

KD
Campus
KD Campus Pvt. Ltd

PLOT NO.2, SSI INDUSTRIAL AREA, G.T. KARNAL ROAD, JAHANGIRPURI, DELHI

36. (A) $17 \quad 14 \quad 15 \quad 12 \quad 13 \quad 10 \quad 11$
 $\quad \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $\quad \quad -3 \quad +1 \quad -3 \quad +1 \quad -3 \quad +1$

37. (A)

38. (D) $5 \times 2 \times 6 = 60$
 $8 \times 4 \times 2 = 64$
 $7 \times 6 \times 3 = \mathbf{126}$

39. (D) $25 = 5 \times 5$
 $30 = 5 \times 6$
 $35 = ? \times 5$

$\therefore ? = \frac{35}{5} = \mathbf{7}$

40. (D) $(24 \times 2) + 5 = 48 + 5 = 53$
 $(51 \times 4) + 7 = 204 + 7 = 211$
 $(67 \times 6) + 5 = 402 + 5 = \mathbf{407}$

41. (C)

42. (B) $1 \times 10 \Rightarrow (1 \times 10) - 1 = 9$
 $2 \times 10 \Rightarrow (2 \times 10) - 2 = 18$
 $3 \times 10 \Rightarrow (3 \times 10) - 3 = 27$
 $8 \times 10 \Rightarrow (8 \times 10) - 8 = \mathbf{72}$

43. (B)

44. (D) $[(4)^2 + (2)^2 + (5)^2 + (3)^2] \div 2 = 54 \div 2 = 27$
 $[(5)^2 + (3)^2 + (2)^2 + (6)^2] \div 2 = 74 \div 2 = 37$
 $[(5)^2 + (9)^2 + (2)^2 + (2)^2] \div 2 = 114 \div 2 = \mathbf{57}$

45. (C)

46. (D) $8 - 8 + 1 = 11 \div 11$
 $\Rightarrow 0 + 1 = 1$
 $\Rightarrow 1 = 1$

47. (A) As,

M O N E Y
 $\downarrow \downarrow \downarrow \downarrow \downarrow$
 1 2 3 4 5

P L U S
 $\downarrow \downarrow \downarrow \downarrow$
 6 7 8 9

So,

P L U M
 $\downarrow \downarrow \downarrow \downarrow$
 $\boxed{6 \ 7 \ 8 \ 1}$

48. (C) $6 + 3 \Rightarrow 3 \times 6 - (6 - 1) = 18 - 5 = 13$
 $5 + 20 \Rightarrow 5 \times 20 - (5 - 1) = 100 - 4 = 96$
 $11 + 7 \Rightarrow 11 \times 7 - (11 - 1) = 77 - 10 = 67$
 $19 + 11 \Rightarrow 19 \times 11 - (19 - 1) = 209 - 18 = 191$

49. (D)

| | | | | |
|-------------------------|--------------|--------------|--------------|-----------------------|
| Day before yesterday | Yesterday | Today | Tomorrow | Day after tomorrow |
| \downarrow | \downarrow | \downarrow | \downarrow | \downarrow |
| Wednesday | Thursday | Friday | Saturday | Sunday |

50. (C) C \Rightarrow 02, **11**, 23, 32, 40
 A \Rightarrow 00, 13, 21, **33**, 42
 R \Rightarrow **57**, 68, 77, 88, 99
 D \Rightarrow 03, 10, **22**, 30, 41

51. (B) The separation of powers, often imprecisely used interchangeably with the trias political principle, is a model for the

governance of a state. The normal division of branches is into a legislature, an executive, and a judiciary. Division of powers is the often overlooked principle of dividing governmental power among the federal, state, and local governments.

52. (B) The Calcutta High Court is the oldest High Court in the country which was established on 2nd July, 1862. Madras High Court in Chennai, Bombay High Court in Mumbai, Calcutta High Court in Kolkata are the first three High Courts in India.
53. (B) The equatorial climate is found between 5 degree north and 10 degree south of the equator. Precipitation in the equatorial region is heavy between 60 inches and 106 inches and is well distributed throughout the year. Due to this abundant rainfall, tropical rainforest climate is usually found at latitudes within five degrees North and South of the equator.
55. (A) The Panasonic Open is a golf tournament on the Asian Tour. It was first played in 2011.
 Winner - Khalin Joshi (2018)
 Shiv Kapur (2017)
56. (A) An important physical property of non-metals is that they are brittle and hence cannot be beaten into sheets or drawn into wires. In other words, non-metals are non-malleable and non-ductile. When stress is applied on non-metals, they shatter into pieces.
57. (C) The atmosphere of the Earth is an envelope of gases extending to a height of 200 kms.
58. (B) Jaundice is a yellow discoloration of the skin, mucous membranes, and the whites of the eyes caused by increased amounts of bilirubin in the blood. Normally, the liver metabolizes excretes the bilirubin in the form of bile. However, if there is a disruption in this normal metabolism and/or production of bilirubin, jaundice may result.
59. (C) The different parts of a flower are calyx, corolla, androecium and gynoecium. Calyx and corolla are accessory organs, while androecium and gynoecium are reproductive organs. Photosynthetic activity is found in the calyx, green shoulder, pericarp and locular parenchyma. It suggests that all of these tissues have significant roles in CO₂ scavenging and the provision of carbon assimilates.
60. (D) Jair Messias Bolsonaro is a Brazilian politician and retired military officer who is the President elect of Brazil.

