CPO MOCK TEST – 18 (SOLUTION)

1.(C) Threat lead to fear and **provocation** lead to anger.

2.(C) Yen is the currency of Japan and **Renminbi** is the currency of china.

3. (C) First is the name given to the meat of second.

4. (C) $1024 \Rightarrow \sqrt{1024} = 32 \Rightarrow 32 - 1 = 31$

$1225 \Rightarrow \sqrt{1225} = 35 \Rightarrow 35 - 1 = \mathbf{34}$

5.(C) **74**9 $\Rightarrow 74 \div 9 \Rightarrow$ Remainder = 2
618 $\Rightarrow 61 \div 8 \Rightarrow$ Remainder = **5**

6.(D) A cup is used to have coffee and a bowl is used to have **soup**.

7.(B) $16 \Rightarrow = 4 \Rightarrow 4 + 2 \Rightarrow (4 + 2)^2 = 36$

$64 \Rightarrow \sqrt{64} = 8 \Rightarrow 8 + 2 \Rightarrow (8 + 2)^2 = \mathbf{100}$

8.(B) As,

Word	E	G	I	M
Position	5	7	9	13

So,

Word	**C**	**E**	**H**	**P**
Position	3	5	8	16

9.(D) Ink is used in a pen and petrol is used in a car.

10.(C) As,

11.(A) All except **doctor** required raw material to work.

12. (A)

13. (D) $2 \Rightarrow 2 + 1 \Rightarrow (2 + 1)^2 = 9 \Rightarrow 2 - 9$
$3 \Rightarrow 3 + 1 \Rightarrow (3 + 1)^2 = 16 \Rightarrow 3 - 16$
$4 \Rightarrow 4 + 1 \Rightarrow (4 + 1)^2 = 25 \Rightarrow 4 - 25$
$5 \Rightarrow 5 + 1 \Rightarrow (5 + 1)^2 \Rightarrow 36 \neq 49 \Rightarrow \mathbf{5 - 49}$

14.(D) We can't find a vowel in **VNYQ**.

15. (C) All letters are vowel.

16. (A) 1261 = 97 × 13 (not a prime no.)
1581 = 93 × 17 (not a prime no.)
7331 = A prime no.
713 = 23 × 31 (not a prime no.)

17. (C) Except **80**, rest multiple of 12.

18. (C) All except **thump** are sound of animals.

19.(C) As,

S E N S A T I O N A L
1 2 3 1 4 5 6 7 3 4 8

M I L I T A R Y
1 2 3 2 4 5 6 7

Then,

L I M I T
3 2 1 2 4

20.(A) $1 \rightarrow 6 \rightarrow 2 \rightarrow 4 \rightarrow 5 \rightarrow 3$

21.(D)
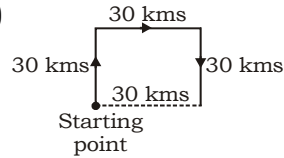
So, he is **30 kms east** from starting point.

22.(B) As,

S E N S A T I O N A L
1 2 3 1 4 5 6 7 3 4 8

Then,

S T A T I O N
1 5 4 5 6 7 3

23.(C) **10 + 5 – 5 ÷ 5 × 5 = 10** (given)
As per the given details, replacing the signs-
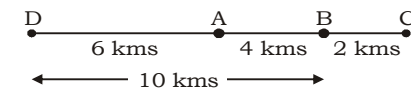LHS = 10 × 5 ÷ 5 – 5 + 5
= 10 × 1 – 0
= 10 = RHS

24.(C) As he failed once in class 1, it means in 2 years after admission, he will pass class 1, after 3 years class 2, after 4 years class 3. Similarly, after 11 years class 10.
So, required no. of years to pass class 10
= 2 + 3 + 4 + 5 + ... + 11

$= \dfrac{11 \times 12}{2} - 1 = 66 - 1 = 65$ yrs

So, at the age of 65 + 4 = **69 years**, he will pass his matriculation.

25.(D)

So, C is **2 kms** away from B.
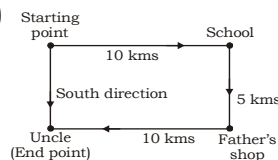
26.(C) Number of educated poor youth = 11 + 3
= **14**

27.(B)

So, he is **5 kms** south from his home.

28.(A)

Person	Languages		
A	Tamil	Malyalam	English
B	Tamil	Malyalam	Hindi
C	English	Hindi	Tamil
D	English	Hindi	Malyalam

So, the person who can speak english, Hindi and Tamil is **C**.

29. (D) Plough → Sow → Irrigate → Harvest → Sell.
     (3)   (2)   (1)   (5)   (4)

30. (C) **b** cb/ **a** ca/b **c** b/aca/ **b** cb/a **c** a/b.

31. (C)

