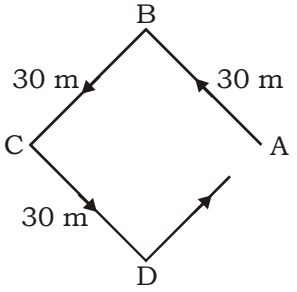
CPO MOCK TEST – 22 (SOLUTION)

1. (C) Wine is made from Grapes and Vodka is made from **potatoes**.
2. (C) Blood flows in Vein whereas Oil flows in **pipeline**.
3. (D) Liberty is opposite to Slavery and Danger is opposite to **safety**.
4. (B) Coach guides the Player in the same way as **teacher** guides the Pupil.
5. (C) Net is required to Trap and **money** is required to Trade.
6. (A) '↷' symbol is moving one step forward in clockwise direction and '↶' symbol is moving one step backward in anti-clockwise direction.
7. (B) $28 \Rightarrow 28 + (2 \times 8) = 28 + 16 = 44$
   $35 \Rightarrow 35 + (3 \times 5) = 35 + 15 =$ **50**
8. (B) 29 : 62 :: 218 : **341**
   $3^3 + 2$ $4^3 - 2$ $6^3 + 2$ $7^3 - 2$
9. (A) M K Q O
   −1 +3 −1 +3
   L N P R

   Y S U W
   −1 +3 −1 +3
   X V T Z
10. (C) P Y X F **O X Y E**
    −1, −1, +1, −1

    V E R L U D S K
    −1, −1, +1, −1
11. (A) All except **mechanic** help in building a house.
12. (C) All except **bear** belong to the cat family.
13. (D) All except **tower** are natural geographical features, while tower is a man made.
14. (A) Only in **232**, a digit is repeated.
15. (A) Each of the number except **140** is a multiple of 120.
16. (D) B E G (+2, +3) K N P (+2, +3) W Z B (+2, +3) **J L N** (+2, +2)
17. (A) **K N M** (+1, +2) J M K (+2, +1) C F D (+2, +1) G J H (+2, +1)
18. (D) B × P, A, M
    I. ✔
    II. ✔
19. (C) The letters at the third and sixth places are repeated thrice alternately to code BOMBAY as MYMYMY. Similarly, the letters at the third and sixth places are repeated thrice alternately to code DISPUR as **SRSRSR**.
20. (C) Nisha's mother's mother is man's mother i.e., Nisha's mother is man's sister (or) Nisha is man's **niece**.
21. (B) **1 → 4 → 2 → 5 → 3**
22. (A) "The terms of the given series are 3×1^2, 3×2^2, 3×3^2, 3×4^2, 3×5^2, 3×6^2, ...
    So, missing term = $3 \times 7^2 = 3 \times 49 =$ **147**
23. (A) The pattern is -
    −1, × 10 + 1, −1, × 10 + 1, −1, × 10 + 1, ...
    So, missing term = 10 × 10 + 1 = **101**
24. (D) The pattern is + 0, + 3, + 8, + 15, ...
    We can find a difference of +3, +5 and +7 in the above mentioned pattern. So, the next difference will be 7 + 2 = 9 and the pattern will become
    + 0, + 3, + 8, + 15, +(15 + 9)
    So, missing term = 28 + (15 + 9)
    = 28 + 24 = **52**
25. (A)



    The movements of the girl are as shown in Fig.
    (A to B, B to C, C to D, D to A).
    Clearly, she is finally moving in the direction DA i.e. **North east**.

26. (C) Let ascent of the monkey in 1 hour
= (30 – 20) = 10 feet.
So, the monkey ascends 90 feet in 9 hours i.e., 5 p.m.
Clearly, in the next 1 hour i.e., till **6 p.m**. the monkey ascends remaining 30 feet to touch the flag.

27. (C) The order is:
Literary → Literature → **Litter** → Little → Littoral

28. (B) Number of persons between Arun and Mukesh
= 50 – (10 + 25) = 15
Since Maha lies in middle of these 15 persons, so Maha's position is 8th from Arun i.e. **18th** from the front.

29. (A) Given:- 9 ÷ 8 × 7 + 5 – 10
After replacing the signs as per the given details.
$9 - 8 \div 7 \times 5 + 10$
$= 9 - \frac{8}{7} \times 5 + 10$
$= 9 - \frac{40}{7} + 10$
$= 19 - \frac{40}{7} = \frac{133 - 40}{7} = \frac{93}{7} =$ **13.3**

30. (B) 25 + 20 = **45**

31. (B) 5 × 1 = 5, 6 × 1 = 6, 5 + 6 =11
6 × 4 = 24, 3 × 2 = 6, 24 + 6 = 30
3 × 5 = 15, 4 × 3 = 12
So, missing number = 15 + 12 = **27**

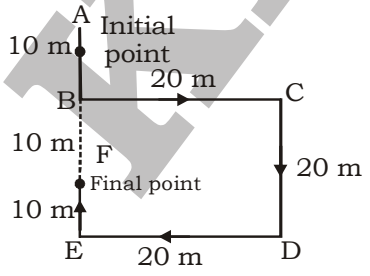
32. (B) 3 × 4 + **3** = 15
7 × 5 + **3** = 38
So, missing number = 3 × 5 + **3** = **18**