62. (D) Harsimrat Kaur Badal is the Union Cabinet Minister of Food Processing in the Government of India and member of parliament from Bathinda. She is a member of Shiromanin Akali Da.
Arun Jaitley is an Indian politician and legal advocate, who is a Minister of Finance and Corporate Affairs.
Muppavarapu Benkaiah Naidu is an Indian politician and the current Vice-President of India, in office since 11 August 2017.
65. (C) When a running car stops suddenly, the passengers tend to lean forward due to inertia of motion. Inertia is that property of a body due to which it resists a change in its state of rest or of uniform motion.
66. (B) Legal tender is a medium of payment allowed by law or recognized by a legal system to be valid for meeting a financial obligation. So it is accepted by people and government on a legal basis. Paper currency and coins are common forms of legal tender in many countries.
68. (B) Ireland is an island in the North Atlantic. it is separated from Great Britain to its east by the North Channel, the Irish Sea, and St George's Channel. Ireland is the second-largest island of the British isles, the third-largest in Europe, and the twentieth-largest on Earth.
Ireland currency Euro
Ireland's capital Dublin
70. (C) The Kushan period is considered the Golden period of Gandhara. Peshawar Valley and Taxila are littered with ruins of stupas and monasteries of this period. Gandharan art flourished and it produced some of the best pieces of Indian sculpture. Many monuments were created to commemorate the Jataka tales. The Gandhara civilization peaked during the reign of the great Kushan King Kanishka (128-151). The cities of Taxila (Takshasila) at Sirsukh and Peshawar were built.
73. (D) Arunachal Pradesh is one of the 29 states of India and is the northeastern-most state of the country. Arunachal Pradesh borders the states of Assam and Nagaland to the south and shares international borders with Bhutan in the west, Myanmar in the east and is separated from China in the north by the McMohan Line.
Chief Minister: Pema khandu
official language: English;
75. (B) The World Day for Audiovisual Heritage takes place every 27 October. This commemorative day was chosen by UNESCO in 2005 to raise of awareness of the significance of preservation risks recorded sound and audiovisual documents.
76. (D) Female birds in most families have only one functional ovary (the left one), connected to an oviduct-although two ovaries are present in the embryonic stage of each female bird.
77. (D) **Composition of air**
Nitrogen : 78.08 percent
Oxygen : 20.94 percent
Argon : 0.93 percent
Carbon dioxide : 0.03 percent
Neon : 0.0018 percent
Helium : 0.005 percent
Ozone : 0.00006 percent
Hydrogen : 0.00005 percent
78. (D) The World Trade Organization is an intergovernmental organization that regulates international trade. The WTO officially commenced on 1 January 1995 under the Marrakesh Agreement, signed by 124 nations on 15 April 1994, replacing the General Agreement on Tariffs and Trade, which commenced in 1948.
80. (D) The Ninth Five Year Plan recognised the integral link between rapid economic growth and the quality of life of the mass of the people. Ensuring environmental sustainability of the development process through social mobilisation and participation of people at all level was one of the specific objectives of the Ninth Plan as approved by the National Development Council. In the Ninth Plan document, policies and programmes during the Eighth Plan period were reviewed, shortcomings identified and new policy framework suggested overcoming the shortcomings and ensuring sustainability of the development process not only in economic terms but also in terms of social and environmental factors.
81. (B) According to Newton's first law, an object that is at rest will stay at rest unless an external force acts upon it and an object that is in motion will not change its velocity unless an external force acts upon it. So this law is known as the law of inertia.
82. (C) The chemical used for cloud seeding for artificial rains is silver iodide.
83. (C) There are three bones in each human ear. The small ear bones are arranged in series and are known as ossicles. Ear bones are the malleus or hammer, the incus or anvil and the stapes, or stirrup. Together they form a short chain that crosses the middle ear and transmits vibrations caused by sound waves from the eardrum membrane to the liquid of the inner ear. As we have a pair of ear, total number of bones are 6.

