

Answers with Explanation

1. (a) The one who studies different varieties of birds is known as Ornithologist. Similarly, Archaeologist studies artifacts.
2. (c) Here animal-behaviour relationship has been shown. Fox is characterised by its cunningness. Similarly, rabbit is considered as timid.

3. (d)
- Brother
- $A^+ \longleftarrow D^+$
- Father
- $C^- \longleftrightarrow B^-$
- Sister
- শ্রীচিঙ্কি

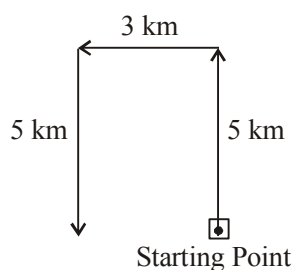
So C and B are daughters of D.
So, A is uncle of D's daughter (B and) C.

4. (d)

$+\Rightarrow \div$	$\times \Rightarrow +$
$-\Rightarrow \times$	$\div \Rightarrow -$

$$\begin{aligned} 36 - 6 + 3 \times 5 \div 3 &= 74 \\ \text{or, } 36 \times 6 \div 3 + 5 - 3 &= 74 \\ \text{or, } 36 \times 2 + 5 - 3 &= 74 \\ \text{or, } 72 + 5 - 3 &= 74 \end{aligned}$$

5. (b) Except wave, all others are different forms of energy.
6. (b) 3 km



It is clear from the diagram that A is going towards South.

7. (a) $4 \quad 24 \quad 48 \quad 80 \quad \boxed{120} \quad 168$
 $\quad \quad \quad \uparrow \quad \uparrow \quad \uparrow \quad \uparrow \quad \uparrow$
 $\quad \quad \quad +20 \quad +24 \quad +32 \quad +40 \quad +48$

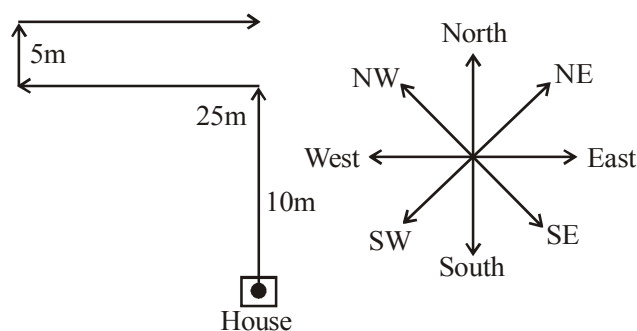
8. (c) Total number of trees in the row = $14 + 7 - 1 = 20$
9. (b) Baby grows into adult. Similarly, bud develops into flower.
10. (a) Bee is an insect. Similarly, man is a mammal.
11. (d) C and D are brothers. C is the brother of A. A and B are married couple. Therefore, D is brother-in-law of B.

12. (d)
- | | |
|---------------------------|------------------------|
| $\div \Rightarrow \times$ | $\times \Rightarrow -$ |
| $- \Rightarrow +$ | $+ \Rightarrow \div$ |

$$\begin{aligned} 48 + 6 - 12 \div 2 + 10 &= ? \\ \Rightarrow ? &= 48 \div 6 + 12 \times 2 \div 10 \\ \Rightarrow ? &= 8 + 12 \times \frac{2}{10} \\ \Rightarrow ? &= 20 \times \frac{2}{10} = 4 \end{aligned}$$

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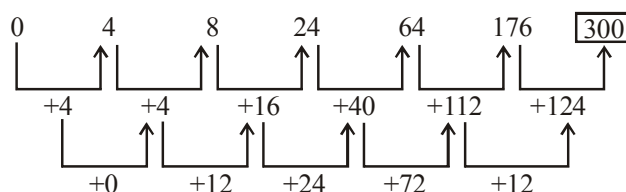
13. (b)



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He is the facing East.

14. (d)



- (15-16) $\begin{matrix} \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ B & E & G & C & A & D/F & D/F \end{matrix}$

15. (a) C is standing in the middle.
16. (c) B is standing at the extreme left.
17. (b) E = 5 i.e. Position Number in the English alphabet.

$$\begin{array}{ccc} \text{H} & \text{E} & \text{N} \\ \downarrow & \downarrow & \downarrow \\ 8 & + & 5 & + & 14 & = & 27 \end{array}$$

Therefore,

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$$\begin{array}{ccccc} \text{P} & & \text{E} & & \text{N} \\ \downarrow & & \downarrow & & \downarrow \\ 16 & + & 5 & + & 14 = 35 \end{array}$$

18. (b) There is only one 'O' in the given word.
Therefore, the word POMPOUS cannot be formed.