B A F E J I P O **V U**
next vowel / next consonant

32. (C) 154   158   185   201   326   **362**
   +4   +27   +16   +125   +36
   2^2 3^3 4^2 5^3 6^2

33. (D) 112   124   156   208   **280**
   +12   +32   +52   +72
      +20   +20   +20

34. (D) 1   5   25   125   **625 3125 15625**
  ×5   ×5   ×5   ×5   ×5   ×5

35. (D) As,

D	O	W	N	B	E	A	T
1	2	3	4	5	6	7	8

and

T	A	B	E	W	N	D	O
8	7	5	6	3	4	1	2

also,

P	R	O	S	P	E	C	T
1	2	3	4	5	6	7	8

and

T	**C**	**P**	**E**	**O**	**S**	**P**	**R**
8	7	5	6	3	4	1	2

36. (B) Let the age of Ranveer Kapoor, Rishi Kapoor and Raj Kapoor be x, y and z respectively.
Given: $x + y + z = 140$ ...(i)
As, the age of Ranveer Kapoor in no. of months = Age of Raj Kapoor in no. of years
$\Rightarrow 12x = z$ (multiply by 12 to convert year to month)
Also, the age of Ranveer Kapoor in no. of days = Age of Rishi Kapoor in no. of weeks
$\Rightarrow 365 \times x = 365 \times y/7$
$\Rightarrow 7x = y$
Putting the value of y and z in equation (i)
$x + 7x + 12x = 140 \Rightarrow 20x = 140 \Rightarrow x = 7$
∴ Ranveer Kapoor's age (x) = **7 yrs**
Rishi Kapoor's age (y) = $7x = 7 \times 7$ = **49 yrs**
and Raj Kapoor's age (z) = $12x = 12 \times 7$ = **84 yrs**

37. (A) 0, 4, 48, 100, 180, 296, 448
$0 = 1^3 - 1^2$, $4 = 2^3 - 2^2$, $18 = 3^3 - 3^2$
$48 = 4^3 - 4^2$, $100 = 5^3 - 5^2$, $180 = 6^3 - 6^2$,
$296 \neq 7^3 - 7^2 = 294$
$448 = 8^3 - 8^2$

38. (B) We can't find three S of the word 'SENSES' in the given word 'MISAPPREHENSION'.

39. (D) $6 \times 2 = 12$, $12 \times 2 = 24$
$18 \times 2 = 36$, $36 \times 2 = $ **72**
$9 \times 2 = 18$, $18 \times 2 = 36$

40. (A) $3 \times 5 \times 4 = 60$
$5 \times 7 \times 2 = 70$
$8 \times 6 \times \mathbf{3} = 144$

41. (C) As, $(3 \times 5) + (7 + 2) = 15 + 9 = 24$
$(2 \times 4) + (6 + 8) = 8 + 14 = 22$
then, $(4 \times 4) + (8 + 9) = 16 + 17 = 33$

42. (A) As, $2 + 6 - 4 = 4$
$9 + 7 - 3 = 13$
$4 + 6 - 7 = 3$
then, $9 + 8 - 7 = $ **10**

43. (D)

Good Physique, Professionals, Sportsmen
I. ✗
II. ✓

44. (C)

Rose, Garden, Jasmine

45. (D)

Simple triangles are AFB, FEB, EBC, DEC, DFE and AFD i.e. 6 in number.
Triangles composed of two components are AEB, FBC, DFC, ADE, DBE and ABD i.e. 6 in number.
Triangles composed of three components are ADC and ABC i.e. 2 in number.
There is only one triangle i.e. DBC which is composed of four components.
Thus, there are 6 + 6 + 2 + 1 = 15 triangles in the figure.

46. (B) From dice (2) and dice (4), we have

Front face	6	4	2
Opposite face	1	3	**5**

So, **5** is at bottom, when 2 is on top.

47. (A)   48. (B)

49. (D)

50. (C)

51. (C) CT was invented in 1972 by British engineer Godfrey Hounsfield of EMI Laboratories, England. A CT scan, also called X-ray computed tomography (X-ray CT) and computerized axial tomography scan (CAT scan), makes use of computer-processed combinations of many X-ray images taken from different angles to produce cross-sectional images (virtual "slices") of specific areas of a scanned object, allowing the user to see inside the object without cutting.

52. (A) If labour productivity increases, then the demand for labour also increases, and so does real wage.

53. (A) Chloroplasts are organelles found in plant cells and eukaryotic algae that conduct photosynthesis. Chloroplasts absorb sunlight and use it in conjunction with water and carbon dioxide gas to produce food for the plant.

54. (B) 1. The Widal test, developed in 1896 and named after Georges-Fernand Widal, who introduced it, is a presumptive serological test for enteric fever or undulant fever whereby bacteria causing typhoid fever are mixed with a serum containing specific antibodies obtained from an infected individual.

2. The Wayson stain is a basic fuchsin-methylene blue, ethyl alcohol-phenol microscopic staining procedure. It was originally a modified methylene blue stain used for diagnosing bubonic plague. With this stain, Yersinia pestis appears purple with a characteristic safety-pin appearance, which is due to the presence of a central vacuole.

3. An enzyme-linked immunosorbent assay, also called ELISA or EIA, is a test that detects and measures antibodies in your blood. This test can be used to determine if you have antibodies related to certain infectious conditions. Antibodies are proteins that your body produces in response to harmful substances called antigens. An ELISA test may be used to diagnose: HIV, which causes AIDS

4. Mantoux test: a test for immunity to tuberculosis using intradermal injection of tuberculin.

55. (B) Visible light ranges from about 3,900 angstroms to 7,600 angstroms. In fact, the colors that make up visible light, like red, blue and green, and their complements violet, yellow, and orange, also have their own ranges of wavelength. The light with shorter waves, like violet and blue, are more energetic than the light with longer wavelengths such as red.

56. (A) The Three Language Formula was devised in the chief ministers conferences held during 1961. The National Commission on Education known as the Kothari commission examined and recommended a graduated formula which was recommended by the 1968 policy.

58. (C) "All the Prime Minister's men" is written by Janardan Thakur
Subject: On the alleged misuse of power and corrupt practices of politicians and officials during the previous administration of India.

60. (C) Bangabandhu Satellite-1 (BANGABANDHUSAT-1 or BS-1) is the first Bangladeshi geostationary communications and Broadcasting Satellite. It was launched on 11 May 2018. The project is being implemented by Bangladesh Telecommunication Regulatory Commission (BTRC) and was the first payload launched by SpaceX.