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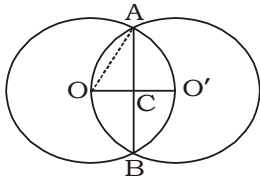
85. (C) Article 280 of the Indian Constitution deals with the Finance Commission. The Finance Commission of India came into existence in 1951. It was established under Article 280 of the Indian Constitution by the President of India. It was formed to define the financial relations between the centre and the state.
86. (C) Raja Todar Mal was a warrior, an able administrator and an exemplary finance minister. He was one of the 'Navratnas' of Akbar's court. He introduced an excellent land revenue system. In 1582, the title Diwan-I-Ashraf was bestowed upon him by the Emperor.
89. (D) The Chief Justice of a High Court is appointed by the President with the consultation of the Chief Justice of the Supreme Court and the Governor of the State. The other judges are appointed by the will of President, Governor and the Chief Justice of High Court.
90. (D) Lucknow Pact, (December 1916) was a famous agreement made by the Indian National Congress headed by Maratha leader Bal Gangadhar Tilak and the All-India Muslim League led by Muhammad Ali Jinnah which was adopted by the Congress at its Lucknow session on December 29 and by the league on December 31, 1916. The meeting at Lucknow marked the reunion of the moderate and radical wings of the Congress. The pact dealt both with the structure of the government of India and with the relation of the Hindu and Muslim communities.
92. (D) Tiger Reserve – Simlipal Tiger Reserve (Odisha)
Satkosia Tiger Reserve (Odisha)
Amangarh Tiger Reserve Uttar Pradesh
94. (D) When treated with ammoniacal silver nitrate solution alkynes form white precipitate of silver acetylides.
96. (C) Pobitora Wildlife Sanctuary – Assam
Coringa Wildlife Sanctuary – Andhrapradesh
Pameda Wildlife Sanctuary – Chhattisgarh
98. (A) Goa is a former Portuguese colony, the Portuguese overseas territory of Portuguese India existed for about 450 years until it was annexed by India in 1961. In 1510, the Portuguese defeated the ruling Bijapur kings with the help of a local ally, Timayya, leading to the establishment of a permanent settlement in Velha Goa (or Old Goa). In 1843 the capital was moved to Panjim from Velha Goa. By the mid of the 18th century the area under occupation had expanded to most of Goa's present day state limits. Simultaneously the Portuguese lost other possessions in India until their borders stabilized and formed the Estado-da-India Portuguesa, of which Goa was the largest territory.
99. (A) An ecosystem is a community of living and non-living things that work together. It includes soil, atmosphere, heat and light from the sun and also includes water and living organisms.
100. (B) Dadabhai Naoroji, of Bombay Parsee origin, is the "Grand Old Man of India" and the "Father of Indian Nationalism" who worked with perseverance and unshakeable faith towards the goal of Swaraj was the first Indian to claim self-government for his people. Dadabhai Naoroji was also the first Indian to show that India was being drained of its wealth under the British rule and thus was fast succumbing to poverty. He played a key role in founding the Indian National Congress in 1885 and was associated with the organisation till his death.
101. (D) Let the numbers be $3x$ and $4x$ respectively
First number \times second number = HCF \times LCM
 $\Rightarrow 3x \times 4x = 2028$
 $\Rightarrow x^2 = \frac{2028}{3 \times 4} = 169$
 $\therefore x = \sqrt{169} = 13$
 \therefore Sum of the numbers
 $= 3x + 4x = 7x = 7 \times 13 = 91$
102. (D) ATQ,
$$\frac{13}{4} \times \frac{2}{3} - \left(\frac{9}{4} - \frac{5}{3}\right) \times \frac{3}{4}$$

$$= \frac{13}{6} - \left(\frac{27 - 20}{12}\right) \times \frac{3}{4}$$

$$= \frac{13}{6} - \frac{7}{12} \times \frac{3}{4} = \frac{13}{6} - \frac{7}{16}$$

$$= \frac{104 - 21}{48} = \frac{83}{48}$$
103. (B) $q(p^2 - 1)$
 $= (\sec\theta + \operatorname{cosec}\theta) \{(\sin\theta + \cos\theta)^2 - 1\}$
 $= \left(\frac{1}{\cos\theta} + \frac{1}{\sin\theta}\right) \{\sin^2\theta + \cos^2\theta + 2\sin\theta\cos\theta - 1\}$
 $= \left(\frac{\sin\theta + \cos\theta}{\cos\theta\sin\theta}\right) (1 + 2\sin\theta\cos\theta - 1)$
 $= \left(\frac{\sin\theta + \cos\theta}{\cos\theta\sin\theta}\right) (2\sin\theta\cos\theta)$
 $= 2(\sin\theta + \cos\theta) = 2p$

104. (B)



$$OC = 2 \text{ cm}$$

$$OA = 4 \text{ cm}$$

$$\therefore AC = \sqrt{4^2 - 2^2}$$

$$= \sqrt{16 - 4}$$

$$= \sqrt{12} = 2\sqrt{3}$$

$$\Rightarrow AB = 4\sqrt{3} \text{ cm}$$

105. (A) Boys : Girls

$$= 4 : 3 = 32 : 24$$

Girls : Teachers

$$= 8 : 1 = 24 : 3$$

\therefore Boys : Girls : Teachers

$$= 32 : 24 : 3$$

\therefore Required ratio

$$= (32 + 24) : 3 = 56 : 3$$

106. (A) Let price of the third variety = x per kg.

ATQ,

$$126 + 135 + 2x = 4 \times 153$$

$$\Rightarrow 261 + 2x = 612$$

$$\Rightarrow 2x = 612 - 261 = 351$$

$$\Rightarrow x = \frac{351}{2} = ₹ 175.5$$

107. (C) Average of first five odd multiples of 3

$$= \frac{3(1+3+5+7+9)}{5}$$

$$= \frac{3 \times 25}{5} = 15$$

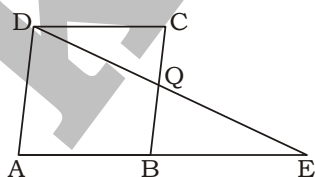
108. (B) Required percent

$$= \frac{1}{4} \times 3 + \frac{2}{3} \times 5 + \left(1 - \frac{1}{4} - \frac{2}{3}\right) \times 11$$

$$= \frac{3}{4} + \frac{10}{3} + \frac{11}{12} = \frac{9+40+11}{12} = 5\%$$

109. (B) $AD \parallel BC$

$\Rightarrow AD \parallel BQ$



Point B is the mid-point of AE.

\therefore Q is the mid-point of DE.