33. (A) **2** × 9 + **3** × 17 = 18 + 51 = 69.
2 × 13+ **3** × 11 = 26 + 33 = 59.
Let the missing number in the first row be x.
Then, $\mathbf{2}x + 3 \times 13 = 49$ or $2x = 10$ or $x =$ **5**

34. (D) 17 – 11 = 25 – 19 = 6.
12 – 6 = 34 – 28 = 6.
Let the missing number in the third column be x.
Then, $x - 8 = 19 - 11 = 8$ or $x =$ **16**

35. (A) 2 × 1 + 1 = 3
14 × 7 + 7 = 105
Let the missing number in the third column be x.
Then, $x \times 9 + 9 = 117 = 9x = 108$ or $x =$ **12**

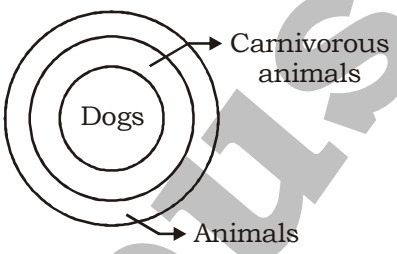
36. (B)



The movements of Surya from A to F are as shown in Fig.
Clearly, Surya's distance from starting point A
= AF = (AB + BF)
= AB + (BE – EF)
= AB + (CD – EF)
= [10 + (20 – 10)] = (10 + 10) m = 20 m.
Also, F lies to the South of A.
So, Surya is **20 metres to the south** of his starting point

37. (B) Clearly, nine days ago, it was Thursday which means today is **Saturday**.

38. (A)



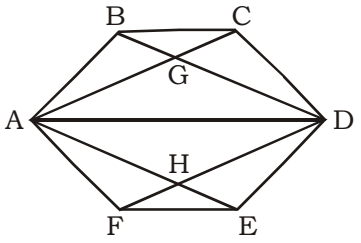
All the dogs belong to animals in which some dogs are flesh eater but not all.

39. (D) Clearly, while counting the numbers associated to the thumb will be 1,9,17,25, ... i.e., numbers of the form $(8n + 1)$.
Since, 2016 = 252 × 8 + 0
So, 2017 shall correspond to the thumb and 2016 to the **index finger**.

40. (B) 1.12.1991 is the first Sunday of December 1991. So, 3.12.1991 is the first Tuesday of the month.
Clearly, 10.12.1991, 17.12.1991, 24.12.1991 and 31.12.1991 are also Tuesdays.
So, **24.12.1991** is the fourth Tuesday.

41. (D)

42. (D) The figure may be markred as shown below.



The quadrilaterals in the figure are ABCD, ABDE, ABDF, ABDH, CDHA, CDEA, CDFA, DEAG, DEFA, FAGD and AGDH.
∴ The number of quadrilaterals in the figure is **11**.

43. (C) In a usual dice, the sum of the numbers on any two opposite faces is always 7. Thus, 1 is opposite to 6, 2 is opposite to 5 and 3 is opposite to 4.
Consequently, when 4, 3, 1 and 5 are the numbers on the top faces, then 3, 4, 6 and 2 respectively are the numbers on the faces touching the ground. The sum of these numbers = 3 + 4 + 6 + 2 = **15**.

44. (C) **1, 6, 8** are figures composed of straight lines as well as curve.
3, 7, 9 are closed figures shaded by oblique line segments.
2, 4, 5 are figures composed of straight lines only.

45. (C) 46. (A) 47. (D)

48. (D) Go on subtracting 24, 21, 18, 15, 12, 9 from the numbers to get the next number.
190 – 24 = 166
166 – 21 = 145
145 – 18 = 127 [Here, 128 is placed instead of 127]
127 – 15 = 112
112 – 12 = 100 ... and so on.
Therefore, **128** is wrong.

49. (A) Word: MISUNDERSTAND
Let's check all the options:
(A) **TENT** ⇒ It can't be formed as it requires 2 T's.
(B) SEND ⇒ It can be formed.
(C) SENT ⇒ It can be formed.
(D) MEND ⇒ It can be formed.

50. (D)

51. (D) Fred Riggs is the father of Comparative Public Administration. He is well known for his works in Comparative Public Administration specially Riggsian Model.

52. (D) Cotopaxi is an active volcano in the Andes Mountains, Ecuador, in South America. It is the second highest summit in Ecuador, reaching a height of 5,897 m (19,347 ft).

54. (A) Madhya Pradesh Government has launched an outstanding power bill waiver scheme and subsidised power scheme called 'Sambal' for labourers and poor families.
Objective: The main objective of the scheme is to make sure that all the households have power facility in the state.

61. (B) Union Cabinet has approved signing of a MOU between India and United Kingdom regarding cooperation between both countries in the sphere of Law & Justice and to set up a Joint Consultative Committee.
Static: United Kingdom
- Capital: London + Currency: Pound sterling
- Prime minister: Theresa May

58. (D) Somyajeet Ghosh has become the youngest national Table Tennis Champion. The 19 year old Ghosh defeated six time champion Achanta Sharath Kamal.

60. (C) Bangladesh and India share a 4,096-kilometer long international boundary, the fifth-longest land border in the world.West Bengal with 2,217 km share longest boundary with Bangladesh. Other states include 262 km with Assam, 856 km with Tripura, 180 km with Mizoram, 443 km with Meghalaya.