61. (D) Ohm's Law deals with the relationship between voltage and current in an ideal conductor. This relationship states that:
The potential difference (voltage) across an ideal conductor is proportional to the current through it. The constant of proportionality is called the "resistance", R. Ohm's Law is given by: $V = I R$

66. (A) According to Huxley the protoplasm is the physical basis of life. Inside the cell wall of living cell the living substance is known as protoplasm. The protoplasm is a thick fluid or jelly-like substance.

70. (B) 'Surya Kiran' is a series of bilateral military exercise between India and Nepal, that is conducted annually, alternatively in India and Nepal. It is the largest exercise in terms of troop's participation in series of military training exercises undertaken by India with various countries. The 13th edition of bilateral annual military Exercise 'Surya Kiran', will be commenced from 30th May 2018 to 12th June 2018 at Pithoragarh, Uttarakhand.

71. (D) Producer gas consists chifly of Carbon monoxide and Nitrogen by forcing air upward through a burning coal or coke. The carbon of the coal/coke is oxidized by the oxygen of the air thus forming Carbon monoxide. The Nitrogen of the air being inert passes through the fire without change.

72. (C) It would be around 4 degrees centigrade. This is because as the water cools to this temperature it reaches its maximum density so will tend to drop to the bottom of the lake. The water above may then cool further & freeze, but this 'heavy' layer will stay at the bottom, insulated by the layers of water above. This is essential

for the survival of fish etc, as otherwise in cold weather ponds/lakes could freeze completely.

73. (A) The large Thorium reserves of India is the compelling motivation for India's interest in the Thorium fuel cycle. India is perhaps amongst a selected few countries of the world which has continued to pursue the study of this fuel over the years. Although it was recognised that Thorium would become a practical energy source in India only in the later stages of the Indian nuclear programme sometime in the next century, in view of the long lead times required to develop various technologies associated with the Thorium fuel cycle, research and development programme were initiated in India in a number of relevant areas right from the early days.

74. (C) X ray is a form of electromagnetic radiation, as is visible light, but with some different characteristics. The important difference is that X-ray can penetrate or pass through the human body and produce shadow-like images of structures such as bones, some of the organs, and signs of disease and injury. X-ray can propagate in vacuum.

76. (A) Sulphuric acid , because it is used in manufacture of almost all the chemicals. Sulphuric acid is called the king of chemical because it is involved in some way or other, in the manufacturing of practically everything.

77. (D) Aadhaar, the 12-digit unique identity number issued by the Unique Identification Authority of India (UIDAI), is a compulsory identity card. UIDAI has recently launched 'Blue coloured' Baal Aadhaar for children below the age of 5 years. These cards don't include Biometric and Iris scan. For enrolling for 'Baal Aadhaar', the birth certificate of the child and Aadhaar card number of one of the parents is required.

81. (A) Galvanization is the process of applying a protective zinc coating to steel or iron, to prevent rusting.

82. (C) The first real measurement of the speed of light came about half a century later, in 1676, by a Danish astronomer, Ole Romer, working at the Paris Observatory. Romer estimated that light would take about 22 minutes to travel a distance equal to the diameter of Earth's orbit around the Sun.

86. (B) Abu'l Hasan Yaminuddin Khusro, better known as Amir Khusro (also Khusrau, Khusrow) Dehlavi, was the poet laureate of the Indian subcontinent and enjoys ever-lasting fame as one of the most versatile poets and prolific prose-writers of the 13th and 14th centuries. The invention of the sitar and the musical styles known as khyal and tarana are also attributed to him. His poetical composition, the amalgamation of Persian and Hindi in particular, was aimed at cementing the bonds of culture and friendship between the Hindus and Muslims of India.

88. (C) Four years after bifurcation, Andhra Pradesh has announced its state symbols recently. Following are the state symbol of A.P.-
State Tree- Neem
State Flower- Jasmine
State Animal- Blackbuck (Krishna Jinka)
State Bird- Rose-ringed Parakeet (Rama Chiluka)

92. (B) Liberalism is a political philosophy or worldview founded on ideas of liberty and equality. Whereas classical liberalism emphasizes the role of liberty, social liberalism and stresses the importance of equality .Liberals espouse a wide array of views depending on their understanding of these principles, but generally they support ideas of freedom of speech, freedom of press, freedom of religion, free markets, civil rights, democratic societies, secular governments, and international cooperation.

93. (C) A conservation effort, Operation Kachhapa, has been launched in 1998, with the cooperation of local conservation groups and the Orissa Forest Department. This initiative hopes to implement management practices by strictly enforcing the ban on near-shore mechanised trawling by providing the necessary support to the Forest Department and seeking the cooperation of the Coast Guard. Since sea turtles do not respect national boundaries, it is important to have active regional cooperation in the conservation of these species.

94.(A) The World Trade Organization (WTO) is an intergovernmental organization which regulates international trade. "It is an international organization to promote multilateral trade.

97. (D) Karnataka may become the first State to go for polls under delimitation. The 'model' of redrawing of constituencies, experimented in Mandya district, is most likely to be replicated in the rest of the State.

99. (B) The Geographical Indication Registry (GIR) has given Geographical Indication (GI) Tag to traditional Etikoppaka toys from Andhra Pradesh. These traditional toys are made by artisans (generally passes from ancestors through generations) in Etikoppaka village located on banks of river Varaha in Visakhapatnam district of A.P. The toys are unique in shape and form. They are made of special wood which is very soft and painted with natural dyes.