In Δ s DQC and BQE.

$$\angle DQC = \angle BQE$$

$$\angle DCQ = \angle QBE$$

$$\angle CDQ = \angle QEB$$

\therefore Both triangles ΔDQC and ΔBQE are similar.

$$\Rightarrow CQ : QB = 1 : 1$$

110. (A) $\frac{x}{y} + \frac{y}{x} = -2 \Rightarrow \frac{x^2 + y^2}{xy} = -2$

$$\Rightarrow x^2 + y^2 = -2xy$$

$$\Rightarrow x^2 + y^2 + 2xy = 0$$

$$\Rightarrow (x + y)^2 = 0$$

$$\Rightarrow x + y = 0$$

$$\therefore x^3 + y^3 + 3xy(x + y) = (x + y)^3 = 0$$

111. (A) $(3 + 2\sqrt{2})(3 - 2\sqrt{2})$

$$= (3)^2 - (2\sqrt{2})^2 = 9 - 8 = 1$$

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

$$(x + y)^3 + (x - y)^3$$

$$= x^3 + y^3 + 3x^2y + 3xy^2 + x^3 - y^3 - 3x^2y + 3xy^2$$

$$= 2x^3 + 6xy^2$$

$$\therefore (3 + 2\sqrt{2})^{-3} + (3 - 2\sqrt{2})^{-3}$$

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

$$= (3 - 2\sqrt{2})^3 + (3 + 2\sqrt{2})^3$$

$$= 2 \times (3)^3 + 6 \times 3 \times (2\sqrt{2})^2$$

$$= 2 \times 27 + 18 \times 8$$

$$= 54 + 144 = 198$$

112. (D) If the number of men be 100. Then

Number of women = 90

\therefore Required percent

$$= \frac{100}{90} \times 100 = 111\% \text{ (Approximate)}$$

113. (B) $\frac{x+a}{b+c} + 1 + \frac{x+b}{c+a} + 1 + \frac{x+c}{a+b} + 1 = 0$

$$\Rightarrow \frac{x+a+b+c}{b+c} + \frac{x+b+c+a}{c+a} + \frac{x+c+a+b}{a+b} = 0$$

$$\Rightarrow (x + a + b + c) \left(\frac{1}{b+c} + \frac{1}{c+a} + \frac{1}{a+b} \right) = 0$$

$$\Rightarrow (x + a + b + c) = 0$$

$$\Rightarrow x = -(a + b + c)$$

114. (C) Let the original number of boys and girls be x and y respectively.

Then,

$$\frac{x}{y-15} = \frac{2}{1}$$

$$\Rightarrow x = 2y - 30$$

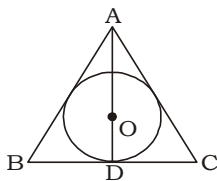
...(i)

Again, $\frac{x-45}{y-15} = \frac{1}{5}$

$$\begin{aligned} \Rightarrow 5x - 225 &= y - 15 \\ \Rightarrow 5x &= y - 15 + 225 \\ \Rightarrow 5(2y - 30) &= y + 210 \quad [\text{From equation (i)}] \\ \Rightarrow 10y - 150 &= y + 210 \\ \Rightarrow 10y - y &= 210 + 150 \\ \Rightarrow 9y &= 360 \end{aligned}$$

$$\Rightarrow y = \frac{360}{9} = 40$$

115. (C)



$$BD = DC = 7\sqrt{3} \text{ cm}$$

$$AD = \sqrt{AB^2 - BD^2}$$

$$= \sqrt{(14\sqrt{3})^2 - (7\sqrt{3})^2}$$

$$= \sqrt{(14\sqrt{3} + 7\sqrt{3})(14\sqrt{3} - 7\sqrt{3})}$$

$$= \sqrt{21\sqrt{3} \times 7\sqrt{3}} = 21 \text{ cm}$$

$\therefore OD = \text{Radius of circle}$

$$= \frac{1}{3} \times 21 = 7 \text{ cm}$$

$\therefore \text{Area of circle} = \pi r^2$

$$= \frac{22}{7} \times 7 \times 7 = 154 \text{ sq.cm.}$$

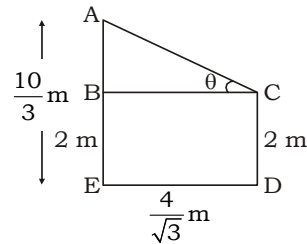
116. (C) $x^2 + 4y^2 + z^2 - 2x - 4y - 2z + 3 = 0$
 $\Rightarrow x^2 - 2x + 1 + 4y^2 - 4y + 1 + z^2 - 2z + 1 = 0$
 $\Rightarrow (x-1)^2 + (2y-1)^2 + (z-1)^2 = 0$
 $\Rightarrow x-1 = 0 \Rightarrow x = 1$

$$2y-1 = 0 \Rightarrow y = \frac{1}{2}$$

$$z-1 = 0 \Rightarrow z = 1$$

$$\Rightarrow x + y + z = 1 + \frac{1}{2} + 1 = 2\frac{1}{2}$$

117. (D)



$$\tan \theta = \frac{AB}{BC} = \frac{\frac{10}{3} - 2}{\frac{4}{\sqrt{3}}} = \frac{4}{3} \times \frac{\sqrt{3}}{4}$$

$$\Rightarrow \tan \theta \frac{1}{\sqrt{3}} = \tan 30^\circ \Rightarrow \theta = 30^\circ$$

118. (A) $x = \sqrt{2^3 \sqrt{4} \sqrt{2^3 \sqrt{4}} \dots}$

On squaring

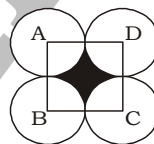
$$x^2 = 2^3 \sqrt{4} \sqrt{2^3 \sqrt{4}} \dots$$

On cubing,

$$x^6 = 8 \times 4x$$

$$\Rightarrow x^5 = 32 = 2^5 \Rightarrow x = 2$$

119. (B)



