# STAFF SELECTION COMMISSION

# COMBINED HIGHER SECONDARY LEVEL (TIER-I)

# SOLVED PAPER

## (10th August 2023: Shift-2)

**Time Allotted-** 1 hour                                                    **Max marks-** 200

**Important Instructions:-**
⇨ This paper contains 100 questions which are divided into 4 sections and each section contains 25 questions.
  ✓ English Language (Basic Knowledge)
  ✓ General Intelligence
  ✓ Quantitative Aptitude (Basic Arithmetic Skill)
  ✓ General Awareness
⇨ There will be 2 marks for each correct answer and also there will be negative marking of 0.50 marks for each wrong answer.
⇨ Each question is compulsory to attempt and there will be no negative marking for unattempted questions.

## English Language

1. Select the most appropriate option to fill in the blank.
   My cousin owns a shop of food _____.
   **1.** additives   **2.** addetivis  **3.** aditives   **4.** addetives

2. Select the most appropriate option to substitute the underlined segment in the following sentence.
   The newly admitted students <u>has been given a pair</u> of uniforms by the management.
   **1.** are been given a pair        **2.** has given a pair
   **3.** have been given a pair    **4.** have being given a pair

3. Select the most appropriate option that can substitute the underlined words in the given sentence.
   Are you sure <u>you have go to</u> drop her at the airport?
   **1.** you will go to           **2.** you should have to go to
   **3.** you had to go to        **4.** you might go to

4. Select the most appropriate synonym of the given word.
   Survey
   **1.** Disregard    **2.** Slothful   **3.** Scrutinise  **4.** Apathy

5. Select the most appropriate idiom for the underlined segment in the following sentence.
   Rohit is very mischievous and always <u>annoys his teachers</u>.
   **1.** Gets in his teacher's hair
   **2.** Puts his shoulders to the wheel
   **3.** A storm in a tea cup
   **4.** Leads up the garden path

6. Select the most appropriate option that can substitute the underlined segment in the given sentence.
   Pooja could feel the anger <u>building off inside her</u>.
   **1.** building upon inside her    **2.** building of inside her
   **3.** building on inside her       **4.** building up inside her

7. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.
   Can you please / pass me a sweater? / It's going to be / the cold day today.
   **1.** Can you please           **2.** the cold day today
   **3.** It's going to be          **4.** pass me a sweater?

8. Select the most appropriate option that can substitute the underlined words in the following sentence.
   The health-care system is in transition <u>at those moment</u>.
   **1.** at that moments         **2.** at the moment
   **3.** at a moments             **4.** at these moment

9. Parts of a sentence are given below in jumbled order. Arrange the parts in the correct order to form a meaningful sentence.
   **A.** groups such as migrants and
   **B.** collecting data on vulnerable population

   **C.** persons with disabilities is crucial
   **D.** understanding who are being left behind
   **E.** in identifying the challenges they face and
   **1.** EADCB        **2.** CABED    **3.** BACED    **4.** DACBE

10. Select the most appropriate meaning of the homonym in the context of the following sentence to fill in the blank.
    They do not say anything but stalk furiously out of the room.
    'Stalk' here means _____.
    **1.** the stem or main axis of a plant
    **2.** to walk in an angry or proud way
    **3.** to go through an area in search of prey
    **4.** recur constantly and spontaneously

11. Select the most appropriate ANTONYM of the underlined word.
    The Tokyo Games accelerated energy policies in Japan, <u>demonstrating</u> how they could make steps towards a low-carbon economy by powering the athletes' village with hydrogen from clean, green sources.
    **1.** inspiring     **2.** exploring  **3.** collating   **4.** hiding

12. Select the option that expresses the given sentence in active voice.
    The guilty are punished by the judge.
    **1.** The judge is punishing the guilty.
    **2.** The judge punishes the guilty.
    **3.** The judge has been punishing the guilty.
    **4.** The judge has punished the guilty.

13. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.
    Can you please / open a door? / I can hear / somebody knocking.
    **1.** Can you please          **2.** somebody knocking
    **3.** I can hear               **4.** open a door?