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P [RE] S U M P [TI] O N \Rightarrow TIER

[P] R E S [U M P] T I O N \Rightarrow PUMP

P [R] E S [U] M P T [I] O [N] \Rightarrow RUIN

19. (b) The given statement is Universal Negative (E type). Conclusion II is Converse of it

20. (b) Suppose the age of A is x years and that of B is y years. According to question,

$$x = y + 16$$

$$\text{or, } x - y = 16 \quad \dots (i)$$

$$\text{Again, } \frac{x}{3} = \frac{y}{2}$$

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$$\text{or, } 2x = 3y$$

$$\text{or, } 2x - 3y = 0 \quad \dots (ii)$$

From equations (i) and (ii) $x = 48$ years

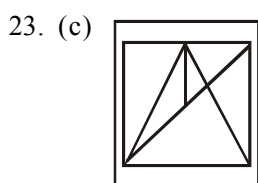
$$\therefore y = 48 - 16 = 32 \text{ years}$$

Thus, A = 48 years

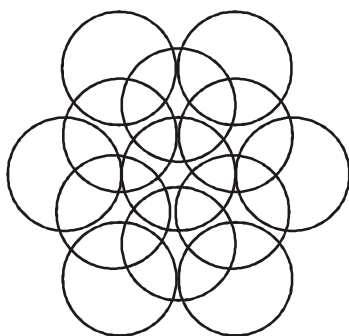
B = 32 years.

21. (b) 2 8 9 6 4 9
 $\downarrow \downarrow \downarrow \downarrow \downarrow \downarrow$
 S R B V E B

22. (a) The numbers 1, 2, 3 and 6 lie on the faces adjacent to the number 5. Therefore, the number 5 lies opposite 4.

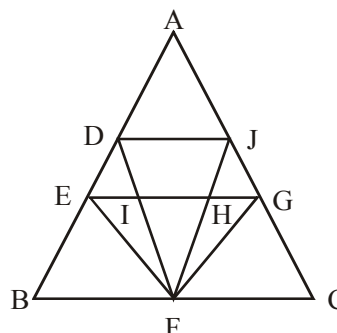


24. (b) There are altogether 13 circles.



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25. (b)



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The triangles are :

$\triangle ADJ$; $\triangle DEI$; $\triangle JHG$; $\triangle EBF$; $\triangle EIF$; $\triangle FIH$;
 $\triangle FHG$; $\triangle GFC$; $\triangle AEG$; $\triangle DEF$; $\triangle DBF$; $\triangle FEG$;
 $\triangle FDJ$; $\triangle GFJ$; $\triangle JFC$; $\triangle FEH$; $\triangle FIG$; $\triangle ABC$

26. (b) After the Kannauj Assembly was concluded, Hiuen-Tsang was making preparations to go to his home, but Harsha invited him to attend another Assembly at Prayag which he used to hold after ever five years on the confluence of Ganga and Yamuna. Five such assemblies had already taken place and this was the sixth Assembly in which Hiuen-Tsang was invited. This ceremony was attended by the kings of eighteen kingdoms and about 5,00,000 people including Sramanas. Hercetics, Nigranthas, the poor, the orphans etc, attended this assembly. The Prayag Assembly is a glorious example of the generosity of Harshavardhana as he gave all his personal wealth and belongings in charity during the assembly.

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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 Ksheerer Putul are landmarks in Bengali language children's literature. Tagore sought to modernize Moghul 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.