Area of the shaded region

$$= \text{Area of square of side 6 cm} - 4 \times \text{a right angled sector}$$

$$= 36 - 4 \times \frac{\pi \times 3^2}{4}$$

$$= 36 - 9\pi = 9(4 - \pi) \text{ sq. cm}$$

120. (A) Let the cost price of 1 book be x

$$\Rightarrow \text{Cost price of 3 books} = 3x$$

$$\text{and, cost price of 12 books} = 12x$$

$$\text{Selling price of 12 books} = 1800$$

$$= 12x + 3x = 1800$$

$$\Rightarrow 15x = 1800$$

$$\therefore x = \frac{1800}{15} = 120$$

The cost price of each book = ₹ 120

121. (C) Let the principal be x .

$$\text{Time} = \frac{\text{SI} \times 100}{\text{Principal} \times \text{Rate}}$$

$$= \frac{x \times 100 \times 3}{x \times 50} = 6 \text{ years}$$

122. (B) $\angle OCX = 45^\circ$ (ABCD is a square & AC bisects $\angle BCD$)

$$\angle COD + \angle COX = 180^\circ$$

$$\Rightarrow \angle COX = 180^\circ - \angle COD = 180^\circ - 105^\circ = 75^\circ$$

In $\triangle OCX$

$$\angle OCX + \angle COX + \angle OXC = 180^\circ$$

$$\Rightarrow 45^\circ + 75^\circ + \angle OXC = 180^\circ$$

$$\Rightarrow \angle OXC = 180^\circ - 120^\circ = 60^\circ$$

$$\Rightarrow x = 60^\circ$$

123. (C) Let C.P. of article be x

$$\text{S.P. at 15\% gain} = \frac{115x}{100} = \frac{23x}{20}$$

$$\text{New C.P.} = ₹ \frac{90x}{100}$$

$$\text{New S.P.} = ₹ \frac{90x}{100} \times \frac{125}{100} = ₹ \frac{9x}{8}$$

ATQ,

$$\frac{23x}{20} - \frac{9x}{8} = 4$$

$$\Rightarrow \frac{46x - 45x}{40} = 4$$

$$\Rightarrow x = 40 \times 4 = ₹ 160$$

124. (B) Let the number of each type of notes be x

$$\therefore x + 5x + 10x = 640$$

$$\Rightarrow 16x = 640$$

$$\Rightarrow x = 40$$

\therefore Total number of notes

$$= 3 \times 40 = 120$$

125. (B) Quotient = 16

$$\text{Divisor} = 25 \times 16 = 400$$

and remainder = 80

$$\text{Dividend} = \text{Divisor} \times \text{quotient} + \text{remainder}$$

$$= 400 \times 16 + 80$$

$$= 6400 + 80 = 6480$$

126. (A) $a_4 = a + (4 - 1) \times d$

$$16 = a + 3d \Rightarrow a = 16 - 3d \quad \dots(i)$$

$$\text{Also, } 80 = a + 11d \quad \dots(ii)$$

After putting the value of a from equation

(i) in equation (ii)

$$\Rightarrow 16 - 3d + 11d = 80$$

$$8d = 80 - 16 = 64$$

$$\Rightarrow d = 8$$

$$\Rightarrow a = 16 - 24 = -8$$

127. (D) Let the amount to be distributed be ₹ x .

$$P : Q : R = 2 : 7 : 9$$

Sum of the ratios

$$= 2 + 7 + 9 = 18$$

$$\therefore P = \frac{2}{18} \times x = \frac{x}{9}$$

$$Q = \frac{7}{18}x$$

$$R = \frac{9x}{18} = \frac{x}{2}$$

As given,

$$\frac{x}{9} + \frac{7x}{18} = \frac{x}{2}$$

Thus, we get no conclusion. Amount should be given in the question.

$$128. (C) (m^2 + n^2) \cos^2 \beta = \left(\frac{\cos^2 \alpha}{\cos^2 \beta} + \frac{\cos^2 \alpha}{\sin^2 \beta} \right) \cos^2 \beta$$

$$\left[\because m = \frac{\cos \alpha}{\cos \beta} \text{ and } n = \frac{\cos \alpha}{\sin \beta} \right]$$

$$= \left(\frac{\cos^2 \alpha \sin^2 \beta + \cos^2 \alpha \cos^2 \beta}{\cos^2 \beta \sin^2 \beta} \right) \cos^2 \beta$$

$$= \cos^2 \alpha \left(\frac{\sin^2 \beta + \cos^2 \beta}{\cos^2 \beta \sin^2 \beta} \right) \cos^2 \beta$$

$$= \cos^2 \alpha \left(\frac{1}{\cos^2 \beta \sin^2 \beta} \right) \cos^2 \beta$$

$$= \frac{\cos^2 \alpha}{\sin^2 \beta} = \left(\frac{\cos \alpha}{\sin \beta} \right)^2 = n^2$$

129. (C) Let large number = x then

Smaller number = $520 - x$

ATQ,

$$\frac{96x}{100} = \frac{(520 - x)}{100} \times 112$$

$$\Rightarrow 96x = 520 \times 112 - 112x$$

$$\Rightarrow 112x + 96x = 520 \times 112$$

$$\Rightarrow 208x = 520 \times 112$$

$$\Rightarrow x = \frac{520 \times 112}{208} = 280$$

\therefore Smaller number

$$= 520 - 280 = 240$$

130. (B) A's work = (B + C)'s work

ATQ,

(A + B)'s can complete the work in 9 hr 36

minutes i.e. $\frac{48}{5}$ hrs

C can complete the work in 48 hours.

| Time | Efficiency |
|------------------------|------------|
| $A + B = \frac{48}{5}$ | 5 |
| $C = 48$ | 1 |
| } 48 (Total work) | |