61. (B) Patiala House court, one of the six district courts in New Delhi, switched to e-stamping process. The move is aimed at ensuring hassle- free transactions and keeping a check on fraudulent practices. The e-stamping facility, which was introduced in April 2008, is now available in all denominations.

63. (C) Former Jodhpur MP Krishna Kumari has passed away recently. She was 92. Born in 1926, Krishna Kumari, princess of Dharangdhra in Gujrat, had married to the then ruler of Marwar, Hanwant Singh, in 1943.

64. (B) Human Rights Day is celebrated annually across the world on 10th December. The date was chosen to honour the United Nations General Assembly's adoption and proclamation, on 10th December 1948, of the Universal Declaration of Human Rights (UDHR), the first global enunciation of human rights and one of the first major achievements of the new United Nations. This year the objective of the human rights day is to highlight the rights of all people, including women, minorities, persons with disabilities and marginalised people as well as to make their voices heard in decision making processes.

67. (C) Reserve Bank of India has issued licence to Bank of China to launch operations in India. Prime Minister Narendra Modi had made a commitment to Chinese President Xi Jinping to allow Bank of China to set up branches in India when they met on the sidelines of the SCO summit in Chinese city of Qingdao. RBI has issued license to Bank of China to set up its first branch in India.

68. (A) Sports Authority of India is set to be renamed as **Sports India.**
Sports Authority of India (SAI)
- Set Up: 1984
- Headquarters: New Delhi
- Director General: Neelam Kapur

70. (D) • Pyrometer - used to determine the density and coefficient of expansion of liquids.
• Polygraph - used to record changes in heartbeat, blood-pressure and respiration.
• Photometer - used to compare luminous intensity of the source of light.

71. (B) NITI Aayog is organising 'MOVE: Global Mobility Summit' in New Delhi on 7th and 8th September, 2018. Summit will help drive Government's goals for vehicle electrification, renewable energy integration and job growth and also speed up India's transition to a clean energy economy. Prime Minister Narendra Modi will inaugurate the Summit.

72. (B) The Chhattisgarh government has taken the initiative to pass the first Food Security Act.

75. (A) Starting of his six-decade literary career as a bohemian poet and editor of Kritibas, a monthly poetry magazine, Sunil

Gangopadhyay wrote his first novel, Athmo Prakash (Self-Revelation). Two of the most critically acclaimed films of legendary filmmaker Satyajit Ray - Pratidwandi and Aranyer Din Ratri - were based on novels written by him.

76. (A) Rabindranath Tagore was Asia's first Nobel Prize winner. He was awarded the Nobel prize for literature in 1913 for his book Gitanjali.
77. (B) Galaxy NGC 1277 is a small, flattened galaxy that contains one of the most massive central black holes ever found. At 17 billion solar masses, the black hole weighs an extraordinary 14% of the total galaxy mass.
78. (C) National energy conservation day is celebrated every year all over the India on 14^{th} of December.
79. (D) The temperature range of a mercury thermometer depends on its design, but the absolute limits would be from approximately -39 to +357 degrees centigrade, which are the melting and boiling points of mercury.
80. (B) Haryana Government has launched a Scheme titled "Mahatma Gandhi Gramin Basti Yojna" on 2^{nd} October, 2008 to allot free 100 sq. yards residential plots to the eligible BPL families, Scheduled Castes' families, Backward Classes (Category A) families in all the villages of the State.
82. (A) Iltutmish, the Sultan of Delhi, was contemporary of Mongol leader Chengiz Khan. In 1221 A.D, there was a danger of expected attack of Chengiz Khan on Delhi.
86. (B) Hooke's Law states that the restoring force of a spring is directly proportional to a small displacement.
    F = k.x
87. (B) Parshvanath was the twenty third Jain Tirthankar. He was a kshatriya and son of Ashvasena, king of Banaras (Varanasi).
88. (B) Aurangzeb stopped the engraving of Kalma on coins, forbade the Parsis to celebrate their festival Navroz, released an order to ban the music everywhere and arrest those who listen to the music. He reintroduced Jizya.
89. (A) Methanol (CH_3OH) is also known as Wood Alcohol. It is a solvent in many chemical processes and is a component of automobile antifreeze.
92. (D) India Innovation Summit by the Confederation of Indian Industry (CII) will be held in Bengaluru.
    Theme: "India.AI - Driving the Future for the World", will address the aspects of impact of AI on farming, healthcare, automobiles and job creation, among others.
95. (B) Tritium, $^{3}_{1}H$
    Protons = 1
    Neutrons = 3 – 1 = 2
99. (D)Union Minister of Coal, Railways, Finance & Corporate Affairs, Piyush Goyal launched the Coal Mine Surveillance & Management System (CMSMS) and Mobile Application 'Khan Prahari' at New Delhi.
101. (C) Let the total votes be N

$$75\% = \frac{3}{4},\ 2\% = \frac{1}{50}$$

$$N \times \left(\frac{3}{4}\right) \times \left(\frac{49}{50}\right) \times \left(\frac{3}{4}\right) = 9261$$

$$\Rightarrow N = \frac{(21\times 21\times 21)}{3\times 7\times 7\times 3} \times 16 \times 50$$