28. (d) On the 14 August, 1947 meeting of the Assembly, a proposal for forming various committees was presented. Such committees included a Committee on Fundamental Rights, the Union Powers Committee and Union Constitution Committee. 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. অধ্যক্ষ
29. (c) A supernova is a stellar explosion that is more energetic than a nova. During this short interval a supernova can radiate as much energy as the Sun is expected to emit over its entire life span. The explosion expels much or all of a star's material at a velocity of up to 30,000 km/s (10% of the speed of light).
30. (c) Pet-care brand Heads Up for Tails (HUFT) has announced the bollywood Actress Kriti Sanon, who is an animal lover, as their first brand ambassador.
31. (c) RBINet is a communication software, developed in 'C' and available for both DOS and UNIX machines. It allows free format messaging and file transfer on the existing BANKNET infrastructure with the help of UNIX servers installed at the 4 NCCs. Each RBINet user interacts with the local UNIX server through PADs connected to the X.25 switch. The UNIX servers in turn communicate with each other using TCP/IP over the X.25 protocol. The software allows free format messaging without any restrictions on the length of the message, enables file transfer of both ASCII-text and Binary (spreadsheets, data bases, programs etc.) files, facilitates dial-up access, and has security features such as end-to-end encryption, audit trail, etc. অধ্যক্ষ
32. (a) The Battle of the Hydaspes River was fought by Alexander the Great in 326 BC against King Porus of the Hindu Paurava kingdom on the banks of the Hydaspes River (Jhelum River) in the Punjab near Bhera in what is now modern-day Pakistan. The battle resulted in a complete Macedonian victory and the annexation of the Punjab, which lay beyond the confines of the defeated Persian Empire, into the Alexandrian Empire. The battle is historically significant for opening up India for Greek political (Seleucid Empire, Indo-Greeks) and cultural influence (Greco-Buddhist art) which was to continue for many centuries. অধ্যক্ষ
33. (a) The English word "caste" derives from the Spanish and Portuguese *casta*, which the Oxford English Dictionary quotes John Minsheu's Spanish dictionary (1599) to mean, "race, lineage, or breed." When the Spanish colonized the New World, they used the word to mean a "clan or lineage." However, it was the Portuguese who employed *casta* in the primary modern sense when they applied it to the many inmarrying hereditary Hindu social groups they encountered upon their arrival in India in 1498. The use of the spelling "caste," with this latter meaning, is first attested to in English in 1613. অধ্যক্ষ
34. (c) The Pacific Ring of Fire is an area where a large number of earthquakes and volcanic eruptions occur in the basin of the Pacific Ocean. In a 40,000 km horseshoe shape, it is associated with a nearly continuous series of oceanic trenches, volcanic arcs, and volcanic belts and/or plate movements. The Ring of Fire has 452 volcanoes and is home to over 75% of the world's active and dormant volcanoes. It is sometimes called the circum-Pacific belt or the circum-Pacific seismic belt. About 90% of the world's earthquakes and 81% of the world's largest earthquakes occur along the Ring of Fire.
35. (b) Located on the banks of river Vegavathy, Kanchipuram served as the capital city of the Pallava Kingdom during the 4th to 9th century A.D. অধ্যক্ষ
36. (a) The Govt. of Uttar Pradesh is set to build India's first Education Township with an idea of 'Single Entry, Multiple Exit'.
37. (b) In photosynthesis, solar energy is converted to chemical energy. The chemical energy is stored in the form of glucose (sugar). Carbon dioxide, water, and sunlight are used to produce glucose, oxygen, and water. Photosynthesis is a process used by plants and other organisms to convert the light energy captured from the sun into chemical energy that can be used to fuel the organism's activities. Photosynthesis occurs in plants, algae, and many species of bacteria, but not in archaea. Photosynthetic organisms are called photo-autotrophs, since they can create their own food. In plants, algae, and cyanobacteria, photosynthesis uses carbon

dioxide and water, releasing oxygen as a waste product. Photosynthesis is vital for all aerobic life on Earth.