We know that

A's efficiency = (B + C)'s efficiency

C's efficiency = 1

then,

$A - B = 1$

and $A + B = 5$

\Rightarrow A's efficiency = 3

and B's efficiency = 2

time taken by B is = $\frac{48}{2} = 24$ hr

131. (C) Let AB be the tower such that

CB = a and BD = b

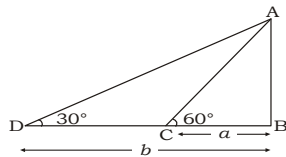
In $\triangle ABC$

$$\tan 60^\circ = \frac{AB}{BC} = \frac{AB}{a}$$

$$\Rightarrow AB = a\sqrt{3}$$

...(i)

In $\triangle ABD$,



$$\tan 30^\circ = \frac{AB}{BD}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{AB}{b}$$

...(ii)

From equations (i) and (ii)

$$(AB)^2 = ab$$

$$AB = \sqrt{ab}$$

132. (C) Let the merchant bought 100 metres of cloth for ₹ 100.

\therefore Total S.P.

$$= ₹ \left(\frac{50 \times 140}{100} + \frac{25 \times 60}{100} + 25 \right)$$

$$= ₹ (70 + 15 + 25) = ₹ 110$$

\therefore Gain percent = 10%

133. (B) $m^2 - n^2 = (\tan\theta + \sin\theta)^2 - (\tan\theta - \sin\theta)^2$
 $= 4 \tan\theta \sin\theta$ [$\because (a + b)^2 - (a - b)^2 = 4ab$]

$$\text{and } 4\sqrt{mn} = 4\sqrt{(\tan\theta + \sin\theta)(\tan\theta - \sin\theta)}$$

(From option)

$$= 4\sqrt{\tan^2\theta - \sin^2\theta}$$

$$= 4\sqrt{\frac{\sin^2\theta}{\cos^2\theta} - \sin^2\theta}$$

$$= 4\sqrt{\frac{\sin^2\theta - \sin^2\theta \cos^2\theta}{\cos^2\theta}}$$

$$= 4\sqrt{\frac{\sin^2\theta(1 - \cos^2\theta)}{\cos^2\theta}}$$

$$= 4\sqrt{\frac{\sin^4\theta}{\cos^2\theta}} = 4\frac{\sin^2\theta}{\cos\theta}$$

$$= 4 \sin\theta \frac{\sin\theta}{\cos\theta} = 4 \sin\theta \tan\theta$$

$$\Rightarrow m^2 - n^2 = 4\sqrt{mn}$$

134. (B) Let the CP of each shirt be ₹ 100, then SP = ₹ 140.

$$\therefore \text{New SP} = \frac{140 \times 90}{100} = ₹ 126$$

\therefore When S.P. is ₹ 126.

CP = ₹ 100

$$\therefore \text{When S.P. is } ₹ \frac{13608}{72}$$

then C.P.

$$= \frac{100}{126} \times \frac{13608}{72} = ₹ 150$$

135. (C) Let the first number be x , then

$$x = \frac{60 \times 4 - x}{4}$$

$$\Rightarrow 4x = 240 - x$$

$$\Rightarrow 5x = 240$$

$$\Rightarrow x = \frac{240}{5} = 48$$

136. (C) Let marked price = ₹ x and

Cost price = ₹ y .

ATQ,

$$50\% \text{ of } x = 90\% \text{ of } y$$

$$\Rightarrow \frac{x \times 50}{100} = \frac{y \times 90}{100}$$

$$\Rightarrow y = \frac{x \times 50}{90} = ₹ \frac{5}{9}x$$

$$= \frac{5}{9} \text{ th of marked price.}$$

137. (B) $M_1D_1 = M_2D_2$

$$\Rightarrow 9 \times 20 = M_2 \times 15$$

$$\Rightarrow M_2 = \frac{9 \times 20}{15} = 12 \text{ pipes}$$

138. (A) Let speed of cyclist = x kmph

& Time = t hours

Then distance covered by jogger = $\frac{xt}{2}$

and time = $2t$

$$\Rightarrow \text{Required ratio} = \frac{xt}{2 \times 2t} : x$$

$$= 1 : 4$$

139. (B) $(2 \text{ men} + 3 \text{ women}) \times 10$
 $= (3 \text{ men} + 2 \text{ women}) \times 8$
 $\Rightarrow 20 \text{ men} + 30 \text{ women}$
 $= 24 \text{ men} + 16 \text{ women}$
 $\Rightarrow 4 \text{ men} = 14 \text{ women}$
 $\Rightarrow 2 \text{ men} = 7 \text{ women}$
 $\therefore 2 \text{ men} + 3 \text{ women} = 10 \text{ women}$
 $\therefore 2 \text{ men} + 1 \text{ woman} = 8 \text{ women}$
 $\therefore M_1 D_1 = M_2 D_2$
 $\Rightarrow 10 \times 10 = 8 \times D_2$
 $\Rightarrow D_2 = \frac{25}{2} = 12\frac{1}{2} \text{ days}$

140. (D) S.I. = $\frac{P \times R \times T}{100}$

$$\therefore y = \frac{x \times T \times R}{100}$$

$$\text{and } z = \frac{y \times T \times R}{100}$$

$$\text{So, } \frac{y}{z} = \frac{x}{y} \Rightarrow y^2 = zx$$

141. (A) Let the length of each train be x metre.

$$\text{Speed of first train} = \frac{x}{18} \text{ m/sec}$$

$$\text{Speed of second train} = \frac{x}{12} \text{ m/sec}$$

When both trains cross each other, time taken

$$= \frac{2x}{\frac{x}{18} + \frac{x}{12}} = \frac{2x}{\frac{2x+3x}{36}} = \frac{2x \times 36}{5x}$$

$$= \frac{72}{5} = 14.4 \text{ seconds}$$

142. (D) Let the first investment be $3x$
 Then second investment be $5x$
 Combined loss %

$$= \frac{3x \times \frac{15}{100} - 5x \times \frac{10}{100}}{3x + 5x} \times 100$$

$$= \frac{45x - 50x}{8x} \times 100$$

$$= \frac{-5x}{8x \times 100} \times 100$$

$$= \frac{-5}{8} \text{ percent or } \frac{5}{8} \% \text{ loss} \quad [-\text{ve sign}]$$

shows loss.]