14. Select the most appropriate option to fill in the blank.
    She suffered an emotional _____ after the death of her husband in a road accident.
    **1.** turbulense              **2.** terbulense
    **3.** toorbulence             **4.** turbulence

15. Parts of a sentence are given below in jumbled order. Select the option that arranges the parts in the correct order to form a meaningful sentence.
    **A.** although many scholars believe that
    **B.** no records of such a commission from Francesco exist,
    **C.** the painting depicts Lisa Gherardini, wife of the Florentine merchant Francesco del Giocondo,
    **D.** and the sitter has never been conclusively identified

**1.** D, C, B, A                          **2.** C, A, B, D
**3.** B, D, A, C                          **4.** A, C, B, D

**16.** Select the most appropriate ANTONYM of the given word.
Hysterical
**1.** Controlled      **2.** Resolute   **3.** Manful      **4.** Shy

**17.** Select the most appropriate idiom for the underlined segment in the following sentence.
The child played the video game <u>as much as he wanted to</u>.
**1.** To his heart's content       **2.** To gild the pill
**3.** To kick the bucket           **4.** To assume airs

**18.** Select the option that expresses the given sentence in passive voice.
We hope that we shall win the match against Australia.
**1.** It is hoped that the match against Australia shall be won by us.
**2.** It is expected that the match against Australia should be won by us.
**3.** It is hoped that the match against Australia was won by us.
**4.** It is sure that the match against Australia was won by us.

**19.** Select the appropriate ANTONYM of the underlined word to fill in the blank.
The flow of the river is very rapid now. Let's go in when it's a little _____.
**1.** fast          **2.** quick       **3.** delayed      **4.** slow

**20.** Select the most appropriate synonym of the word 'Flung' from the given sentence.
The entrepreneur's innovative strategies propelled his startup to success.
**1.** Strategies    **2.** Innovative **3.** Success      **4.** Propelled

**Comprehension:**
In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

Primitive cultures are those that exist in societies that have not yet developed advanced technology or complex social (1)_____. These cultures are often characterised by their close relationship with the natural world. Despite being considered 'primitive', these cultures have a rich history and a unique way of life that is (2)_____ studying and preserving. These cultures often have a deep understanding of the environment and its cycles, and they have developed intricate systems of knowledge and belief that are closely tied to nature. For example, indigenous cultures in the Amazon rainforest have an (3)_____ knowledge of the medicinal properties of plants and the cycles of the seasons, which they use to sustain themselves and their communities. Another important aspect is that these cultures often have complex systems of kinship and social hierarchy. Despite the many challenges that primitive cultures face, including the (4)_____ of modern societies and environmental degradation, these cultures have an important role to play in our understanding of the human experience. They offer a different (5)_____ on the world and its complexities, and their traditions and knowledge have the potential to inform and enrich our modern lives.

**21.** Select the most appropriate option to fill in blank 1.
**1.** borders                   **2.** outlines
**3.** structures                **4.** configurations

**22.** Select the most appropriate option to fill in blank 2.
**1.** important                 **2.** insignificant
**3.** worth                     **4.** trivial

**23.** Select the most appropriate option to fill in blank 3.
**1.** acquired                  **2.** intimate
**3.** estimated                 **4.** gained

**24.** Select the most appropriate option to fill in blank 4.
**1.** migration                 **2.** possession
**3.** encroachment              **4.** estimation

**25.** Select the most appropriate option to fill in blank 5.
**1.** conclusion                **2.** perspective
**3.** blame                     **4.** biasness

## General Intelligence

**26.** In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Select the option in which the numbers are related in the same way as are the numbers of the following pairs.
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 - Operations on 13 such as adding/subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)
12, 57
16, 77
**1.** 11, 49       **2.** 4, 14      **3.** 8, 37       **4.** 21, 106

**27.** If it was Friday three days ago, then what was the day of the week 150 days ago from today?
**1.** Friday                    **2.** Wednesday
**3.** Sunday                    **4.** Thursday

**28.** Based on the alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that does NOT belong to that group?
**1.** CYF           **2.** OJL        **3.** LGI         **4.** UPR

**29.** What will come in place of the question mark (?) in the following equation if '+' and '÷' are interchanged and '−' and '×' are interchanged?
$25 \times 6 - 4 \div 18 + 9 = ?$
**1.** 7             **2.** 10         **3.** 3           **4.** 5

**30.** Select the term from the given options that can replace the question mark (?) in the given series to make it logically complete.
BP 74, ?, FT 64, HV 59, JX 54
**1.** CS 70         **2.** DR 69      **3.** ET 68       **4.** ES 70