38. (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. অ্যাসিডিক্স
39. (a) Khalsa is the collective body of Singhs and Kaurs represented by the five beloved-ones and is the final temporal Guru/leader of the Sikhs. The Khalsa was inaugurated on March 30, 1699, by Guru Gobind Singh, the tenth Sikh Guru. The leadership was passed on by Guru Gobind Singh to the Khalsa and bestowed the title “Guru Panth” or “Guru”. The Khalsa is also the nation of the Sikhs. The Khalsa is responsible for all executive, military and civil authority. The meaning of Khalsa translates to “Sovereign/ Free”. Another interpretation is that of being ‘Pure’. Guru Gobind Singh has declared the Khalsa as his true Guru and therefore as following described in the Sarbloh Granth the attributes of the Khalsa
40. (a) The Gandhi Sagar Dam is one of the four dams built on India’s Chambal River. The dam is located in the Mandsaur district of the state of Madhya Pradesh. The Jaikawadi project is one of the largest irrigation projects in the Indian state of Maharashtra. It is a multipurpose project. Nagarjuna Sagar Dam is the world’s largest masonry dam at the time of its construction, which is built across Krishna River at Nagarjuna Sagar in Guntur district & Nalgonda district of Andhra Pradesh. The Tehri Dam is a multi-purpose rock and earth-fill embankment dam on the Bhagirathi River near Tehri in Uttarakhand, India. It is the primary dam of the THDC India Ltd. and the Tehri hydroelectric complex. অ্যাসিডিক্স
41. (b) In printing, type metal (sometimes called hot metal) refers to the metal alloys used in traditional typesetting and hot metal typesetting. Lead is the main constituent of these alloys. Antimony and tin are added to make the character produced durable and tough while reducing the difference between the coefficients of expansion of the matrix and the alloy. Cheap, plentifully available as galena and easily workable, lead has many of the ideal characteristics, but on its own it lacks the

necessary hardness and does not make castings with sharp details because molten lead shrinks and sags when it cools to a solid. অ্যাসিডিক্স

42. (c) It was Adam Smith who conceptualized Economics as a science of wealth. Elaborating upon the scope and fundamental conceptualizations of the new science, he then called political economy as “an inquiry into the nature and causes of the wealth of nations.”
43. (a) India came in third at the 15th International Olympiad on Astronomy and Astrophysics (IOAA) 2022, which took place from August 14-21, 2022 in Kutaisi, Georgia. India won 5 medals (3-Gold, 2-Silver).
44. (c) Petroleum (petroleum, from Latin: ‘petra’ (rock) + Latin: oleum (oil) or crude oil is a naturally occurring flammable liquid consisting of a complex mixture of hydrocarbons of various molecular weights and other liquid organic compounds, that are found in geologic formations beneath the Earth’s surface. Petroleum is recovered mostly through oil drilling. It is refined and separated, most easily by boiling point, into a large number of consumer products, from petrol (or gasoline) and kerosene to asphalt and chemical reagents used to make plastics and pharmaceuticals. Petroleum is used in manufacturing a wide variety of materials, and it is estimated that the world consumes about 88 million barrels each day. hydrocarbon is an organic compound consisting entirely of hydrogen and carbon. The majority of hydrocarbons found naturally occur in crude oil, where decomposed organic matter provides an abundance of carbon and hydrogen which, when bonded, can catenate to form seemingly limitless chains.
45. (a) The Satyagraha of Gandhiji for the cause of indigo farmers was observed at Champaran, Bihar in 1917. অ্যাসিডিক্স
46. (b) Garba is an Indian form of dance that originated in the Gujarat region. The name is derived from the Sanskrit term Garbha (“womb”) and Deep (“a small earthenware lamp”). Many traditional garbas are performed around a central lit lamp or picture/statues of different avatars of Goddess Shakti. The circular and spiral figures of Garba have similarities to other spiritual dances, such as those of Sufi culture.
47. (d) Heart is the only organ in the body which never rest throughout the entire life. The heart is a hollow muscle that pumps blood throughout

the blood vessels by repeated, rhythmic contractions. It is found in all animals with a circulatory system (including all vertebrates). The vertebrate heart is principally composed of cardiac muscle and connective tissue. The average human heart, beating at 72 beats per minute, will beat approximately 2.5 billion times during an average 66 year lifespan. **অ্যাসিডর্স**

48. (d) An Independent journalist, Nilanjana Bhownick's book "Lies Ours Mothers Told Us : The Indian Women's Burden" published by Rupa & Co; Aleph Book Company, on 5 July 2022.

49. (c) The Nathpa Jhakri Dam is a concrete gravity dam on the Sutlej River in Himachal Pradesh, India. The primary purpose of the dam is hydroelectric power production and it supplies a 1,500 MW underground power station with water. Construction on the project began in 1993 and it was complete in 2004. It is owned by SJVN Ltd.

50. (c) The Vice President is elected indirectly, by an electoral college consisting of members of both houses of the Parliament. The election of the Vice President is slightly different from the election of the President—the members of state legislatures are not part of the Electoral College for Vice Presidential election.