100.(D) The Public Accounts Committee (PAC) examines the report of Accounts of the union government submitted by the Comptroller and Auditor General of India, to the President. The Public Accounts Committee in India ensures Parliamentary control over government expenditure. However, only the Lok Sabha has constituted a P.A.C. The Public Accounts Committee is composed of a maximum of 22 members. The present P.A.C. consists of 15 members from the Lok Sabha. From 1954, 7 members from the Rajya Sabha are elected to the P.A.C. as associate members. Thus, the present P.A.C is a joint committee of the two Houses.

101.(D)

102.(A) % of marks obtained by Alex in Biology

$= \dfrac{90}{125} \times 100 = 72\%$

= % of marks obtained by Alex in Hindi.

103.(B) 56% of 150 = 84.

Hence, five students will get grade A.

104.(D) Let the average price of 1 book = ₹ x

According to the question,

$\Rightarrow \dfrac{50x + 76}{(50 + 14)} = (x - 1) \Rightarrow \dfrac{50x + 76}{64} = x - 1$

$\Rightarrow 50x + 76 = 64x - 64$

$\Rightarrow 140 = 14x$

$\therefore x = ₹ 10$

Therefore average price of per book = ₹ 10

105.(A) W = 2M, B = $\dfrac{1}{2}$ M

Given: 3M + 4W + 6B = 7

1.5W + 4W + 1.5W = 7

(As, 3M = 1.5W, 6B = 3M = 1.5W)

7W = 7

So, 7 women together can complete the work in 7 days.

106.(C) $55\dfrac{5}{9}\% = \dfrac{5}{9}$

So,

$$
\begin{array}{ccc}
 & \text{D.S} & \text{U.S} \\
\text{Time} \to & 9 & (9 + 5) \\
 & 9 & : \quad 14 \\
\text{Speed} \to & 14 & : \quad 9
\end{array}
$$

5 km/h $\underset{\times 2}{\to}$ 10 km/h

$\therefore$ downstream speed = 14 × 2 = 28 km/h

$\therefore$ upstream speed = 9 × 2 = 18 km/h

$\therefore$ Speed of boat in still water = $\dfrac{1}{2}$ (28 + 18)

= 23 km/h

107.(B) Let us consider that total population of town be 41 unit

Male :	Female
28 unit	(41 – 28) = 13 unit

$14\dfrac{2}{7}\%$ Male are married

i.e. $\dfrac{28}{7}$ = 4 male

So, % of married females = $\dfrac{4}{13}$ × 100%

$= 30\dfrac{10}{13}\%$

108.(B) Let the principal be ₹ x and time be y years

Now, we have

$\dfrac{x \times 10 \times y}{100} = 35 - x$

$\Rightarrow y = \dfrac{(35 - x)}{x} \times 10$ ...(i)

$\dfrac{x \times 8 \times y}{100} = 30 - x$

$\Rightarrow y = \dfrac{(30 - x)}{x} \times 12.5$ ...(ii)

equating the equation (i) and (ii)

$$\frac{10}{x}(35-x) = \frac{12.5}{x}(30-x)$$

$\Rightarrow 350 - 10x = 375 - 12.5x$

$\Rightarrow 2.5x = 25$

$\Rightarrow x = ₹ 10$

putting the value of equation (i)

$$y = \frac{35-10}{10} \times 10 = 25 \text{ yrs}$$

So, time is 25 yrs.

109.(A) Trader buys 1200 gm for $₹\left(1200 \times \frac{110}{100}\right)$

$= ₹ 1320$

∴ His total gain (profit) = 1320 – 1000 = ₹ 320

∴ Net profit percentage = $\frac{320 \times 100}{1000}$

$= 32\%$

110.(C) raddii are in the ratio 2 : 3 : 1

∴ Let the their radii are $2x$, $3x$ and x respectively and $h_1 = h_2 \Rightarrow h_2 = x$

∴ volume of cone = $\frac{1}{3}\pi r^2 h = \frac{1}{3}\pi(2x)^2 x = \frac{4}{3}\pi x^3$

volume of cylinder = $\pi r^2 h = \pi(3x)^2 x = 9\pi x^3$

volume of hemisphere = $\frac{2}{3}\pi x^3 = \frac{2}{3}\pi x^3$

∴ ratio = $\frac{4}{3}\pi x^3 : 9\pi x^3 : \frac{2}{3}\pi x^3$

$= 4 : 27 : 2$

111. (D) $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

$= \frac{1}{2}(a + b + c)[(a-b)^2 + (b-c)^2 + (c-a)^2]$

∴ $\dfrac{a^3 + b^3 + c^3 - abc}{(a-b)^2 + (b-c)^2 + (c-a)^2}$

$= \dfrac{\frac{1}{2}(a+b+c)[(a-b)^2 + (b-c)^2 + (c-a)^2]}{(a-b)^2 + (b-c)^2 + (c-a)^2}$

$= \frac{1}{2}(a+b+c) = \frac{1}{2}(25 + 15 - 10) = \frac{30}{2} = 15$

112.(C) $A + B = 90° \Rightarrow A = 90° - B$

$\Rightarrow \sin A = \sin(90° - B) = \cos B$

Similarly,

$\Rightarrow \cos A = \sin B, \tan A = \cot B$

∴ $\sin A \cdot \cos B + \cos A \cdot \sin B - \tan A \cdot \tan B + \sec^2 A - \cot^2 B$

$= \cos^2 B + \sin^2 B - \cot B \cdot \tan B + \sec^2 A - \tan^2 A$

$= 1 - 1 + 1 = 1$

113.(C) Rate of interest = $11\frac{1}{9}\%$ or $\frac{1}{9}$

Let us consider

$= \frac{1}{9} \to \text{intrest} \to \text{principal}$

S.I in 5 year = $5 \times 1 = 5$

So,   Principal   S.I

$\times 1100$ 9   5

9900   4 unit less $\xrightarrow{\times 1100}$ 4400

114.(B) P can complete $\frac{1}{4}$ of work in 10 days

∴ P can complete the whole work in 40 days.
Q can complete 40% of work in 15 days.