N = 16800

102. (D) Quantity of milk in the last

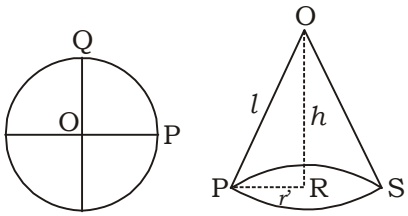
$$= 81\left(1-\frac{27}{81}\right)^2 = 81\left(1-\frac{1}{3}\right)^2$$

$$= 81 \times \frac{2}{3} \times \frac{2}{3} = 36$$

Quantity of water in the last
= 81 – 36 = 45

$$\therefore \text{Ratio} = \frac{36}{45} = \frac{4}{5} = 4:5$$

103. (C) LCM of 4, 5, 6, 7 and 8 = 840
Let required number be 840 K + 2 which is multiple of 13.
∴ Required number
= 840 × 3 + 2
= 2520 + 2 = 2522
104. (B) If a + b + c = 0, then $a^3 + b^3 + c^3 = 3abc$
Here, 0.111 + 0.222 + (–0.333) = 0
$= -3 \times 0.111 \times 0.222 \times 0.333$
$= -(0.333)^2 \times 0.222$
∴ Expression
$= [-(0.333)^2 \times 0.222 + (0.333)^2 \times 0.222]^3 = 0$
105. (B) ∠OCX = 45° (ABCD is a square & AC bisects ∠BCD)
∠COD + ∠COX = 180°
⇒ ∠COX = 180° – ∠COD = 180° – 105° = 75°
In ΔOCX
∠OCX + ∠COX + ∠OXC = 180°
⇒ 45° + 75° + ∠OXC = 180°
⇒ ∠OXC = 180° – 120° = 60°
⇒ x = 60°
106. (B) The quadrant POQ of the circle is folded in such a way that the arc PQ form the base of the cone. Radii OP and OQ form slant height of the cone and they wil coincide.



Arc PQ = $\left(\frac{1}{4}\right) 2\pi r$

$= \frac{1}{4} \times 2 \times \frac{22}{7} \times 14 \text{ cm} = 22 \text{ cm}$

Circumference of the base of the cone = Arc PQ.

or, $2\pi r' = 22$ (where r' = radius of the base of the cone)

or, $r' = \frac{22}{2\pi} = \frac{22}{2 \times \frac{22}{7}} = \frac{7}{2}$ cm

Slant height of the cone,

OP = radius of the circle

or, $l = 14$ cm

Height of the cone,

$h = \sqrt{(l)^2 - (r')^2}$

or, $h = \sqrt{(14)^2 - \left(\frac{7}{2}\right)^2} = \sqrt{\frac{735}{4}}$ cm

$= \frac{1}{2}\sqrt{735}$ cm

Volume of the cone = $\frac{1}{3}\pi(r')^2 h$

$= \frac{1}{3} \times \frac{22}{7} \times \left(\frac{7}{2}\right)^2 \times \frac{\sqrt{735}}{2}$ cm^3

$= \frac{77}{12}\sqrt{735}$ cm^3 = 174 cm^3 (Approx.)

107. (A) The digit in unit's place = unit's digit in the product $1 \times 2 \times 3 \times .... \times 9 = 0$

108. (A) $5 \tan\theta = 4 \Rightarrow \tan\theta = \frac{4}{5} = \frac{\text{Perpendicular}}{\text{Base}}$

Now, $\frac{5\sin\theta - 3\cos\theta}{5\sin\theta + 3\cos\theta} = \frac{5\tan\theta - 3}{5\tan\theta + 3}$

$= \frac{5 \times \frac{4}{5} - 3}{5 \times \frac{4}{5} + 3} = \frac{1}{7}$

109. (B) Monthly income of P & Q = ₹ 10,100
Monthly income of Q & R = ₹ 12,500
Monthly income of P & R = ₹ 10,400
Monthly income of 2(P + Q + R) = ₹ 33,000
$\therefore$ income of (P + Q + R) = ₹ 16500
$\therefore$ income of P = 16500 – 12500 = ₹ 4000

110. (D) $246 = P\left[\left(1 + \frac{5}{100}\right)^2 - 1\right]$

$\Rightarrow 246 - P\left[\left(\frac{21}{20}\right)^2 - 1\right]$

$\Rightarrow 246 = P\left(\frac{441 - 400}{400}\right)$

$\Rightarrow 246 = \frac{41P}{400} = P = \frac{246 \times 400}{41}$

$\Rightarrow$ ₹ 2400

$\therefore$ S.I = $\frac{P \times T \times R}{100} \Rightarrow \frac{2400 \times 3 \times 6}{100} \Rightarrow$ ₹ 432

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

$\Rightarrow x^2 + y^2 = -2xy$
$\Rightarrow x^2 + y^2 + 2xy = 0$
$\Rightarrow (x + y)^2 = 0$
$\Rightarrow x + y = 0$
$\therefore x^3 + y^3 + 3xy(x + y) = (x + y)^3 = 0$

112. (B) $q(p^2 - 1)$
$= (\sec\theta + \text{cosec}\theta)\{(\sin\theta + \cos\theta)^2 - 1\}$

$= \left(\frac{1}{\cos\theta} + \frac{1}{\sin\theta}\right)\{\sin^2\theta + \cos^2\theta + 2\sin\theta\cos\theta - 1\}$