51. (c) $(0.1)^2 = 0.01$

$$\sqrt{0.0121} = \sqrt{0.11 \times 0.11} = 0.11$$

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$$\sqrt{0.0004} = 0.02$$

$$\Rightarrow 0.01 < 0.02 < 0.11 < 0.12$$

52. (d) We find LCM of = 10, 16, 24

$$\begin{array}{r} 2 \quad 10, 16, 24 \\ 2 \quad 5, 8, 12 \\ 2 \quad 5, 4, 6 \\ 2 \quad 5, 2, 3 \\ 3 \quad 5, 1, 3 \\ 5 \quad 5, 1, 1 \\ 1, 1, 1 \end{array}$$

$$\begin{array}{r} 2 \quad 5, 8, 12 \\ 2 \quad 5, 4, 6 \\ 2 \quad 5, 2, 3 \\ 3 \quad 5, 1, 3 \\ 5 \quad 5, 1, 1 \end{array}$$

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$$= \frac{17}{2} - \left[\frac{13}{4} \div \left\{ \frac{5}{4} - \frac{1}{2} \left(\frac{9-2-1}{6} \right) \right\} \right]$$

$$= \frac{17}{2} - \left[\frac{13}{4} \div \left\{ \frac{5}{4} - \frac{1}{2} \times \frac{6}{6} \right\} \right]$$

$$= \frac{17}{2} - \left[\frac{13}{4} \div \left\{ \frac{5}{4} - \frac{1}{2} \right\} \right]$$

$$= \frac{17}{2} - \left[\frac{13}{4} \div \left\{ \frac{5-2}{4} \right\} \right]$$

$$= \frac{17}{2} - \left[\frac{13}{4} \div \frac{3}{4} \right]$$

$$= \frac{17}{2} - \left[\frac{13}{4} \times \frac{4}{3} \right] = \frac{17}{2} - \frac{13}{3}$$

$$= \frac{51-26}{6} = \frac{25}{6} = 4\frac{1}{6}$$

54. (a) Numbers are : 10, 15, 20, 25, 30, 35, 40, 45
Sum = 220

$$\text{Average} = \frac{220}{8} = 27.5$$

55. (a) $\frac{a}{3} = \frac{b}{4} = \frac{c}{7} = k$

$$\Rightarrow a = 3k, b = 4k \text{ and } c = 7k$$

$$\Rightarrow \frac{a+b+c}{c} = \frac{3k+4k+7k}{7k}$$

$$= \frac{14k}{7k} = \frac{2}{1} = 2 : 1$$

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56. (b) Expression

$$= \frac{25}{4} \% \text{ of } 1600 + \frac{25}{2} \% \text{ of } 800$$

$$= \frac{1600 \times 25}{400} + \frac{800 \times 25}{200}$$

$$= 100 + 100 = 200$$

57. (b) If the original cost of shirt be x, then

$$x \times \frac{80}{100} = 64$$

$$\Rightarrow x = \frac{64 \times 100}{80} = ₹80$$

58. (c) S.P. after first discount

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$$= \frac{1600 \times 90}{100} = ₹1440$$

$$\therefore \text{Second discount} \\ = 1440 - 1224 = ₹216$$

$$\therefore \frac{1440 \times x}{100} = 216 \quad \text{অ্যাচিভার্স}$$

$$\therefore x = \frac{216 \times 100}{1440} = 15\%$$

59. (d) If principal = x and rate = r% per annum, then

$$1380 = x + \frac{x \times 3 \times r}{100} \quad \dots (i)$$

$$1500 = x + \frac{x \times 5 \times r}{100} \quad \dots (ii)$$

$$\text{S.I. for two years} = 1500 - 1380 = ₹120$$

$$\therefore \frac{x \times 2 \times r}{100} = 120$$

$$\therefore \frac{xr}{100} = 60 \quad \dots (iii)$$

\therefore From equation (i)

$$1380 = x + 60 \times 3$$

$$\Rightarrow x = 1380 - 180 = ₹1200$$

From equation (iii)

$$\frac{1200 \times r}{100} = 60$$

$$\Rightarrow r = \frac{6000}{1200} = 5\% \text{ per annum}$$

$$60. (b) \text{ C.I.} = P \left[\left(1 + \frac{R}{100} \right)^T - 1 \right]$$

$$= 5000 \left[\left(1 + \frac{10}{100} \right)^3 - 1 \right]$$

$$= 5000 \left[\left(\frac{11}{10} \right)^3 - 1 \right]$$

$$\text{C.I.} = \frac{5000 \times 331}{1000} = ₹1655$$

$$61. (d) \text{ A's 1 day's work} = \frac{1}{20}$$

$$\text{B's 1 day's work} = \frac{1}{30}$$

$$\therefore (\text{A} + \text{B})\text{'s 1 day's work}$$

$$= \frac{1}{20} + \frac{1}{30} = \frac{3+2}{60} = \frac{1}{12}$$

Hence, the work will be completed in 12 days.
When worked together.