**31.** Identify the number of rectangles in the given figure.
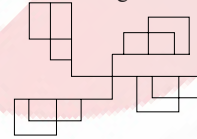


**1.** 16            **2.** 24         **3.** 17          **4.** 28

**32.** What should come in place of the question mark (?) in the given series based on the English alphabetical order?
FGO, HIR, JKU, LMX, ?
**1.** NZP           **2.** NOA        **3.** NOP         **4.** NPZ

**33.** Four number-pairs have been given, out of which three are alike in some manner and one is different. Select the one that is different.
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)
37 : 152
61 : 248
39 : 160
53 : 208
**1.** 61 : 248      **2.** 39 : 160   **3.** 37 : 152    **4.** 53 : 208

**34.** Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.

M

Fb3e5g

N

**1.** ꕹꙅɘƐdꟻ        **2.** ꕹꝺ3ɘƐbꟻ
**3.** ꕹꝺ9ɘƐdF        **4.** ꕹꝺ9ɘ5ꟻ
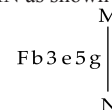
**35.** Select the word-pair that best represents a similar relationship to the one expressed in the pair of words given below.
(The words must be considered meaningful English words and must not be related to each other based on the number of letters/consonants/vowels in the word.)
Latent Dormant
**1.** Nice : Demanding      **2.** Picky : Fussy
**3.** Lathe : Latex      **4.** Pious : Dainty

**36.** What should come in place of X in the given series?
9 13 21 33 49 X
**1.** 67      **2.** 71      **3.** 65      **4.** 69

**37.** What should come in place of the question mark (?) in the given series?
417, 429, 443, ?, 469
**1.** 452      **2.** 460      **3.** 455      **4.** 447

**38.** Which of the following interchanges in two mathematical operators will balance the equation given below?
$63 - 23 \times 132 \div 12 + 7 = 117$
**1.** $\div$ and $\times$      **2.** $+$ and $-$      **3.** $-$ and $\div$      **4.** $+$ and $\times$

**39.** In a certain code language,
E + M means 'E is the father of M',
E – M means 'E is the husband of M',
E @ M means 'E is the daughter of M',
E $ M means 'E is the mother of M'.
If R $ A – F $ H, then how is R related to F?
**1.** Mother      **2.** Husband's mother
**3.** Sister      **4.** Father's sister

**40.** Select the option in which the letter-clusters share the same relationship as that shared by the given pair of letter-clusters.
ZPJ : FNF
SNT : YLP
**1.** HIG : NFC      **2.** LOS : FQW
**3.** RJX : XHT      **4.** AND : GQZ

**41.** Select the triad in which the numbers are related in the same way as are the numbers of the following triads.
4 – 24 – 6
2 – 6 – 3
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)
**1.** 9 – 17 – 3    **2.** 6 – 30 – 7  **3.** 1 – 9 – 8    **4.** 5 – 35 – 7

**42.** In a certain code language, 'EARNT' is coded as '25371' and 'TUNER' is coded as '57142'. What is the code for 'U' in the given code language?
**1.** 2      **2.** 5      **3.** 4      **4.** 7

**43.** In a certain code language, 'FROM' is coded as '8167' and 'ROMP' is coded as '6218' What is the code for 'F' in the given code language?
**1.** 7      **2.** 6      **3.** 8      **4.** 1

**44.** Identify the figure given in the options which when put in place of ? will logically complete the series.



**45.** Select the number from among the given options that can replace the question mark (?) in the following series.
426, 423, 414, 387, 306, ?
**1.** 62      **2.** 64      **3.** 65      **4.** 63

**46.** Read the given statements and conclusions carefully. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. You have to decide which conclusion(s) logically and definitely follow(s) from the given statements.
**Statements:** Some Hats are Caps. Some Hats are Turbans. All Caps are Monkeys.
**Conclusions:** (1) Some Turbans are Caps.
(II) All Hats are Monkeys.
**1.** Both conclusions (I) and (II) do not follow.
**2.** Only conclusion (1) follows.
**3.** Only conclusion (II) follows.
**4.** Both conclusions (I) and (II) follow.