$= \left(\frac{\sin\theta + \cos\theta}{\cos\theta\sin\theta}\right)(1 + 2\sin\theta\cos\theta - 1)$

$= \left(\frac{\sin\theta + \cos\theta}{\cos\theta\sin\theta}\right)(2\sin\theta\cos\theta)$

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

113. (D)

	Speed	Time	
Actual →	5	4	+1
New →	4	5	

1 unit = 15 min
Actual time = 60 min

114. (C) Fill pipe = 4 min ——— 4
16 min
L + Fill = 16 min ——— 1

Capacity of leak pipe = 3 unit

$\therefore$ Required time = $\frac{16}{3}$

$\Rightarrow 5\frac{1}{3}$ min

115. (A) Let the length of the side of the chess board be x cm. Then

Area of 64 equal squares = $(x-4)^2$

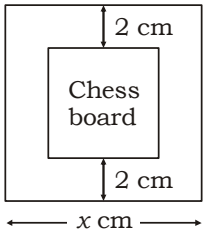
$\therefore (x-4)^2 = 64 \times 6.25$

$\Rightarrow x^2 - 8x + 16 = 400$

$\Rightarrow x^2 - 8x - 384 = 0$

$\Rightarrow x^2 - 24x + 16x - 384 = 0$

$\Rightarrow (x-24)(x+16) = 0 \Rightarrow x = 24$ cm



Hence option (A) is true.

116. (A) Let the initial speed of the train be x km/h and distance be d km

Condition (i) difference in time

1 unit = 2 hr 20 min

2 unit = 4 hr 40 min

Condition (ii)

1 unit = 2 hr 32 min

2 unit = 5 hr 4 min

difference in time = 24 min

Speed = $\frac{d}{T} = \frac{18}{24}$

Speed = $\frac{18}{24} \times 60 = 45$ km/hr

distance = T × V = $45\left(4+\frac{2}{3}\right)$

$= 45 \times \frac{14}{3} = 210$ km

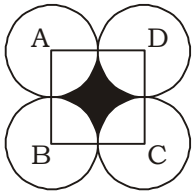
$\therefore$ total distance = 300 km

117. (B) 10% = $\frac{1}{10}$

Loan		Instalment
$10_{\times 11}$	—	$11_{\times 11}$
100	—	121
210	—	121

$\therefore$ Required sum = ₹ 121

118. (B)



Area of the shaded region

= Area of square of side 6 cm – 4 × area right angled sector

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

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

119. (D)

x	:	y	:	z
$3_{\times 3}$	:	$4_{\times 3}$		
		$3_{\times 4}$	:	$4_{\times 4}$
9	:	12	:	16

$\therefore \frac{x+y+z}{3z} = \frac{9+12+16}{3\times 16} = \frac{37}{48}$

120. (C) $\frac{\sin 2\theta + \sin\theta}{\cos 2\theta + \cos\theta + 1} = \frac{2\sin\theta\cdot\cos\theta + \sin\theta}{2\cos^2\theta - 1 + \cos\theta + 1}$

$= \frac{\sin\theta(2\cos\theta+1)}{2\cos^2\theta + \cos\theta} = \frac{\sin\theta(2\cos\theta+1)}{\cos\theta(2\cos\theta+1)} = \frac{\sin\theta}{\cos\theta}$

$= \tan\theta$

121. (B) In condition-I

Let the principal be x

Amount = $3x$

$\therefore$ Interest = $2x$

Time = 20 years

$\therefore I = \frac{PRT}{100} \Rightarrow 2x = \frac{x \times R \times 20}{100}$

$\Rightarrow R = 10\%$

In condition-II

I = x

P = x

R = 10

T = ?

$\therefore I = \frac{PRT}{100} \Rightarrow x = \frac{x \times 10 \times T}{100}$

$\therefore$ T = 10 years

122. (A) Required time = $\frac{x}{(y-x)} \times t$

$= \frac{40}{(50-40)} \times \frac{1}{2} = 2$ hrs

123. (C) Here interior angle – exterior angle = 60°

$\frac{(n-2)\times 180}{n} - \frac{360}{n} = 60$

$\frac{1}{n}[(n-2) \times 180 - 360] = 60$

$\frac{1}{n}[180n - 360 - 360] = 60$

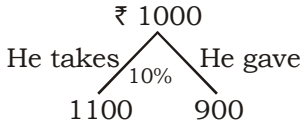
$\frac{1}{n}[180n - 720] = 60$

$180n - 720 = 60n$

$120n = 720$

$n = \frac{720}{120} = 6$

124. (B) C.P of article be



$\therefore$ Profit % = $\frac{200}{900} = 22\frac{2}{9}\%$

125. (C) $\frac{x+\frac{1}{x}}{2} = V$

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

Required average

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

$= \frac{4V^2-2}{2} = 2V^2 - 1$

126. (C) $\frac{5}{1400} \times (6m + 5c) = \frac{8}{3040} \times (8m + 7c)$

$2m = 3c$

$\frac{5}{1400} \times (6m + 5c) = \frac{D}{720} \times (4m + 3c)$

$\frac{5}{1400} \times (9c + 5c) = \frac{D}{720} \times (6c + 3c)$

D = 4 days

127. (A) 10% = $\frac{1}{10}$, 25% = $\frac{1}{4}$

$SP_1 + SP_2 = 1710$ [Given]