$$62. (d) \text{ Part of the cistern filled in 1 hour} = \frac{1}{3} + \frac{1}{4} - \frac{1}{2}$$

[Cistern filled by 1st pipe +

Cistern filled by 2nd pipe -

Cistern emptied by 3rd pipe]

$$= \frac{4+3-6}{12} = \frac{1}{12}$$

Hence, the cistern will be filled in 12 hours.

$$63. (c) 3^{x+3} + 7 = 250$$

$$\Rightarrow 3^{x+3} = 243 \Rightarrow 3^{x+3} = 3^5$$

$$\Rightarrow x + 3 = 5 \Rightarrow x = 2$$

$$64. (b) 7^x = \frac{1}{343}$$

$$\Rightarrow 7^x = \frac{1}{7^3} = 7^{-3}$$

$$\Rightarrow x = -3$$

$$65. (a) \cos x + \cos y = 2$$

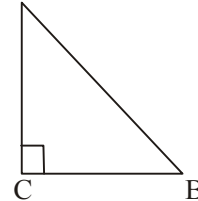
$$\therefore \cos x \leq 1$$

$$\Rightarrow \cos x = 1; \cos y = 1$$

$$\Rightarrow x = y = 0^\circ [\because \cos 0^\circ = 1]$$

$$\therefore \sin x + \sin y = 0$$

$$66. (c) \text{ A}$$



$$AC = BC = 5 \text{ cm}$$

$$\therefore AB = \sqrt{AC^2 + BC^2}$$

$$= \sqrt{5^2 + 5^2} = \sqrt{50} = 5\sqrt{2} \text{ cm}$$

$$67. (d) \text{ Let the breadth be } x \text{ m.}$$

$$\therefore \text{Length} = (23 + x) \text{ m}$$

$$\Rightarrow 2(x + 23 + x) = 206$$

$$\Rightarrow 4x = 206 - 46$$

$$\Rightarrow x = \frac{160}{4} = 40 \text{ m}$$

$$\therefore \text{Length} = 40 + 23 = 63 \text{ m}$$

$$\therefore \text{Required area} = 63 \times 40 = 2520 \text{ m}^2$$

$$68. (d) \text{ Difference of SI and CI for 3 years}$$

$$= \frac{PR(300+R)}{100^3}$$

$$\therefore \frac{P \times 25 \times 305}{100 \times 100 \times 100} = 36.60$$

$$\Rightarrow P = \frac{36.60 \times 100 \times 100 \times 100}{25 \times 305} = ₹ 4800$$

69. (d) $x\left(3 - \frac{2}{x}\right) = \frac{3}{x}$

$$\Rightarrow 3x - 2 = \frac{3}{x}$$

$$\Rightarrow 3x - \frac{3}{x} = 2$$

On dividing by 3,

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

On squaring both sides,

$$x^2 + \frac{1}{x^2} - 2 = \frac{4}{9}$$

$$\Rightarrow x^2 + \frac{1}{x^2} = 2 + \frac{4}{9} = 2\frac{4}{9}$$

70. (c) $\left(x + \frac{1}{x}\right)^2 = x^2 + \frac{1}{x^2} + 2$

$$\Rightarrow x^2 + \frac{1}{x^2} = 9 - 2 = 7$$

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

$$\Rightarrow 27 = x^3 + \frac{1}{x^3} + 3 \times 3$$

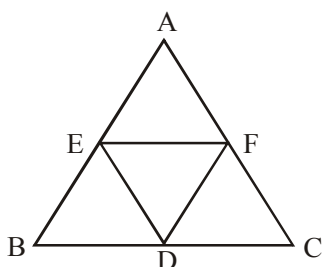
$$\Rightarrow x^3 + \frac{1}{x^3} = 18$$

$$\therefore \left(x^2 + \frac{1}{x^2}\right)\left(x^3 + \frac{1}{x^3}\right) = 7 \times 18 = 126$$

$$\Rightarrow x^5 + \left(x + \frac{1}{x}\right) + \frac{1}{x^5} = 126$$

$$\Rightarrow x^5 + \frac{1}{x^5} = 126 - 3 = 123$$

71. (b)