**47.** Select the combination of letters which when sequentially placed in the blanks of the given series will complete the series.
JK_MJJ_LMJJKK_MJJKKLL_
**1.** MMJJ      **2.** LKLM      **3.** LMLJ      **4.** JKLJ

**48.** In a certain code language,
P + Q means P is the mother of Q,
P – Q means P is the brother of Q,
P × Q means P is the wife of Q,
P/Q means P is the father of Q.
Based on the above, how is B related to D in A × B/C – D?
**1.** Brother      **2.** Father's brother
**3.** Father      **4.** Mother

**49.** What should come in place of ? in the given series based on the English alphabetical order?
QED   TKM   WQV   ZWE   ?
**1.** BDO      **2.** DDN      **3.** CCN      **4.** DCM

**50.** Select the correct mirror image of the given figure when the mirror is placed at MN as shown.
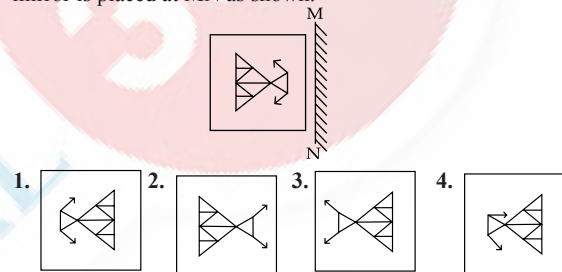
### Quantitative Aptitude

**51.** A shopkeeper earns a profit of 20% after offering a discount of 10% on the marked price of an electric mixer. What is the cost price (in ₹) of the electric mixer having marked price ₹6,500?
**1.** 4,900      **2.** 4,825      **3.** 4,850      **4.** 4,875

**52.** Study the following table carefully and answer the question that follows.

| State/Year | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| Maharashtra | 723 | 840 | 900 | 920 | 925 |
| Kerala | 1035 | 940 | 1200 | 1400 | 1500 |
| Karnataka | 750 | 600 | 830 | 575 | 900 |
| West Bengal | 500 | 550 | 450 | 600 | 525 |
| Delhi | 1500 | 1625 | 1700 | 1475 | 1800 |
| Andhra Pradesh | 800 | 840 | 875 | 925 | 785 |
| **Total** | **5308** | **5395** | **5955** | **5895** | **6435** |

In the case of which state/UT was there a continuous increase in the number of students over the given years?
**1.** Andhra Pradesh      **2.** Maharashtra
**3.** Karnataka      **4.** West Bengal

**53.** X, Y and Z can complete a piece of work in 20, 12 and 28 days, respectively. If all work together, the approximate number of days to complete the work will be:
**1.** 6      **2.** 7      **3.** 4      **4.** 5

**54.** If each side of a cube is decreased by 12%, then the percentage decrease in its surface area is:
**1.** 25.66%    **2.** 28.23%    **3.** 22.56%    **4.** 26.54%

**55.** A trader allows a discount of 5% for cash payment. What percentage above the cost price must he mark his goods to make a profit of 14%?
**1.** 30%    **2.** 40%    **3.** 50%    **4.** 20%

**56.** In a circle of radius 8 units, a chord of length 10 units is drawn. What is the perpendicular distance of the chord from the centre of the circle in units?
**1.** $\sqrt{39}$ unit          **2.** $\sqrt{35}$ unit
**3.** $\sqrt{30}$ unit          **4.** $\sqrt{33}$ unit

**57.** Lakshita purchased a sofa set at a discount of 25%. As per her calculations, she noticed that if she would have not been given this discount, she would have paid ₹ 22,400 more as the cost of this sofa set. How much did Lakshita pay for the sofa set?
**1.** ₹ 22,400    **2.** ₹ 33,600    **3.** ₹ 67,200    **4.** ₹ 67,000

**58.** If $\left(y - \dfrac{1}{y}\right) = 8,$ find the value of $\left(y^2 + \dfrac{1}{y^2}\right).$
**1.** 64    **2.** 62    **3.** 60    **4.** 66

**59.** If $1 + m + n = 0$, then what will be the value of
$$\left(\frac{l^2}{mn} + \frac{m^2}{nl} + \frac{n^2}{lm}\right)^2 ?$$
**1.** 9    **2.** 16    **3.** 4    **4.** 1

**60.** A man bought 13 chairs at ₹ 150 each and 15 chairs at ₹ 130 each. The average price of a chair (to the nearest rupee) is:
**1.** ₹ 130    **2.** ₹ 145    **3.** ₹ 142    **4.** ₹ 139

**61.** If $\tan(5\theta - 10°) = \cot(5\phi + 20°)$, then the value of $\theta + \phi$ is:
**1.** 16°    **2.** 18°    **3.** 15°    **4.** 20°

**62.** A chord of length 24 cm is at a distance of 5 cm from the centre of the circle. The radius of the circle is:
**1.** 13 cm    **2.** 12 cm    **3.** 16 cm    **4.** 15 cm

