow (x - 4)(x + 6) = 0$
 $\Rightarrow x = 4$, as $x \neq -6 = 0$
 \therefore Numbers are 4 and 6.

$$56. (a) ? = \left(\frac{1}{2} - \frac{1}{4} + \frac{1}{5} - \frac{1}{6}\right) \div \left(\frac{2}{5} - \frac{5}{9} + \frac{3}{5} - \frac{7}{18}\right)$$

$$= \left(\frac{30-15+12-10}{60}\right) \div \left(\frac{36-50+54-35}{90}\right)$$

$$= \left(\frac{17}{60}\right) \div \left(\frac{5}{90}\right) = \frac{17}{60} \times 18$$

$$= \frac{51}{10} = 5\frac{1}{10}$$

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$$57. (d) \text{ Let } 0.0347 = a$$

$$\text{and, } 0.9653 = b$$

$$\therefore \text{ Expression} = \frac{a^3 + b^3}{a^2 - ab + b^2}$$

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

$$= 0.0347 + 0.9653 = 1$$

58. (a) Expression

$$= \frac{16}{3} \div \frac{11}{9} \times \frac{1}{4} \left(10 + \frac{3}{5-1}\right)$$

$$= \frac{16}{3} \times \frac{9}{11} \times \frac{1}{4} \left(10 + \frac{15}{4}\right)$$

$$= \frac{16}{3} \times \frac{9}{11} \times \frac{1}{4} \left(\frac{40+15}{4}\right)$$

$$= \frac{16}{3} \times \frac{9}{11} \times \frac{1}{4} \times \frac{55}{4} = 15$$

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$$59. (a) \text{ Total annual expenditure of man}$$

$$= ₹(5 \times 1200 + 7 \times 1300)$$

$$= ₹(6000 + 9100)$$

$$= ₹ 15100$$

His total annual income

$$= ₹(15100 + 2900)$$

$$= ₹ 18000$$

\therefore Average monthly income

$$= \frac{18000}{12} = ₹1500$$

$$60. (c) \text{ Let the third number be } x.$$

\therefore Second number = $3x$

First number = $6x$

$$\therefore (x + 3x + 6x) = 100 \times 3$$

$$\Rightarrow 10x = 300$$

$$\Rightarrow x = 30$$

\therefore The largest number = $6x$

$$= 6 \times 30 = 180$$

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$$61. (c) \text{ Required per cent}$$

$$= \frac{40}{100-40} \times 100$$

$$= \frac{40 \times 100}{60} = \frac{200}{3} = 66\frac{2}{3}\%$$

$$62. (c) 10\% \text{ of } A = 15\% \text{ of } B$$

$$= 20\% \text{ of } C$$

$$\Rightarrow 10A = 15B = 20C$$

$$\Rightarrow \frac{10A}{60} = \frac{15B}{60} = \frac{20C}{60}$$

$$\Rightarrow \frac{A}{6} = \frac{B}{4} = \frac{C}{3}$$

$\therefore A : B : C = 6 : 4 : 3$

$$\therefore 6x + 4x + 3x = 7800$$

$$\Rightarrow 13x = 7800$$

$$\Rightarrow x = \frac{7800}{13} = 600$$

\therefore B's income = $4x$

$$= 600 \times 4 = ₹2400$$

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$$63. (a) \text{ Required profit} = \frac{36-30}{30} \times 100 = 20\%$$

$$64. (c) \text{ Suppose the number of oranges bought}$$

$$= \text{LCM of } 10 \text{ and } 9 = 90$$

C.P. of 90 oranges = $\frac{25}{10} \times 90 = ₹225$

S.P. of 90 oranges = $\frac{25}{9} \times 90 = ₹250$

$$\text{Profit\%} = \frac{25}{225} \times 100 = \frac{100}{9} = 11\frac{1}{9}\%$$

$$65. (b) \sin 17^\circ = \frac{x}{y}$$

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$$\cos 17^\circ = \sqrt{1 - \sin^2 17^\circ}$$

$$= \sqrt{1 - \frac{x^2}{y^2}} = \sqrt{\frac{y^2 - x^2}{y^2}} = \frac{\sqrt{y^2 - x^2}}{y}$$

$$\therefore \sec 17^\circ = \frac{y}{\sqrt{y^2 - x^2}}$$

$$\sin 73^\circ = \sin (90^\circ - 17^\circ)$$

$$= \cos 17^\circ$$

$$\therefore \sec 17^\circ - \sin 73^\circ$$

$$= \frac{y}{\sqrt{y^2 - x^2}} - \frac{\sqrt{y^2 - x^2}}{y}$$

$$= \frac{y^2 - y^2 + x^2}{y\sqrt{y^2 - x^2}} = \frac{x^2}{y\sqrt{y^2 - x^2}}$$

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$$66. (b) a \sin \theta + b \cos \theta = c \dots(i)$$