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প্র্যাচিভর্স

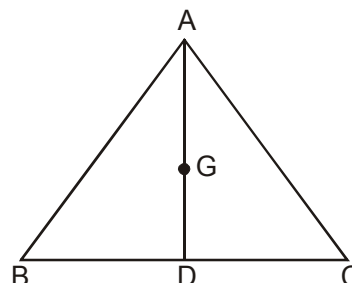
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$$\triangle DEF = \frac{1}{4} \triangle ABC$$

$$= \frac{1}{4} \times 24 = 6 \text{ sq. units.}$$

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72. (b)



The point of intersection of medians of a triangle is called centroid. It divides each median in the ratio 2 : 1.

$$\therefore \frac{AG}{GD} = \frac{2}{1} \Rightarrow \frac{GD}{AG} = \frac{1}{2}$$

$$\Rightarrow \frac{GD}{AG} + 1 = \frac{1}{2} + 1$$

$$\Rightarrow \frac{GD + AG}{AG} = \frac{1 + 2}{2}$$

$$\Rightarrow \frac{AD}{AG} = \frac{3}{2}$$

$$\Rightarrow AG : AD = 2 : 3$$

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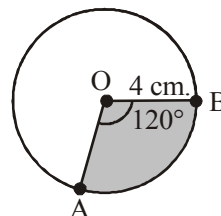
73. (a) $\tan \theta = 1 \Rightarrow \theta = 45^\circ$

$$\therefore \frac{8 \sin \theta + 5 \cos \theta}{\sin^3 \theta - 2 \cos^3 \theta + 7 \cos \theta}$$

$$= \frac{8 \times \frac{1}{\sqrt{2}} + \frac{5}{\sqrt{2}}}{\frac{1}{2\sqrt{2}} - \frac{2}{2\sqrt{2}} + \frac{7}{\sqrt{2}}}$$

$$= \frac{\frac{13}{\sqrt{2}}}{\frac{13}{2\sqrt{2}}} = \frac{13}{\sqrt{2}} \times \frac{2\sqrt{2}}{13} = 2$$

74. (c)



$$\therefore 360^\circ \equiv \pi r^2$$

$$\therefore 120^\circ \equiv \frac{120}{360} \times \pi r^2$$

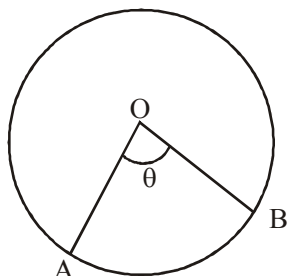
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$$\equiv \frac{\pi r^2}{3} = \frac{22}{7 \times 3} \times 4 \times 4$$

$$= \frac{352}{21} = 16.76 \text{ sq.cm.}$$

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75. (b)



Let the length of arc AB be y units and radius of circle be r units.

$$\angle AOB = x \text{ radius}$$

$$\therefore \theta = \frac{l}{r}$$

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$$\Rightarrow x = \frac{y}{r} \dots (i)$$

Again area of sector AOB

$$= \frac{\theta}{2\pi} \times \pi r^2 = \frac{x}{2} r^2 \text{ sq. units}$$

According to the question,

$$\frac{xr^2}{2} = y^2 = (xr)^2 \quad [\text{From equation (i)}]$$

$$\Rightarrow \frac{xr^2}{2} = x^2 r^2$$

$$\Rightarrow x = \frac{1}{2}$$

76. (b) **the** will be used before **worst** comes to the worst will replace comes to worst because –

worst (Adj.) is the **Superlative Degree of bad (Positive Degree)** and **worse (comparative Degree)** and **the (Def. Art.)** is used with a **Superlative Degree**.

if the worst comes to the worst (Idiom) : if the situation becomes too difficult or dangerous.

Look at the examples given below :

If the **worst** comes to **the worst**, we'll just have to sell the house.

If the **worst** comes to **the worst**, we'll have to give them our bed and sleep on the floor.