**63.** Deepak starts a business with a capital of ₹1,60,000. He incurs a loss of 10% during the first year. But he makes a profit of 5% during the second year on his remaining investment. Finally, he makes a profit of 25% on his new capital during the third year. Find his total profit at the end of three years.
**1.** ₹29,500    **2.** ₹29,000    **3.** ₹28,000    **4.** ₹28,500

**64.** At a certain annual rate (rounded off to the nearest integer) of simple interest, a sum of money becomes nine times its original value in 21 years. By how much does the rate of interest change if the same sum of money has to become 12 times its original value in 25 years?
**1.** Decreases by 6%       **2.** Increases by 6%
**3.** Increases by 8%       **4.** Decreases by 8%

**65.** In a circle, an arc subtends an angle of 84° at the centre. If the length of the arc is 22 cm, then the radius of the circle (in cm) is equal to:
Take $\pi = \dfrac{22}{7}$
**1.** 19    **2.** 15    **3.** 17    **4.** 13

**66.** If θ is an acute angle and $\sin\theta\cos\theta = 2\cos^3\theta - \dfrac{1}{4}\cos\theta,$ then the value of sin θ is:
**1.** $\dfrac{\sqrt{15}-1}{8}$          **2.** $\dfrac{\sqrt{15}-1}{4}$
**3.** $\dfrac{\sqrt{15}+1}{4}$          **4.** $\dfrac{\sqrt{15}-1}{2}$

**67.** The value of (sin 45° + cos 45°) is _____.
**1.** $\dfrac{4}{\sqrt{2}}$    **2.** $\dfrac{1}{\sqrt{2}}$    **3.** 1    **4.** $\sqrt{2}$

**68.** In a mixture, the ratio of a chemical X and water is 15 : 9. When 48 litres of this mixture is replaced with water, the ratio becomes 11 : 13. Find the quantity of water after replacement.
**1.** 97.5 litres       **2.** 99 litres
**3.** 92 litres       **4.** 102.5 litres

**69.** Three partners P, Q and R invest ₹1,000, ₹1,200 and ₹1,500, respectively, in a business. What should be the share of Q if the total profit is ₹666?
**1.** ₹216    **2.** ₹275    **3.** ₹252    **4.** ₹284

**70.** $(a + b + c) = 20,\ a^2 + b^2 + c^2 = 262,\ ab + bc + ca$
**1.** 69    **2.** 72    **3.** 84    **4.** 48

**71.** Find the value of the given expression.
$$\frac{\left(4\frac{1}{3} + 3\frac{1}{3} \times 1\frac{4}{5} \div 3\frac{3}{4} \times \left(1\frac{1}{2} + 1\frac{1}{3}\right)\right)}{\left(\frac{2}{3} \div \frac{5}{6} \times \frac{2}{3}\right)}$$
**1.** $11\dfrac{3}{8}$    **2.** $10\dfrac{1}{8}$    **3.** $14\dfrac{3}{8}$    **4.** $16\dfrac{5}{8}$

**72.** The following bar graph gives the details of income and expenditure of five companies A, B, C, D, E (in crores of rupees)
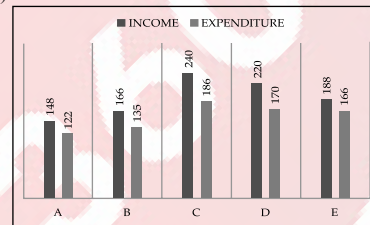


The profit percentage $\left(\dfrac{\text{Income} - \text{Expenditure}}{\text{Expenditure}} \times 100\right)$ is highest for the company:
**1.** D    **2.** E    **3.** A    **4.** C

**73.** In triangle STU, V is a point on the side ST and W is a point on the side SU such that VWUT is a trapezium. Given that VW : TU = 2 : 7, what is the ratio of area of trapezium VWUT to the area of the triangle STU?
**1.** 4 : 49    **2.** 4 : 45    **3.** 45 : 49    **4.** 49 : 81

**74.** Sanjana can row a boat at 9 km/h in the still water. It takes her twice as long to row up a certain distance as to row down the same distance in the river. What is the rate of the stream (in km/h)?
**1.** 4    **2.** 1    **3.** 3    **4.** 2

**75.** The annual agricultural production (in tonnes) of an Indian state is given in the pie chart. The total production is 12960 tonnes.
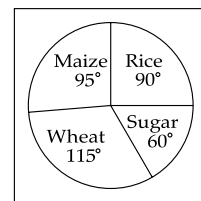