143. (B) The sum of two sides of a triangle is greater than the third side.
 $(3, 5, 6)$ and $(2, 5, 6)$
 Hence, the maximum no. of triangle is 2.

144. (B) $\frac{SI}{CI} = \frac{rt}{100 \left[\left(1 + \frac{r}{100} \right)^t - 1 \right]}$

$$= \frac{4 \times 2}{100 \left[\left(1 + \frac{4}{100} \right)^2 - 1 \right]}$$

$$= \frac{2}{25 \left(\frac{676}{625} - 1 \right)} = \frac{2 \times 625}{25 \times 51}$$

$$\frac{SI}{CI} = \frac{50}{51} = 50 : 51$$

145. (C) Mean of 10 observations - Mean of 9 observations = 10th observation
 $10\text{th observation} = 10 \times 17 - 16 \times 9$
 $= 170 - 144 = 26$

146. (C) Required percentage = $\frac{420}{600} \times 100 = 70\%$

147. (B) Required ratio = $\frac{360}{435} = \frac{24}{29} = 24 : 29$

148. (A) Total marks of Physics = 469

$$\text{Average marks} = \frac{469}{7} = 67$$

149. (A) Average marks in Maths = $\frac{651}{7} = 93$

$$\text{Required percentage} = \frac{93}{150} \times 100 = 62\%$$

150. (B) Total (B) = $70 + 80 + 63 + 68 + 49 + 30$
 $= 360$

$$\text{Total (E)} = 123 + 79 + 79 + 84 + 40 + 27$$

$$= 432$$

$$\text{Required percentage} = \frac{432 - 360}{360} \times 100$$

$$= 20\%$$

MEANINGS IN ALPHABETICAL ORDER

| Word | Meaning in English | Meaning in Hindi |
|---------------|--|---|
| Arena | A level area surrounded by seats for spectators, in which sports, entertainments and other public events are held | अखाड़ा, रंगभूमि |
| Assimilation | The act of fully understanding an idea or some information so that you are able to use it yourself | समावेश, सम्मिलन |
| Augur | (of an event or circumstance) indicate a good or bad outcome | पूर्वसूचना देना |
| Barbarous | Not polite or proper : very rude or offensive | असभ्य, क्रूर |
| Calumny | a false accusation of an offense or a malicious misrepresentation of someone's words or actions | मिथ्या आरोप |
| Catharsis | The act of purging of emotional tensions | भावनात्मक क्रोध के मुक्ति की अभिव्यक्ति |
| Concubine | A woman with whom a man cohabits without being married | उपपत्नी |
| Cordial | Politely pleasant and friendly | शिष्ट, दोस्ताना |
| Culprits | A person who has committed a crime or done something wrong | अपराधी |
| Dandy | A man who cares too much about his clothing and personal appearance | सजीला |
| Delinquents | A young person who regularly does illegal or immoral things | अपचारी, अपराधी |
| Denomination | A value or size of a series of values or sizes | मूल्यवर्ग, कोटि |
| Designate | Chosen for a particular job | मनोनीत करना |
| Extricate | To free or remove (someone or something) from something (such as a trap or a difficult situation) | छुड़ाना, मुक्त करना |
| Foment | Instigate or stir up (an undesirable or violent sentiment or course of action) | भड़काना, उकसाना |
| Hangar | A large building in which aircraft are kept | विमान घर |
| Haphazard | Marked by great carelessness | अव्यवस्थित, बेतरतीब |
| Hereditary | (of a title, office, or right) conferred by or based on inheritance | अनुवांशिक |
| Implicate | To show that someone or something is closely connected to or involved in something (such as a crime) | फंसाना |
| Incumbent | Having an official position | अधिकारी, पदाधिकारी |
| Lass | A girl or young woman | किशोरी, लड़की |
| Maunder | To talk or complain about something in a boring and/or annoying way | बड़बड़ाना |
| Morbid | Having or expressing a strong interest in sad or unpleasant things, especially disease or death | मरणासन्न, अस्वस्थ |
| Nemesis | punishment or defeat that is deserved and cannot be avoided | दण्ड, सजा |
| Oratory | The art of speaking in public eloquently or effectively | बोलने की कला |
| Ouija | Representation of spirit acts | आत्माओं का आमंत्रण |
| Persuade | To cause someone to do or believe something by asking, arguing or giving reasons | समझाना, फुसलाना, मनाना |
| Profound | Very great; felt or experienced very strongly | प्रगाढ़, अथाह |
| Purgation | The action of causing something to leave the body | शुद्धिकरण |
| Ransacked | A place untidy and damaged because of being gone hurriedly through searching something | लूटा हुआ |
| Sanatorium | A place like a hospital where patients who have a lasting illness or who are getting better after an illness are treated | आरोग्य आश्रम |
| Subjugation | The act of defeating somebody/something; complete control over somebody/something | आधिपत्य, जीतना |
| Trousseau | The clothes, household linen and other belongings collected by a bride for her marriage | दुल्हन का साज-सामान |
| Twigs | A small very thin branch that grows out of a larger branch on a bush or tree | दहनी |
| Uncouth | Behaving in a rude way : not polite or socially acceptable | अशिष्ट, असभ्य |
| Verbalization | To express something in words, in speech or writing | शाब्दिक अभिव्यक्ति |
| Wrath | intense anger | क्रोध, गुस्सा |