77. (c) **really** will replace **real** because – **really (Adv.)** is used for emphasizing an **Adjective/Adverb**

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Look at the examples given below :

She was driving **really** fast.

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I am **really** sorry.

Hence, **really good** is the right usage.

78. (c) **higher (Adv.)** the (Indef. Art.) is used in the **Comparative Degree** with **Adverbs**.

The structure is as follows :

the + Comparative Expression + Subject +

\downarrow greater \downarrow demand
Verb + the + Comparative Expression
 \downarrow
 higher

Hence, **the higher** is the right usage.

79. (a) **prefer (Verb)** : to like one thing or person better than another

A **Prepositional Phrase** with **to** will be used.

Hence, **riding to walking** is the right usage.

80. (c) **back out (Phr.V.)** : to withdraw from something

Here, **withdrew his support from** is the right usage.

81. (b) **First two** will replace **two first** because – in **Numeral Adjectives – Ordinal** and **Cardinal Adjectives** – a particular order is followed. The order is –

Determiner + Ordinal + Cardinal + Noun
 \downarrow \downarrow \downarrow \downarrow
 the first two chapters
 Hence, the first two chapters of the book

82. (b) **would** will replace **will** because – in **Indirect speech will** changes into **would** as in –

She said, "I **will** teach you English." (D.S.)

She said that she **would** teach me English. (I.S.)

Hence, **that he would never** is the right usage.

83. (a) English is spoken all over the world. (**Passive**) The sentence is in **Simple Present Tense. (Active)**

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84. (a) He said, "Has anybody been unkind to you ?" → (D.S.).

\downarrow \downarrow \downarrow
 Rep. V. Verb Pro. (me)
 (Pr. Per.)
 He asked me if anybody had been unkind to me. (I.S.)
 \downarrow \downarrow \downarrow
 Rep.V. Conj. Verb (P.Per) Pro.
 (you)

85. (d) Why was my proposal not agreed to by you? (**Passive**)

The sentence is in **Simple Past Tense. (Active)**

86. (c) **rely on (Phr. V.)**: to depend on
Here, **relies** is the right usage.
87. (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.
88. (b) **and (Conj.)**: also; in addition to. **আচ্ছা**
Here, **and** is the right usage.
89. (a) **majestic (Adjective)**: impressive; splendid
august (Adjective): impressive; making you feel respect
important (Adjective): of great value
difficult (Adjective): not easy
huge (Adjective): enormous; vast
90. (b) **destroyed (Verb)**: to damage something very badly
decimated (Verb): to severely damage something or make something weaker
denounced (Verb): to strongly criticize somebody/something that you think is wrong, illegal, etc. **আচ্ছা**
successful (Verb): achieving your aims or what was intended
depressed (Verb): very sad and without hope
91. (b) **genetics**
genetics (N.): the scientific study of the ways in which different characteristics are passed from each generation of living things to the next
hereditary (Adj.): given to a child by its parents before it is born
genesis (N.): the beginning/origin of something
inheritance (N.): the money, property, etc. that you receive from somebody when he dies
92. (c) **diagnose**
diagnose (V.): to say exactly what an illness or the cause of a problem is
investigate (V.): to carefully examine the facts of a situation, an event, a crime, etc; to find out the truth about it or how it happened
determine (V.): to discover the facts to calculate exactly; establish
detect (V.): to discover/notice something that is not easy to see, hear, etc.
93. (d) **quell (Verb)**: to stop violent behaviour or protests
foment (Verb): incite; to create trouble/violence/make it worse **আচ্ছা**
repulse (Verb): repel; to make somebody feel disgust/a strong dislike
cease (Verb): to stop happening/existing
control (Verb): to limit; to have power over a person, company, country etc.
94. (a) **prompt (Adjective)**: done without delay; immediate; punctual
tardy (Adjective): slow to act, move or happen; late in happening or arriving
gradual (Adjective): happening slowly over a long period; not sudden
late (Adjective): near the end of a period of time
quick (Adjective): fast and prompt
95. (d) **the green-eyed monster**: used as a way of talking about jealousy
● Do you think his criticisms for Ramesh are valid or is it just a case of a **green-eyed monster**?
The best option is **Jealousy** **আচ্ছা**
96. (b) **vast (Adj.)**
97. (a) **around (Adv.)**
98. (c) **oasis (Noun)**
99. (b) **search (Noun)**
100. (c) **camel (Noun)**