$$a \cos \theta - b \sin \theta = x \dots(ii)$$

Squaring both the equations and adding,

$$a^2 \sin^2 \theta + b^2 \cos^2 \theta + 2ab$$

$$\begin{aligned} \sin \theta \cdot \cos \theta + a_2 \cos^2 \theta + b^2 \sin^2 \theta \\ - 2ab \sin \theta \cdot \cos \theta = c^2 + x^2 \\ \Rightarrow a^2 \sin^2 \theta + a^2 \cos^2 \theta + b^2 \cos^2 \theta + b^2 \sin^2 \theta = c^2 + x^2 \\ \Rightarrow a^2 (\sin^2 \theta + \cos^2 \theta) + b^2 (\cos^2 \theta + \sin^2 \theta) = c^2 + x^2 \\ \Rightarrow a^2 + b^2 = c^2 + x^2 \\ \Rightarrow x^2 = a^2 + b^2 - c^2 \\ \Rightarrow x = \pm \sqrt{a^2 + b^2 - c^2} \end{aligned}$$

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67. (c) $\frac{\sin \theta + \cos \theta}{\sin \theta - \cos \theta} = \frac{5}{4}$

$$\Rightarrow \frac{\cos \theta \left(\frac{\sin \theta}{\cos \theta} + 1 \right)}{\cos \theta \left(\frac{\sin \theta}{\cos \theta} - 1 \right)} = \frac{5}{4}$$

$$\begin{aligned} \Rightarrow \frac{\tan \theta + 1}{\tan \theta - 1} &= \frac{5}{4} \\ \Rightarrow 4 \tan \theta + 4 &= 5 \tan \theta - 5 \\ \Rightarrow \tan \theta &= 9 \\ \Rightarrow \frac{2 \tan \theta}{2} &= \frac{5 + 4}{5 - 4} \end{aligned}$$

(By componendo and dividendo)

$$\therefore \frac{\tan^2 \theta + 1}{\tan^2 \theta - 1} = \frac{(9)^2 + 1}{(9) - 1} = \frac{81 + 1}{81 - 2} = \frac{82}{80} = \frac{41}{40}$$

68. (c) Sum of all angles of a triangle = 180°

$$\therefore x + 15^\circ + \frac{6x}{5} + 6^\circ + \frac{2x}{3} + 30^\circ = 180^\circ$$

$$\Rightarrow x + \frac{6x}{5} + \frac{2x}{3} + 51^\circ = 180^\circ$$

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$$\Rightarrow \frac{15x + 18x + 10x}{15}$$

∴ The angles of triangle are :

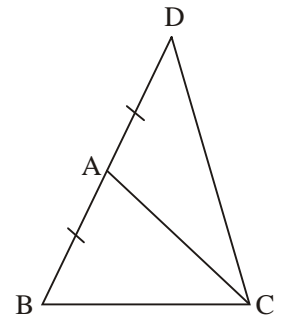
$$x + 15^\circ = 45^\circ + 15^\circ = 60^\circ$$

$$\frac{6x}{5} + 6^\circ = \frac{6 \times 45}{5} + 6^\circ = 60^\circ$$

$$\text{and } \frac{2x}{3} + 30^\circ = \frac{2 \times 45}{3} + 30^\circ = 60^\circ$$

It is an equilateral triangle.

69. (b)

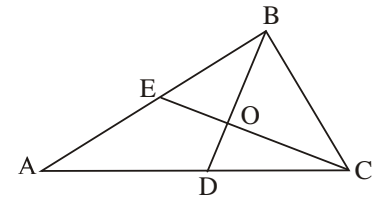


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$$\begin{aligned} AB = AC = AD \\ \Rightarrow \angle ABC = \angle ACB = 30^\circ \\ \Rightarrow \angle BAC = 180^\circ - 60^\circ = 120^\circ \\ \text{Now, } \angle DAC = 180^\circ - 120^\circ = 60^\circ \\ \Rightarrow \angle ADC + \angle ACD = 120^\circ \\ \therefore \angle ACD = \frac{120^\circ}{2} = 60^\circ \\ \therefore \angle BCD = \angle ACB + \angle ACD \\ = 30^\circ + 60^\circ = 90^\circ \end{aligned}$$

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70. (c)



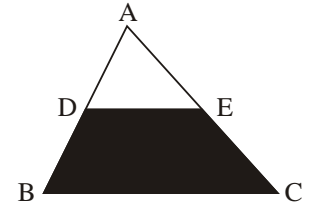
Point 'O' is the centroid of triangle ABC

$$\therefore OE = \frac{1}{3} CE$$

$$\Rightarrow 7 = \frac{1}{3} CE$$

$$\therefore CE = 21 \text{ cm}$$

71. (c)



D is the mid-point of AB and E is the mid-point of AC.