What is the annual production of Maize?
**1.** 3240 tonnes       **2.** 4140 tonnes
**3.** 3420 tonnes       **4.** 2160 tonnes

## General Awareness

**76.** In India the principle of 'procedure established by law' is taken from which constitution?
1. Canada
2. Irish
3. Japan
4. South Africa

**77.** Supply of Money is the quantity of money _____.
1. during the calendar year
2. as on any point of time
3. during the fiscal year
4. during any specified period of time

**78.** Gugga Naumi festival is celebrated in which of the following states?
1. Gujarat
2. Uttarakhand
3. Himachal Pradesh
4. Haryana

**79.** The term 'Dressage' is associate with:
1. equestrian
2. polo
3. rugby
4. water polo

**80.** Shovana Narayan, a famous Kathak dancer, received the _____ in 1992.
1. Padma Bhushan
2. Kalidas Samman
3. Kabir Puraskar
4. Padma Shri

**81.** Which of the following topped the Swachh Vayu Survekshan (SVS) 2023 in the first category of million plus population?
1. Indore
2. Agra
3. Thane
4. Pune

**82.** Who among the following is the author of 'G20 @ 2023: The Roadmap to Indian Presidency'?
1. Sonal Raghuvanshi
2. Prateek Kukreja
3. V. Srinivas
4. Patrick Bond

**83.** The committee to 'Operationalise the Suggestions to Teach Fundamental Duties to the Citizens of the Country' is popularly known as the _____.
1. LP Singh committee
2. Abhijit Sen committee
3. Paul Appleby committee
4. JS Verma Committee

**84.** Which of the following airports is India's first to be completely powered by solar energy?
1. Kempe Gowda International Airport (KIA), Bangalore
2. Indira Gandhi International Airport (IGIA), Delhi
3. Cochin International Airport Limited (CIAL), Kerala
4. Chhatrapati Shivaji Maharaj International Airport (CSMIA), Mumbai

**85.** Which of the following was added to the G-20 group to make it G-21 at the 2023 New Delhi G-20 summit?
1. Ukraine
2. African Union
3. Pakistan
4. Vietnam

**86.** In which year was the Vernacular Press Act passed?
1. 1867
2. 1882
3. 1878
4. 1876

**87.** Asgari Bai is primarily remembered for her contribution to which of the following genres of music?
1. Folk
2. Carnatic
3. Dhrupad
4. Ghazal

**88.** GNP at MP less _____ gives us GDP at MP.
1. depreciation
2. indirect taxes
3. net factor income from abroad
4. subsidies

**89.** Which of the following is the INCORRECT sequence of national income from broader to narrower concepts?
1. GNP at market prices – NNP at factor cost – NNP at market prices – GNP at factor cost
2. GNP at market prices – NNP at market prices – NNP at factor cost – Personal income
3. NNP at factor cost – Personal income – Personal disposable income
4. GNP at factor cost – NNP at factor cost – Personal income – Personal disposable income

**90.** If the uncertainty in position and momentum are equal, the uncertainty in velocity will be:
1. $\sqrt{h/\pi}$
2. $1/2m\sqrt{h/\pi}$
3. $\sqrt{h/2\pi}$
4. $\sqrt{h/2\pi m}$

**91.** The book "Rajatarangini' is about the history of which state written in 12th century CE?
1. Bengal
2. Kashmir
3. Sindh
4. Assam

**92.** Chhau is a popular folk dance of which state-pair from the following?
1. Assam and Bihar
2. Odisha and Bihar
3. Bihar and West Bengal
4. Odisha and West Bengal

**93.** Which of the following rivers originates from the Milam Glacier in Uttarakhand?
1. Sutlej
2. Ganges
3. Gori Ganga
4. Yamuna

**94.** Which of the following is an advantage of foreign competition?
1. No requirement to develop new products
2. Incentive to produce efficiently
3. Expansion of foreign market
4. Saving of foreign exchange reserves

**95.** Which of the following cell organelles can make copies of themselves?
1. Golgi apparatus
2. Vacuole
3. Cytoplasm
4. Mitochondria

**96.** Match List I with List II and choose your answer from the code below:

| List I | List II |
|---|---|
| i. Service tax | a. Capital receipt |
| ii. Interest receipts | b. Revenue expenditure |
| iii. Sale of shares of PSUs | c. Non-tax revenue |
| iv. Salaries and pension | d. Tax revenue |