∴ Q can complete the whole work in

$\frac{15 \times 100}{40} = 37\frac{1}{2}$ days

R can complete the whole work in $13 \times 3 = 39$ days
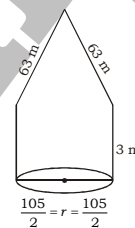
S can complete the whole work in $7 \times 6 = 42$ days

∴ Q will be able to complete the work first.

115. (A)

Slant surface area = $\pi r l$

$= \frac{22}{7} \times \frac{105}{2} \times 63 = 10395 \text{ m}^2$

curved surface area of cylinder

$= 2\pi r h = 2 \times \frac{22}{7} \times \frac{105}{2} \times 3$

$= 22 \times 15 \times 3 = 990 \text{ m}^2$

∴ Required area of canvas to make the tent $= 10395 + 990 = 11385 \text{ m}^2$
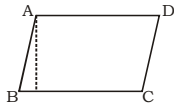
116.(C) $m^4 + \frac{1}{m^4} = 119$

$\Rightarrow m^4 + \frac{1}{m^4} + 2 = 119 + 2 = 121 = 11^2$

$\Rightarrow \left(m^2 + \frac{1}{m^2}\right)^2 = 11^2 \Rightarrow m^2 + \frac{1}{m^2} = 11$

$\Rightarrow m^2 + \frac{1}{m^2} - 2 = 11 - 2 = 9 = 3^2$

$\Rightarrow \left(m - \frac{1}{m}\right)^2 = 3^2 \Rightarrow \left(m - \frac{1}{m}\right) = \pm 3$

117.(B) Sides are in ratio 5 : 4

Let the sides are $5x$ and $4x$ units

∴ parallelogram's area = greater side × altitude

⇒ $1000 = 5x \times 20 \Rightarrow x = 10$

similarly parallelogram's area = smaller side × its altitude

⇒ $1000 = 4x \times$ its altitude

⇒ $1000 = 4 \times 10 \times$ it's altitude

∴ altitude = 25 units
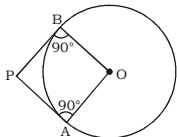
118.(B) $x^2 = y + z \Rightarrow x = \dfrac{y+z}{x}$

∴ $x + 1 = \dfrac{y+z}{x} + 1 = \dfrac{y+z+x}{x} = \dfrac{x+y+z}{x}$

Similarly, $y^2 = z + x \Rightarrow y + 1 = \dfrac{x+y+z}{y}$

and $z^2 = x + y \Rightarrow z + 1 = \dfrac{x+y+z}{z}$

∴ $\dfrac{1}{x+1} + \dfrac{1}{y+1} + \dfrac{1}{z+1}$

$= \dfrac{x}{x+y+z} + \dfrac{y}{x+y+z} + \dfrac{z}{x+y+z}$

$= \dfrac{x+y+z}{x+y+z} = 1$

119.(D)

∵ PA and PB are tangents

OB and OA are radii

PA ⊥ OA and PB ⊥ OB

∠A + ∠B = 180°

∠P + ∠O = 180°

∴ ▱ OAPB is a cyclic quadilateral

120.(C) $\dfrac{\cos^2\theta}{\cot^2\theta - \cos^2\theta} = 3$

⇒ $\dfrac{\cos^2\theta}{\dfrac{\cos^2\theta}{\sin^2\theta} - \cos^2\theta} = 3$

⇒ $\dfrac{\cos^2\theta}{\cos^2\theta\left(\dfrac{1}{\sin^2\theta} - 1\right)} = 3 \Rightarrow \dfrac{\sin^2\theta}{1 - \sin^2\theta} = 3$

⇒ $\dfrac{\sin^2\theta}{\cos^2\theta} = 3 \Rightarrow \tan^2\theta = 3$

⇒ $\tan\theta = \sqrt{3}$

∴ θ = 60°

121.(C) Male = $\dfrac{5}{9}$ part of total population

Married male = 60% = $\dfrac{3}{5}$

So, total % of married male

$= \dfrac{5}{9} \times \dfrac{3}{5} \times 100 = 33\dfrac{1}{3}\%$

it means they will be married to $33\dfrac{1}{3}\%$ of women

So, total population of married population

is $66\dfrac{2}{3}\%$.

122.(A) A   24   6 × 3 = 18

B   36   144   4

C   48   3 × 4 = 12

Required no. of days = $\left(\dfrac{(144 - 12 + 18)}{(6+4)}\right)$

$= \dfrac{150}{10} = 15$ days

123.(B) Loss = $\dfrac{20}{15} - \dfrac{15}{20}$

$= \dfrac{80 - 45}{60} = ₹\ \dfrac{35}{60}$

∴ loss% = $\dfrac{35}{60} \times 100 \times \dfrac{15}{20} = 43\dfrac{3}{4}\%$

124. (D) Let x litres from each vessel are mixed

∴ Total water in third vessel

$= \dfrac{3x}{7} + \dfrac{5x}{8} = \dfrac{59x}{56}$

Total milk in third vessel

$= \dfrac{4x}{7} + \dfrac{3x}{8} = \dfrac{53x}{56}$

∴ Required ratio = $\dfrac{59x}{56} : \dfrac{53x}{56} = 59 : 53$

125.(A) $a = \sqrt{2} + 1 \Rightarrow a + 1 = \sqrt{2} + 2$

$b = \sqrt{2} - 1 \Rightarrow b + 1 = \sqrt{2}$

∴ $\dfrac{1}{a+1} + \dfrac{1}{b+1} = \dfrac{1}{\sqrt{2}+2} + \dfrac{1}{\sqrt{2}}$