∴ DE is parallel to BC.

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$$\text{and } DE = \frac{1}{2} BC$$

∆ADE and ∆ABC are similar, because

$$|D| = |B| \text{ and } |E| = |C|$$

$$\therefore \frac{\Delta ADE}{\Delta ABC} = \frac{DE^2}{BC^2} = \frac{1}{4}$$

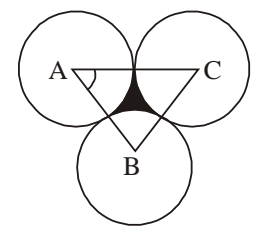
$$\Rightarrow 4\Delta ADE = \Delta ABC$$

$$\therefore \text{Area of trapezium DBCE} = \Delta ABC - \Delta ADE$$

$$4\Delta ADE - \Delta ADE = 3\Delta ADE$$

$$\therefore \text{Required percentage} = \frac{3}{4} \times 100 = 75\%$$

72. (d)



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Let $AB = BC = CA = 2a$ cm.
 $\angle BAC = \angle ACB = \angle ABC = 60^\circ$

$$\text{Area of } \triangle ABC = \frac{\sqrt{3}}{4} \times (\text{side})^2$$

$$= \frac{\sqrt{3}}{4} \times 4a^2$$

$$= \sqrt{3}a^2 \text{ sq.cm.}$$

Area of three sectors

$$= 3 \times \frac{60}{360} \times \pi \times a^2$$

$$= \frac{\pi a^2}{2} \text{ sq.cm.}$$

Area of the shaded region

$$= \sqrt{3}a^2 - \frac{\pi}{2}a^2$$

$$= \left(\frac{2\sqrt{3} - \pi}{2} \right) a^2 \text{ sq.cm.}$$

শ্রুতিভঙ্গ

73. (b) $\sqrt{1 - \frac{x^3}{100}} = \frac{3}{5}$
 Squaring both sides,
 $1 - \frac{x^3}{100} = \frac{9}{25}$
 $\Rightarrow \frac{x^3}{100} = 1 - \frac{9}{25} = \frac{25-9}{25} = \frac{16}{25}$
 $\Rightarrow x^3 = \frac{16}{25} \times 100 = 64$
 $\therefore x = \sqrt[3]{64} = \sqrt[3]{4 \times 4 \times 4} = 4$

74. (b) $3x + \frac{1}{2x} = 5$ শ্রুতিভঙ্গ

On multiplying both sides by $\frac{2}{3}$.

$$2x + \frac{1}{3x} = \frac{10}{3}$$

Cubing both sides,

$$8x^3 + \frac{1}{27x^3} + 3 \times 2x \times \frac{1}{3x} \left(2x + \frac{1}{3x} \right) = \frac{1000}{27}$$

$$\Rightarrow 8x^3 + \frac{1}{27x^3} + 2 \times \frac{10}{3} = \frac{1000}{27}$$

$$\Rightarrow 8x^3 + \frac{1}{27x^3} = \frac{1000}{27} - \frac{20}{3}$$

$$= \frac{1000 - 180}{27} = \frac{820}{27} = 30\frac{10}{27}$$

শ্রুতিভঙ্গ

75. (b) $a + \frac{1}{a^3} = \sqrt{3}$

On cubing both sides,

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

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

$$\Rightarrow a^3 + \frac{1}{a^3} = 0 \quad \dots (1)$$

শ্রুতিভঙ্গ

$$\Rightarrow a^6 - \frac{1}{a^6} + 2$$

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

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

76. (a) Use of **A** is incorrect because –
Uncountable Nouns like milk, wine, information, air, equipment, sand, wood, etc. can't be counted. Hence, **An Indef.Art.** will not be used with them.
 as in–
 Please give me a water. (×)
 Please give me some water. (✓)
 Please give me an ice cube. (✓)
 Please give me an ice . (×)
77. (c) **abuses** will replace **cheers** because –
 a contrast is evident in the sentence.
applause (Noun): approval expressed, especially by the clapping of hands. শ্রুতিভঙ্গ
 The opposite of **applause** is **abuse**
abuse (Noun) : make rude and offensive remarks.
Look at the examples given below :
 The audience broke into a loud **applause**.
 Others broke into a loud **abuse**.
 Hence, **but some abuses were heard too** is the right usage.
78. (b) **know** will replace **am knowing** because –
know is not used in **Progressive/Continuous Tense**.
Look at the example given below :
 I am **knowing** that this is true. (×)
I know that this is true. (✓)
 Hence, **know (Simple Present)** is used here.
79. (c) **rely on (Phr. V.)**: to depend on
 Here, **relies** is the right usage. শ্রুতিভঙ্গ
80. (a) **for all (Idioms)** : despite; in spite of
 Here, **wealth, miser** is the right usage.
81. (c) **one another (Pro.)** : used when you are saying that each member of a group does something to or for the other people in the group
one another and **each other** are **Reciprocal Pronouns**.
 ● Bob and Tom were quarrelling with **each other**.