	Ist		IInd
CP	10	:	$4_{\times 2}$
SP	9	:	$5_{\times 2}$
P/L	–1	:	$+1_{\times 2}$

Total selling price = (9 + 10) = 19 units

ATQ,

19 units = 1710

1 unit = $\frac{1710}{19}$ = ₹ 90

Total profit = (2 – 1) × 90 = ₹ 90

128. (C) 23% = $\frac{23}{100}$

Before	After
100	77
×20 ↓	×20 ↓
2000	1540

129. (C) $\because 1 + 2 + 3 + \ldots + n = \frac{n(n+1)}{2}$

$\therefore 1 + 2 + 3 + \ldots + 25$

$= \frac{25(25+1)}{2} = 25 \times 13$

Hence, 13 is a factor of required sum.

130. (B) $5^{\sqrt{x}} + 12^{\sqrt{x}} = 13^{\sqrt{x}}$

We know that $5^2 + 12^2 = 13^2$ [Pythagorean Triplet]

$\therefore \sqrt{x} = 2 \Rightarrow x = 2^2 = 4$

131. (C) $\frac{T_3 - T_5}{T_1} = \frac{\sin^3\theta + \cos^3\theta - (\sin^5\theta + \cos^5\theta)}{\sin\theta + \cos\theta}$

$= \frac{(\sin^3\theta - \sin^5\theta) + (\cos^3\theta - \cos^5\theta)}{\sin\theta + \cos\theta}$

$= \frac{\sin^3\theta(1 - \sin^2\theta) + \cos^3\theta(1 - \cos^2\theta)}{\sin\theta + \cos\theta}$

$= \frac{\sin^3\theta \cdot \cos^2\theta + \cos^3\theta \cdot \sin^2\theta}{\sin\theta + \cos\theta}$

$= \frac{\sin^2\theta \cdot \cos^2\theta(\sin\theta + \cos\theta)}{(\sin\theta + \cos\theta)}$

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

132. (B) As BC||AD and the diagonals of a trapezium divide each other proportionally.

So, $\frac{AO}{OC} = \frac{BO}{OD}$

$\Rightarrow \frac{3x-1}{5x-3} = \frac{2x+1}{6x-5}$

$\Rightarrow (3x - 1)(6x - 5)$

$= (5x - 3)(2x + 1)$
$\Rightarrow 18x^2 - 15x - 6x + 5$
$= 10x^2 + 5x - 6x - 3$
$\Rightarrow 8x^2 - 20x + 8 = 0$
$\Rightarrow 4x^2 - 10x + 4 = 0$
$\Rightarrow 4x^2 - 8x - 2x + 4 = 0$
$\Rightarrow 4x(x - 2) - 2(x - 2) = 0$
$\Rightarrow (4x - 2)(x - 2) = 0$

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

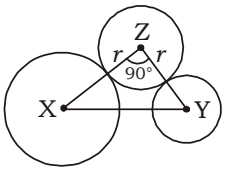
But as $x = \frac{1}{2}$ will make OC negative

$\therefore x = 2$

133. (C) A → 60 — 2
B → 40 — 3
120
15 days work of a + b = 45
∴ Remaining work = 75

∴ Required time = $\frac{75}{2} = 37\frac{1}{2}$ days

134. (D)



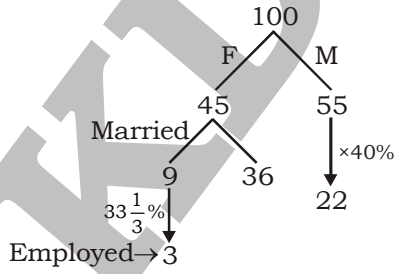
∠XZY = 90°
XY = (9 + r) cm, YZ = (r + 2) cm
XY = 17 cm
∴ $XY^2 = XZ^2 + ZY^2$
$\Rightarrow 17^2 = (9 + r)^2 + (r + 2)^2 \Rightarrow (r - 6)(r + 17) = 0$
$\Rightarrow r = 6$ cm

135. (D)

No. of appear students	No. of passed students
A → 100	70
B → 120	105

∴ Required % = $\frac{105}{120} \times 100 = 87.5\%$

136. (B) Let the total population be



∴ Total unemployed population = 75%

137. (A) $\sin^2 30° \cos^2 45° + 5 \tan^2 30° + \frac{3}{2}\sin^2 90° - 3\cos^2 90°$

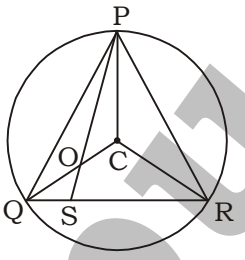
$= \left(\frac{1}{2}\right)^2 \times \left(\frac{1}{\sqrt{2}}\right)^2 + 5 \times \left(\frac{1}{\sqrt{3}}\right)^2 + \frac{3}{2} \times 1 - 3 \times 0$