$= \dfrac{\sqrt{2} + \sqrt{2} + 2}{(\sqrt{2}+2)\sqrt{2}} = \dfrac{2\sqrt{2}+2}{2+2\sqrt{2}} = \dfrac{2\sqrt{2}+2}{2\sqrt{2}+2} = 1$

126.(D) ΔABC ~ ΔPQR

⇒ $\dfrac{\text{Perimeter of } \Delta ABC}{\text{Perimeter of } \Delta PQR} = \dfrac{AB}{PQ} = \dfrac{BC}{QR} = \dfrac{CA}{RP}$

⇒ $\dfrac{6+8+12}{\text{Perimeter of } \Delta PQR} = \dfrac{AB}{PQ} = \dfrac{6}{9} = \dfrac{2}{3}$

$\Rightarrow \dfrac{26}{\text{Perimeter of } \Delta\,PQR} = \dfrac{2}{3}$

$\therefore$ Perimeter of $\Delta PQR = \dfrac{26 \times 3}{2} = 39$ cm

127.(C) In figure, ABC is grassy field
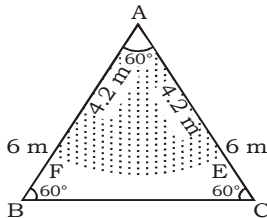
AF and AE are rope 4.2 m long
The horse is tied at vertices A
Available area = shaded AFE
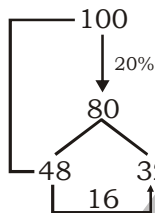
$\because$ AFE is a sector of the circle

$\therefore$ Area of AFE $= \dfrac{\pi r^2 \theta}{360}$

$= \dfrac{22}{7} \times \dfrac{4.2 \times 4.2 \times 60}{360} = 2.2 \times 4.2$ m^2

area of total grassy field $= \dfrac{\sqrt{3}}{4} \times 6 \times 6$

$= 1.732 \times 9$ m^2

$\therefore$ Required percentage

$= \dfrac{2.2 \times 4.2 \times 100}{1.732 \times 9} = 59.28\% \approx 59\%$

128.(B) If sin A = cos B then, A + B = 90°
Hence, $x + y + 3(x + y) = 90°$
$\Rightarrow 4x + 4y = 90°$
$\Rightarrow 2x + 2y = 45°$
$\Rightarrow \tan(2x + 2y) = \tan 45° = 1$

129.(D)

$16 \rightarrow 1900 - 300$
$16 \rightarrow 1600$
$1 \rightarrow 100$
then $32 \rightarrow 32 \times 100 = 3200$

130.(B) C.P. of 1st transistor $= ₹\left(\dfrac{100}{120} \times 840\right)$

$= ₹ 700$

C.P. of 2nd transistor $= ₹\left(\dfrac{100}{96} \times 960\right)$

$= ₹ 1000$

So, total C.P. $= ₹ (700 + 1000) = ₹ 1700$
Total S.P. $= ₹ (840 + 960) = ₹ 1800$

$\therefore$ Gain % $= \left(\dfrac{100}{1700} \times 100\right)\% = 5\dfrac{15}{17}\%$

131.(B) Let the first part of journey is x km and the second part of journey is $(285 - x)$ km

$\therefore \dfrac{x}{40} + \dfrac{285 - x}{55} = 6$

$\therefore \dfrac{11x + 2280 - 8x}{440} = 6 \Rightarrow \dfrac{3x + 2280}{440} = \dfrac{6}{1}$

$\therefore 3x + 2280 = 2640 \Rightarrow 3x = 2640 - 2280$

$\Rightarrow x = \dfrac{360}{3} = 120$ km

$\therefore$ The distance travelled by train
$= 285 - x = 285 - 120 = 165$ km

132.(A) Let the original number is x

$\therefore$ answer obtained by student $= x \times 7.2 = 7.2x$
but correct answer $= 0.72x$
$\Rightarrow 7.2x - 0.72x = 2592 \Rightarrow 6.48x = 2592$

$\Rightarrow x = \dfrac{2592}{6.48} = 400$

$\therefore$ The original number is 400

133.(C) Profit percent $= 25 - 10 + \dfrac{25 \times -10}{100}$

$= 25 - 10 - 2.5$
$= 12.5\%$
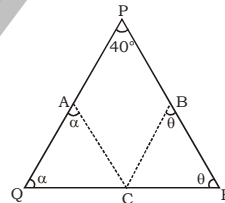
134.(D)

$\because$ QC = AC $\Rightarrow \angle AQC = \angle QAC = \alpha$
and CR = CB $\Rightarrow \angle CBR = \angle CRB = \theta$
$\therefore \Delta PQR \Rightarrow \alpha + \theta + 40° = 180°$
$\Rightarrow \alpha + \theta = 140°$
$\because \angle PAC = 180 - \alpha$ and $\angle CBP = 180 - \theta$
$\therefore$ In $\square$ APBC $\Rightarrow \angle P + \angle A + \angle C + \angle B = 360°$
$\therefore 40 + 180 - \alpha + \angle C + 180 - \theta = 360$
$\therefore \angle C - \alpha - \theta = -40 \Rightarrow \angle C - (\alpha + \theta) = -40$
$\therefore \angle C - 140 = -40 \Rightarrow \angle C = 140 - 40 = 100°$
$\therefore \angle ACB = 100°$

135.(C) The time taken by A in 1 round $= \dfrac{35}{4}$ hrs

The time taken by B in 1 round $= \dfrac{35}{5}$ hrs

$\therefore$ L.C.M of $\dfrac{35}{4}$ and $\dfrac{35}{5} = 35$

$\therefore$ They will meet earliest again after 35 hours.