- The three winners congratulated **one another**.
Here, **one another** is the right usage.
- 82. (b) **Singular form** is used with **Compound Adjectives** using **numbers** and **hyphen**.
Here, **a 17-year-old** is the right usage.
- 83. (b) **and (Conj.)** : also; in addition to.
Here, **and** is the right usage. শ্রীচিড়াক্স
- 84. (d) **abundant (Adjective)** : plentiful; more than enough
luxuriant (Adjective) : growing thickly and strongly in a way that is attractive ; abundant
luxury-loving (Adjective) : loving to be extravagant or enjoy the luxuries
lovely (Adjective) : beautiful rich (Adjective) : having a lot of money or property.
- 85. (c) **responsibility (Noun)** : to take responsibility of somebody or something so that you may be blamed if something goes wrong
onus (Noun) : the responsibility for something
sadness (Noun) : the feeling of being sad
happiness (Noun) : state of being happy
criticism (Noun) : the act of expressing disapproval of somebody or something and opinions about his faults or bad qualities
- 86. (a) **commonplace (Noun)** : done very often; not unusual; existing in many places
trite (Adjective) : dull and boring because it has been expressed so many times before; banal ; not original;
clever (Adjective) : intelligent শ্রীচিড়াক্স
brief (Adjective) : short
impudent (Adjective) : rude
- 87. (c) **storm in a tea cup** : a lot of anger or worry about something that is not important
● The argument at the office turned into a **storm in a tea cup**.
The best option is **commotion over a trivial matter**.
- 88. (d) **set their face against** : to be determined to oppose somebody/something
● Mother had **set her face against** my having music lessons with this teacher in the city.
The best option is **opposed strongly**.
- 89. (a) **to mince matters** : to mix facts unduly
● One must not mince matters; one must say what one means. শ্রীচিড়াক্স
The best option is **to confuse issues**.
- 90. (c) **take for granted** : to pre-suppose as certainly true; to accept readily
● We **take** so many things **for granted** in our houses.
The best option is **to accept readily**.
- 91. (c) **doubtful (Adjective)** : not sure; uncertain and feeling doubt; dubious; unlikely; not probable
evident (Adjective) : clear; easily seen;
obvious suspected (Adjective) : believed likely
disagreed (Verb) : to be of different opinions
unimportant (Adjective) : not important
- 92. (a) **yielding (Adjective)** : soft and easy to bend or move when you press it; willing to do what other people want শ্রীচিড়াক্স
adamant (Adjective) : determined not to change your mind or to be persuaded about something
permissive (Adjective) : allowing or showing a freedom of behaviour that many people do not approve of
liberal (Adjective) : willing to understand and respect other people's behaviour, opinions, etc.; generous
tolerant (Adjective) : able to accept what other people say or do even if you do not agree to it; able to survive or operate in difficult conditions
- 93. (c) **possible (Adjective)** : that can be done or achieved
incredible (Adjective) : unbelievable ; impossible or very difficult to believe
credulous (Adjective) : too ready to believe things and therefore easy to trick ; gullible
probable (Adjective) : likely to happen, to exist or to be true
creditable (Adjective) : of a quite good standard and deserving praise or approval ; praise-worthy ; morally good ; admirable
- 94. (d) **blasphemy** শ্রীচিড়াক্স
blasphemy : behaviour/language that insults/shows a lack of respect for God/religion
amoral : not following any moral rules and not caring about right and wrong
philosophy : the study of the nature and meaning of the universe and of human life
logic : sensible reasons for doing something
- 95. (b) **lexicographer**
lexicographer (N.) : a person who writes and edits dictionaries
geographer (N.) : an expert in geography
lapidist (N.) : a skilled worker who cuts and engraves precious stones
linguist (N.) : a person who knows several foreign languages well ; a person who studies languages শ্রীচিড়াক্স
- 96. (a) **lived (Verb)**
- 97. (b) **named (Verb)**
- 98. (c) **had (Aux. V.)**
- 99. (c) **their (Det.)** [Possessive form of 'they']
- 100. (d) **with (Prep.)**