$= \frac{1}{4} \times \frac{1}{2} + 5 \times \frac{1}{3} + \frac{3}{2}$

$= \frac{1}{8} + \frac{5}{3} + \frac{3}{2} = \frac{3 + 40 + 36}{24}$

$= \frac{79}{24} = 3\frac{7}{24}$

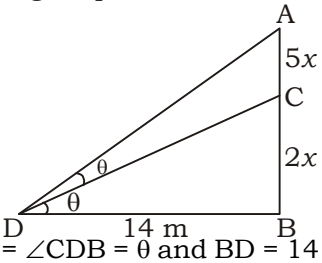
138. (B)



∠PQS = 60°
∠QCR = 130°

∴ $\angle QPR = \frac{1}{2} \times 130° = 65°$
$\Rightarrow \angle QRP = 180° - 60° - 65° = 55°$
In ΔRPS
∠PSR + ∠PRS + ∠RPS = 180°
90° + 55° + ∠RPS = 180°
∠RPS = 35°

139. (D) Let BC = 2x, then CA = 5x
∴ AB = 7x
According to question



∠ADC = ∠CDB = θ and BD = 14 m

In ΔBDC, $\tan\theta = \frac{BC}{BD} = \frac{2x}{14} = \frac{x}{7}$

In ΔABD, $\tan 2\theta = \frac{AB}{BD} = \frac{7x}{14} = \frac{x}{2}$

$\Rightarrow \frac{2\tan\theta}{1 - \tan^2\theta} = \frac{x}{2} \quad \Rightarrow \frac{2\left(\frac{x}{7}\right)}{1 - \left(\frac{x}{7}\right)^2} = \frac{x}{2}$

$\Rightarrow \frac{2x \times 7}{49 - x^2} = \frac{x}{2} \Rightarrow 49 - x^2 = 28$

$\Rightarrow x^2 = 21 \Rightarrow x = \sqrt{21}$

∴ height of the pole = AB = $7x = 7\sqrt{21}$ m

140. (A) $x - y = k$, $x + y = 7k$
$\Rightarrow x = 4k$, $y = 3k$

$\frac{xy}{4} = k \Rightarrow \frac{4k \cdot 3k}{4} = k \Rightarrow k = \frac{1}{3}$

$xy = 4k = 4 \times \frac{1}{3} = \frac{4}{3}$

141. (D) Let the radius of bigger and smaller cylinder be r_1 and r_2 respectively.
$2\pi h(r_1 - r_2) = 44$ ...(i)
$\pi h(r_1^2 - r_2^2) = 99$ $r_1 = ?$
From equation (i)

$r_1 - r_2 = \frac{44}{2\pi h} = \frac{44}{2 \times \frac{22}{7} \times 14} = \frac{1}{2}$

Also, $\frac{22}{7} \times 14 (r_1 + r_2)(r_1 - r_2) = 99$

$44(r_1 + r_2)\frac{1}{2} = 99$

$r_1 + r_2 = \frac{99}{22} = \frac{9}{2}$

We have, $r_1 + r_2 = \frac{9}{2}$

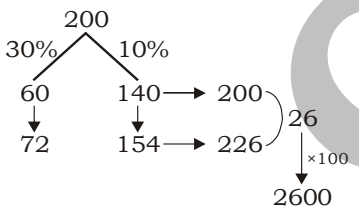
$r_1 - r_2 = \frac{1}{2}$

$2r_1 = 10$

$\Rightarrow r_1 = 5$ cm

142. (A) Required C.P = $\frac{(30+10)}{10} \times 600$
= ₹ 2400

143. (D) Total articles



∴ Total cost of 200 articles
$\Rightarrow 200 \times 100$
$\Rightarrow 20000$

∴ C.P of 1 article = $\frac{20000}{200}$ = ₹ 100

144. (D) Volume of prism = Area of base × height

$\Rightarrow 366 = \frac{1}{2} \times 4 \times 28 \times h$

$\Rightarrow h = \frac{366}{56} = 6.53$ cm

145. (A) A – 5 — 7
35
B – 7 — 5
Total work in 1 cycle = 12 units in 2 days
∴ total time taken by
A and B = $5\frac{4}{5}$ days

146. (C) Shampoos
$= \left[\frac{(12.21 - 7.88)}{7.88} \times 100\right]\% = 54.95\% \approx 55\%$

147. (C)

148. (B) Percentage = $\left[\frac{(48.17 - 37.76)}{37.76} \times 100\right]\%$
= 27.57%

149. (D) Percentage = $\left[\frac{(7.88 - 5.01)}{7.88} \times 100\right]\%$
= 36.42%

150. (A) Required ratio will be
$= \frac{37.16}{14.97} = 2.5 = \frac{5}{2} = 5 : 2$

151. (A) Sentence starting with 'No sooner', shall be in inverted form, i.e, Did+ Sub+ V_1+ ....
thus, change it into 'No sooner did the teacher enter ....'.

152. (B) This is an example of conditional sentences. When two actions take place one after the other in future and the second depends on the first action, the first action is in simple present tense and the second is in simple future tense. Thus, it should be 'When he meets him .....'.

153. (C) Add 'the' before 'habit'. A part of a sentence containing Noun + of + Noun takes 'the' before the first noun.

154. (C) Replace 'as well' by 'also', since 'not only .... but also' is a co-relative conjunction.

155. (A) Replace 'such' by 'those'.

156. (C) 'Befell' is used only with the third person. If something **befalls** somebody, it means 'something unpleasant happen to somebody'.

157. (B) 'To lay the table' means 'to serve food'.