136.(A) Let the income be 100.

Total expenditure = $30 + (100 - 30) \times \dfrac{50}{100}$

= 65

∴ saving = 100 – 65 = 35

Now, 35 → ₹ (1000 + 1800)

∴ $100 \to \dfrac{2800}{35} \times 100 = ₹ 8000$

137.(A) Amount for first year = $6000 \times \left(\dfrac{105}{100}\right)^1$

= ₹ 6300

after repaid ₹ 2100 the rest amount
= 6300 – 2100 = 4200

Amount for second year = $4200 \times \left(\dfrac{105}{100}\right)$

= ₹ 4410

after repaid ₹ 2100 the rest amount
= 4410 – 2100 = ₹ 2310

∴ Amount for third year = $2310 \times \left(\dfrac{105}{100}\right)^1$

= 2425.50

138. (A) After cutting 4 squars, the remaining sheet folded up to form an open rectangular box.

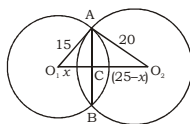∴ Length of box = 40 – (4 + 4) = 40 – 8 = 32 cm

Breadth of box = 15 – (4 + 4) = 15 – 8 = 7 cm

and depth of box = 4 cm

∴ volume of the box = 32 × 7 × 4 = 896 cm³

139.(B)

AB is common chord

Radius O_1A = 15 cm

Radius O_2Q = 20 cm

O_1O_2 = 25 cm

Let $O_1C = x$ and $CO_2 = 25 - x$

In right angled ΔO_1AC,

$AC^2 = 225 - x^2$ ...(i)

In right angled ΔO_2AC, $AC^2 = 20^2 - (25 - x)^2$

⇒ $225 - x^2 = 400 - (625 + x^2 + 50x)$

⇒ $225 - x^2 = 400 - 625 - x^2 + 50x$

⇒ $225 = -225 + 50x \Rightarrow 50x = 450 \Rightarrow x = 9$

By equation (i) $AC^2 = 225 - 81 = 144$

⇒ $AC^2 = 12^2 \Rightarrow AC = 12$ cm

∴ Length of common chord AB = 2AC

= 2 × 12 = 24 cm

140.(B) $10\sin^4\alpha + 15\cos^4\alpha = 6 = 6(\sin^2\alpha + \cos^2\alpha)^2$

⇒ $10\tan^4\alpha + 15 = 6(\tan^2\alpha + 1)^2$

[Dividing both sides by $\cos^4\alpha$]

⇒ $10\tan^4\alpha + 15 = 6\tan^2\alpha + 6 + 12\tan^2\alpha$

⇒ $4\tan^4\alpha + 9 - 12\tan^2\alpha = 0$

⇒ $(2\tan^2\alpha - 3)^2 = 0$

⇒ $2\tan^2\alpha - 3 = 0$

⇒ $\tan^2\alpha = \dfrac{3}{2}$

∴ $27\csc^6\alpha + 8\sec^6\alpha$

= $27(1 + \cot^2\alpha)^3 + 8(1 + \tan^2\alpha)^3$

= $27\left(1 + \dfrac{2}{3}\right)^3 + 8\left(1 + \dfrac{3}{2}\right)^3$

= $27 \times \dfrac{125}{27} + 8 \times \dfrac{125}{8} = 250$

141.(C)
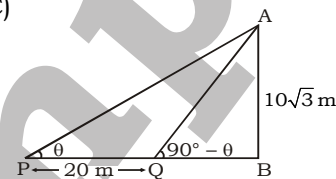
Length of building = $10\sqrt{3}$ m

ATQ,

BP – BQ = 20

$AB\cot\theta - AB\cot(90° - \theta) = 20$

$10\sqrt{3}(\cot\theta - \tan\theta) = 20$

$\cot\theta - \dfrac{1}{\cot\theta} = \dfrac{2}{\sqrt{3}} = \sqrt{3} - \dfrac{1}{\sqrt{3}}$

$\cot\theta = \sqrt{3}$

Distance of point P from building

= $AB\cot\theta$

= $\left(10\sqrt{3}\right)\left(\sqrt{3}\right) = 30$ m

142.(A) $-1^{5^2} + 1^{2^5}$

= $-1^{25} + 1^{32}$ = $-1 + 1 = 0$

143.(D) selling price of one egg to make a profit of

20% = $720 \times \dfrac{120}{100} \times \dfrac{1}{20 \times 12}$

= $\dfrac{360}{100}$ = ₹ 3.60

144.(A) Total no. of cows = n

no. of cows which 1st son got = $\dfrac{n}{2}$

no. of cows which 2nd son got = $\dfrac{n}{4}$

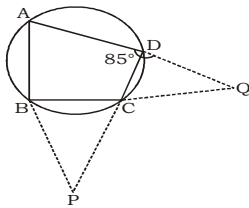$\therefore$ Remaining cows = $n - \left(\dfrac{n}{2} + \dfrac{n}{4}\right)$

$= n - \dfrac{3n}{4} = \dfrac{n}{4}$

It is given that both son has 7 + 7 = 14 cows with them

$\Rightarrow \dfrac{n}{4} = 14 \qquad \therefore n = 56$

So, the value of $n = 56$

145.(C) ABCD is cyclic Quadilateral produced AB and DC meet at point P produced BC and AD meet at point Q