1. i-d, ii-c, iii-b, iv-a
2. i-c, ii-b, iii-a, iv-d
3. i-d, ii-c, iii-a, iv-b
4. i-d, ii-a, iii-c, iv-b

**97.** Which of the following is a valid bond in Alkenes that connects carbon atoms?
1. Single bond
2. Double bond
3. Triple bond
4. Not connected

**98.** Vaibhav Taneja has been appointed as the Chief Financial Officer (CFO) of which of the following?
1. Tesla
2. Meta
3. Microsoft
4. Alphabet

**99.** Who among the following wrote in calligraphic style the Hindi version of the original Indian Constitution?
1. SN Mukherjee
2. Prem Behari Narain Raizada
3. Vasant Krishan Vaidya
4. Nand Lal Bose

**100.** In the context of mapping climate data, what term refers to a line drawn through all points on a map that contain the same amount of cloud?
1. Isohels
2. Isocheim
3. Isonephs
4. Isochalaz

## Answer Key

| 1. | (1) | 2. | (3) | 3. | (1) | 4. | (3) | 5. | (1) | 6. | (4) | 7. | (2) | 8. | (2) | 9. | (3) | 10. | (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11. | (4) | 12. | (2) | 13. | (4) | 14. | (4) | 15. | (4) | 16. | (1) | 17. | (1) | 18. | (1) | 19. | (4) | 20. | (4) |
| 21. | (3) | 22. | (3) | 23. | (2) | 24. | (3) | 25. | (2) | 26. | (3) | 27. | (1) | 28. | (1) | 29. | (3) | 30. | (2) |
| 31. | (3) | 32. | (2) | 33. | (4) | 34. | (4) | 35. | (2) | 36. | (4) | 37. | (3) | 38. | (4) | 39. | (2) | 40. | (3) |
| 41. | (4) | 42. | (3) | 43. | (1) | 44. | (3) | 45. | (4) | 46. | (1) | 47. | (2) | 48. | (3) | 49. | (3) | 50. | (1) |
| 51. | (4) | 52. | (2) | 53. | (1) | 54. | (3) | 55. | (4) | 56. | (1) | 57. | (3) | 58. | (4) | 59. | (1) | 60. | (4) |
| 61. | (1) | 62. | (1) | 63. | (2) | 64. | (2) | 65. | (2) | 66. | (2) | 67. | (4) | 68. | (1) | 69. | (1) | 70. | (1) |
| 71. | (4) | 72. | (1) | 73. | (3) | 74. | (3) | 75. | (3) | 76. | (3) | 77. | (4) | 78. | (4) | 79. | (1) | 80. | (4) |
| 81. | (1) | 82. | (3) | 83. | (4) | 84. | (3) | 85. | (2) | 86. | (3) | 87. | (3) | 88. | (3) | 89. | (1) | 90. | (2) |
| 91. | (2) | 92. | (4) | 93. | (3) | 94. | (2) | 95. | (4) | 96. | (3) | 97. | (2) | 98. | (1) | 99. | (3) | 100. | (3) |

## Answers with Explanations

**1. Option (1) is correct.**

My cousin owns a shop of food additives. Additives mean substances added in small amounts to something else to improve, strengthen, or otherwise alter it. Other options have incorrect spellings.

**2. Option (3) is correct.**

The newly admitted students have been given a pair of uniforms by the management. The part 'has been given a pair' will be replaced by 'have been given a pair'; this is because the subject is 'students' (a plural noun), so the verb will also be plural (have).

**3. Option (1) is correct.**

Are you sure you will go to drop her at the airport? Here, 'you will go to' will replace 'you have go to', because the action refers to a future event, so 'will' is more appropriate.

**4. Option (3) is correct.**

Scrutinise. Survey means to examine/study.

**5. Option (1) is correct.**

Gets in his teacher's hair. 'Gets in someone's hair' means to annoy or bother someone. 'Puts his shoulders to the wheel' implies to make a strenuous effort; 'a storm in a tea cup' refers to a situation in which people are very angry or upset about something that is not important. 'Leads up the garden path' implies 'give someone misleading <u>clues</u> or signals.'

**6. Option (4) is correct.**

The phrase 'build up' means 'increase gradually in feelings'. Other phrases are incorrect.

**7. Option (2) is correct.**

Can you please pass me a sweater? It's going to be a cold day today. The part 'the cold day today' will be replaced by 'a cold day today'. This is so because one cold day can be attributed with an indefinite article 'a'.