159. (D) '**Knock** somebody **down**' means 'to hit somebody and make them fall on the ground'.

160. (B) '**Fell**' means 'to make somebody/ something fall to the ground'.

174. (B) 'Praise' is an uncountable noun.

175. (C) 'Love' doesn't take V_1+ ing form as a verb. 'Loving' comes often as a noun.

176. (C) This sentence is an example of present tense. Thus, it will take 'have'.

178. (D) '**count on** somebody' means 'to trust somebody'.

179. (B) Writing ten letters is not a continuing activity. Thus, it should follow present perfect tense form.

181. (B) This sentence is in past tense. Thus, can shall be changed into 'could'.

MEANINGS IN ALPHABETICAL ORDER

Word	Meaning in English	Meaning in Hindi
Acoustics	Of or relating to sound	ध्वनि संबंधित
Annihilation	the complete destruction	विनाश, प्रलय
Brink (of something)	almost in a very new, dangerous or exciting situation	कगार, किनारा
Bucolic	of or relating to the pleasant aspects of the countryside and country life.	ग्रामीण, गाँव से संबंधित
Calumny	a false accusation of an offense or a malicious misrepresentation of someone's words or actions	मिथ्या आरोप
Catastrophe	an event causing great and often sudden damage or suffering; a disaster.	तबाही, आपदा
Catharsis	The act of purging of emotional tensions	भावनात्मक क्रोध के मुक्ति की अभिव्यक्ति
Confrontation	a hostile or argumentative meeting or situation between opposing parties.	मतभेद, विवाद
Designate	Chosen for a particular job	मनोनीत करना
Despicable	deserving hatred and contempt	घृणा के योग्य
Emigration	the act of leaving your own country to go and live permanently in another country	अपने देश से दूसरे देश में स्थायी रूप से बसना
Endurance	the fact or power of enduring an unpleasant or difficult process or situation without giving way.	सहनशीलता
Enigma	a person or thing that is mysterious, puzzling, or difficult to understand.	रहस्य, पहेली
Exodus	a mass departure of people, especially emigrants	एक बड़ी भीड़ का कहीं से कूच करना
Extremity	the extreme degree or nature of something	चरम सीमा
Extricate	To free or remove (someone or something) from something (such as a trap, accusation or a difficult situation)	छुड़ाना, मुक्त करना
Extrinsic	not part of the essential nature of someone or something	अनावश्यक
Extrovert	an outgoing, overtly expressive person	बर्हिमुखी इंसान
Extrovert	an outgoing, overtly expressive person	बर्हिमुखी इंसान
Foreordain	(of God) destine (someone) for a particular fate or purpose	नियति बनाना
Foresight	the ability to predict or the action of predicting what will happen or be needed in the future.	दूरदर्शिता
Implicate	To show that someone or something is closely connected to or involved in something (such as a crime)	फँसाना
Incalculable	too great to be calculated or estimated.	बेहिसाब
Inevitable	certain to happen; unavoidable	अवश्यंभावी, जिसे टाला ना जा सके
Inhibit	hinder, restrain, or prevent (an action or process).	रोकना
Irrepressible	not able to be controlled or restrained.	अदम्य, जिसे रोका नहीं जा सके
Migration	movement from one part of something to another	स्थानांतरण
Mortgaging	To put somthing at risk	जोखिम में डालना
Nemesis	punishment or defeat that is deserved and cannot be avoided	दण्ड, सजा
Obituary	a notice of a death, especially in a newspaper, typically including a brief biography of the deceased person	निधन सूचना, शोक संदेश
Ouija	Representation of spirit acts	आत्माओं का आमंत्रण
Paronym	A word that is a derivative of another and has a related meaning	व्युत्पन्न शब्द

Philanderer	A person who readily or frequently enters into casual sexual relationships	व्यभिचारी
Poised	having a composed and self-assured manner.	संतुलित
Precariously	dangerously likely to fall or collapse	अनिश्चित रूप से
Purgation	The action of causing something to leave the body	शुद्धिकरण
Razor's edge	a difficult situation where any mistake may be very dangerous	एक अत्यंत मुश्किल एवं खतरनाक परिस्थिति
Sardonic	grimly mocking or cynical	हास्यपूर्ण, निंदापूर्ण
Serenade	a gentle piece of music in several parts, usually for a small group of instruments.	कोई प्रेम धुन
Silver lining	positive side of a difficult situation	सकारात्मक पक्ष, उम्मीद की किरण
Sojourn	A temporary stay	थोड़े समय के लिए कहीं पर ठहरना
Stockpiles	a large accumulated stock of goods or materials	जखीरा
Tamper	interfere with (something) in order to cause damage or make unauthorized alterations.	हस्तक्षेप करना
Traitor	a person who betrays a friend, country, principle, etc.	गद्दार, द्रोही
Under-dog	a competitor thought to have little chance of winning a fight or contest.	अप्रत्याशित विजयी
Unflinching	not showing fear or hesitation in the face of danger or difficulty.	बेधड़क, निडर
Unobtrusive	not conspicuous or attracting attention	अत्यन्त कम महत्व का
Vanish	disappear suddenly and completely	विलुप्त हो जाना
Wrath	Intense anger	क्रोध, गुस्सा

CPO MOCK TEST - 22 (ANSWER KEY)

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