$\angle ADC = 85°$

$\therefore \angle CDQ = 180 - 85 = 95°$

$\angle PBC = \angle ADC = 85°$

$\therefore \angle BCP = 180° - (\angle PBC + \angle CPB)$

$\Rightarrow \angle BCP = 180 - 125 = 55°$

$\therefore \angle DCQ = \angle BCP = 55°$

$\therefore \Delta CDQ \Rightarrow \angle C + \angle D + \angle Q = 180$

$55° + 95° + \angle Q = 180°$

$\angle Q = 180° - 150° = 30°$

$\angle CQD = 30°$

146.(B) Traced arc length by minute hand in 60×60 seconds = $2\pi r$

$\therefore$ Length of arc made in 18 seconds

$= \dfrac{2\pi r}{60 \times 60} \times 18$

$= 2 \times \dfrac{22}{7} \times \dfrac{35 \times 18}{60 \times 60} = 1.1$ cm

147.(B) Least integer divisible by 21, 36, 66

= L.C.M = $2 \times 2 \times 3 \times 3 \times 7 \times 11$

$\therefore$ Least perfect square number

= $2 \times 2 \times 3 \times 3 \times 7 \times 7 \times 11 \times 11 = 213444$

148.(D) There is maximum gap between 1998 and 2000 for state U. And maximum percentage increase is also for state U.

149.(B) Required less %

$= \dfrac{105 - 70}{105} \times 100 = 33\dfrac{1}{3}\%$

150.(C) Avg. production

$= \dfrac{80 + 60 + 25 + 50 + 50 + 80 + 80}{7}$

≈ 60.72 million tonnes

151.(B) Since the indirect speech is in past tense, 'is' should be replaced by 'was'.

152.(C) Replace 'arising' by 'rising'.

153.(B) Sentence starting with 'It is high time' takes simple past form. Thus, replace 'leave' by 'left'.

154.(B) As the sentence is in passive form. Thus, replace 'to attend' by 'to be attended'.

155.(C) Replace 'have' by 'has' as the subject of this sentence is singular i.e, 'each of the students'.

174.(C)

175.(D) 'Advice' is singular uncountable noun.

176.(C) The subject of the sentence is 'My brother'. Thus, it will take singular verb.

177.(B) Verb 'avail' takes 'of' and reflexive pronoun after it.

178.(A) 'Hardly ..... when' is an example of correlative conjunction.

179.(C) 'Hardly any' means 'very little.

180.(C) 'recollect' takes 'V + ing' after it.

181.(A) Here two actions/states are inversely or directly proportional to each other. Here Comparative degrees will come in both preceded by article 'the'.

MEANINGS IN ALPHABETICAL ORDER

Word	Meaning in English	Meaning in Hindi
Acoustics	the branch of physics concerned with the properties of sound.	ध्वनि विज्ञान
Astronomy	the branch of science that deals with celestial objects, space, and the physical universe as a whole.	खगोल विज्ञान
Averse	having a strong dislike of or opposition to something	अनिच्छुक/ नापसंद
Bestowed	conferred or presented (an honor, right, or gift)	प्रदान किया हुआ
Calumny	the making of false and defamatory statements in order to damage someone's reputation; slander.	झूठा अभियोग, बदनामी
Catharsis	the process of releasing strong feelings, for example through plays or other artistic activities, as a way of providing relief from anger, suffering, etc.	भावनाओं का प्रवाह
Concur	be of the same opinion; agree	सहमत होना
Conferred	granted or bestowed (a title, degree, benefit, or right)	किसी पद से सम्मानित
Defunct	no longer existing or functioning.	निष्क्रिय
Discrepancy	a lack of compatibility or similarity between two or more facts.	भिन्नता
Endowed	given or bequeathed an income or talent to (a person or institution).	भेंट किया हुआ
Entrusted	Having assigned the responsibility for doing something to someone	कोई काम सौंपा हुआ
Fraught with	Filled with a specified element	भरा हुआ
Having the last laugh	to make someone who has criticized or defeated you, look stupid by succeeding at something more important or by seeing them fail	अलोचकों को अपनी सफलता से करारा जवाब देना जिससे वे लज्जित प्रतीत होते हो
Idiosyncrasy	a mode of behaviour or way of thought peculiar to an individual.	सनक, व्यक्तिगत विशिष्टता
In consonance with	agreement	के अनुरूप
Inexorable	impossible to stop or prevent.	अवश्यंभावी
Jubilation	a feeling of great happiness and triumph.	जश्न, खुशी
Keep in leash	to allow very little freedom to do something	नियंत्रण में रखना
Momentous	An event of great importance or significance, especially in its bearing on the future.	अति महत्वपूर्ण
Ouija	a board marked with letters of the alphabet and other signs, used in seances to receive messages said to come from people who are dead	एक वर्णमाला बोर्ड जो मृत व्यक्तियों के संदेशों को प्राप्त करने में प्रयोग होता है।
Paronyms	a word that is a derivative of another and has a related meaning	व्युत्पन्न शब्द
Pedestal	a position in which someone is greatly or uncritically admired	विशिष्ट पद
Philanderer	a man who readily or frequently enters into casual sexual relationships with women	स्त्री प्रेमी
Sagacity	the quality of having or showing keen mental discernment and good judgment	बुद्धिमता, अक्लमंदी
Threshold	the point just before a new situation, period of life, etc. begins	प्रारंभ, देहलीज
Uncouth	(of a person or their appearance or behaviour) lacking good manners, refinement, or grace	भद्दा
Underhand	secret and dishonest	चालाकीपूर्ण
Undulate	to go or move gently up and down like waves	लहराना
Unprecedentedly	in a way that has never happened, been done or been known before	अभूतपूर्व
Wrath	extreme anger (chiefly used for humorous or rhetorical effect)	क्रोध

CPO MOCK TEST - 18 (ANSWER KEY)

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