CPO MOCK TEST - 38 (ANSWER KEY)

| | | | | | | | |
|---------|---------|---------|----------|----------|----------|----------|----------|
| 1. (A) | 26. (C) | 51. (B) | 76. (D) | 101. (D) | 126. (A) | 151. (C) | 176. (C) |
| 2. (C) | 27. (D) | 52. (B) | 77. (D) | 102. (D) | 127. (D) | 152. (A) | 177. (A) |
| 3. (D) | 28. (B) | 53. (B) | 78. (D) | 103. (B) | 128. (C) | 153. (A) | 178. (B) |
| 4. (B) | 29. (D) | 54. (C) | 79. (A) | 104. (B) | 129. (C) | 154. (A) | 179. (A) |
| 5. (D) | 30. (A) | 55. (A) | 80. (D) | 105. (A) | 130. (B) | 155. (C) | 180. (B) |
| 6. (B) | 31. (D) | 56. (A) | 81. (B) | 106. (A) | 131. (C) | 156. (B) | 181. (D) |
| 7. (B) | 32. (A) | 57. (C) | 82. (C) | 107. (C) | 132. (C) | 157. (D) | 182. (C) |
| 8. (A) | 33. (C) | 58. (B) | 83. (C) | 108. (B) | 133. (B) | 158. (A) | 183. (A) |
| 9. (A) | 34. (C) | 59. (C) | 84. (A) | 109. (B) | 134. (B) | 159. (D) | 184. (B) |
| 10. (C) | 35. (A) | 60. (D) | 85. (C) | 110. (A) | 135. (C) | 160. (D) | 185. (C) |
| 11. (D) | 36. (A) | 61. (B) | 86. (C) | 111. (A) | 136. (C) | 161. (C) | 186. (C) |
| 12. (A) | 37. (A) | 62. (D) | 87. (C) | 112. (D) | 137. (B) | 162. (D) | 187. (A) |
| 13. (B) | 38. (D) | 63. (C) | 88. (D) | 113. (B) | 138. (A) | 163. (C) | 188. (A) |
| 14. (D) | 39. (D) | 64. (A) | 89. (D) | 114. (C) | 139. (B) | 164. (D) | 189. (D) |
| 15. (A) | 40. (D) | 65. (C) | 90. (D) | 115. (C) | 140. (D) | 165. (A) | 190. (C) |
| 16. (D) | 41. (C) | 66. (B) | 91. (D) | 116. (C) | 141. (A) | 166. (B) | 191. (C) |
| 17. (B) | 42. (B) | 67. (D) | 92. (D) | 117. (D) | 142. (D) | 167. (B) | 192. (D) |
| 18. (D) | 43. (B) | 68. (B) | 93. (C) | 118. (A) | 143. (B) | 168. (C) | 193. (B) |
| 19. (D) | 44. (D) | 69. (B) | 94. (D) | 119. (B) | 144. (B) | 169. (B) | 194. (C) |
| 20. (D) | 45. (C) | 70. (C) | 95. (C) | 120. (A) | 145. (C) | 170. (C) | 195. (C) |
| 21. (A) | 46. (D) | 71. (D) | 96. (C) | 121. (C) | 146. (C) | 171. (D) | 196. (B) |
| 22. (B) | 47. (A) | 72. (B) | 97. (B) | 122. (B) | 147. (B) | 172. (B) | 197. (A) |
| 23. (D) | 48. (C) | 73. (D) | 98. (A) | 123. (C) | 148. (A) | 173. (C) | 198. (B) |
| 24. (D) | 49. (D) | 74. (C) | 99. (A) | 124. (B) | 149. (A) | 174. (A) | 199. (B) |
| 25. (C) | 50. (C) | 75. (B) | 100. (B) | 125. (B) | 150. (B) | 175. (A) | 200. (D) |

151. (C) 'Rich' will be followed by 'in', as 'rich in something' means 'containing or providing a large supply of something'.
152. (A) 'Have' is followed by 'V₃'. Here we have present perfect tense.
153. (A) Change 'needed' into 'need'. The sentence is a general fact.
154. (A) Replace 'impatient' by an adverb 'impatiently' which qualifies the verb 'looking'. Here 'look' is not used as a verb of sensation hence will not take adjective after it.
155. (C) Replace 'whom' by a relative pronoun 'who', as there is a need of a subject in the subordinate clause.
156. (B) As 'effect' means 'cause something to happen or bring about'.
157. (D) Disposable things are 'use and throw' objects.
158. (A) Reconcile with (to adjust, समझौता करना)
Reconcile oneself to (to accept a situation reluctantly)
159. (D) Profound means extreme.
174. (A) Prefer (verb) and preferable (adj) take preposition 'to'.
175. (A) The correct phrase is 'on the alert'. It means watchful and attentive for someone or something.
177. (A) Sentences starting with 'let's' take question tag 'shall we'
178. (B) The formula of past conditional sentence is -
'If + sub + had + V₃, sub + would + have + V₃'
179. (A) The sentence is of past. Change 'is' into 'was'
180. (B) When there are 'two', we use 'between'