**8. Option (2) is correct.**

The health-care system is in transition at the moment. Here, 'those moment' will be substituted by 'at the moment'. The latter phrase refers to the present time; now.

**9. Option (3) is correct.**

The correct sequence of the sentences is: BACED. The phrase 'on vulnerable population' attributes 'groups such as migrants and persons with disabilities'. Therefore, BAC link is a coherent one. This data is crucial in identifying the challenges they face and understanding who are being left behind. Similarly, CED is a logical link. Collecting data on vulnerable population groups such as migrants and persons with disabilities is crucial in identifying the challenges they face and understanding who are being left behind.

**10. Option (2) is correct.**

Stalk means to walk in an angry or proud way. In the given sentence, they were furious and instead of saying anything they went out.

**11. Option (4) is correct.**

The sentence clarifies that the Tokyo Games accelerated energy policies in Japan, signified how they could make steps towards a low-carbon economy by powering the athletes' village with hydrogen from clean, green sources. Therefore, the antonym of the underlined word is 'hiding'.

**12. Option (2) is correct.**

The given sentence 'The guilty are punished by the judge' is in passive voice. In voice change, the object of the active <u>verb</u> becomes the <u>subject</u> of the passive verb. *Active Voice* 1st form + s/es, *Passive* Voice is/am/are+3<sup>rd</sup> form. The judge punishes the guilty.

**13. Option (4) is correct.**

Can you please open the door? I can hear somebody knocking. The part 'the door?' will replace 'a door?' This is because the

door referred here is a particular one, so definite article 'the' will be used.

**14. Option (4) is correct.**

She suffered an emotional turbulence after the death of her husband in a road accident. Turbulence means a state of conflict or confusion.

**15. Option (4) is correct.**

The correct sequence of the sentences is: A, C, B, D. The phrase 'many scholars' is the subject, and the verb 'believe that' continues in C- the painting depicts Lisa Gherardini, wife of the Florentine merchant Francesco del Giocondo, but there are no records of such a commission from Francesco. although many scholars believe that the painting depicts Lisa Gherardini, wife of the Florentine merchant Francesco del Giocondo, no records of such a commission from Francesco exist, and the sitter has never been conclusively identified.

**16. Option (1) is correct.**

Hysterical means unable to control your emotions or behaviour because you are very frightened, excited, etc. Thus, the antonym is 'Controlled'.

**17. Option (1) is correct.**

The idiom 'to his heart's content' means 'until one feels satisfied'. 'To gild the pill' implies 'to make something unpleasant seem appealing.' 'To kick the bucket' means *"to die"*.'To assume airs' connotes 'to pretend superiority'. Thus, To his heart's content.

**18. Option (1) is correct.**

The sentence 'We hope that we shall win the match against Australia' is in active voice. In voice change, the object of the active <u>verb</u> becomes the <u>subject</u> of the passive verb. The passive verb form in the simple future tense is made by putting will/shall + be before the past participle form of the verb. It is hoped that the match against Australia shall be won by us.

**19. Option (4) is correct.**

The flow of the river is very rapid now. Let's go in when it's a little slow. 'Rapid' implies fast movement, so the antonym is 'slow'.

**20. Option (4) is correct.**

The word 'flung' connotes 'to throw somebody/something suddenly and carelessly or with great force'.So the synonym is 'propelled' (drive or push somebody/something forward or in a particular direction). Moreover, since 'flung' is a verb, we need the same part of speech as its synonym; while, all options, except (4) are not verbs.

**21. Option (3) is correct.**

Primitive cultures are those that exist in societies that have not yet developed advanced technology or complex social structures. Since the sentence is about Primitive cultures, so they are without technology or structure. Owing to their missing link with society, they share a close relationship with the natural world.

**22. Option (3) is correct.**

Despite being considered 'primitive', these cultures have a rich history and a unique way of life that is worth studying and preserving. The context affirms the richness of culture and the unique way of life that makes it worth studying and preserving.

**23. Option (2) is correct.**

For example, indigenous cultures in the Amazon rainforest have an intimate knowledge of the medicinal properties of plants and the cycles of the seasons. The word 'intimate' means 'close'; so indigenous cultures in the Amazon rainforest have an in-depth knowledge of the medicinal properties of plants and the cycles of the seasons. This cannot be said to be 'acquired/estimated/gained' knowledge.

**24. Option (3) is correct.**

Despite the many challenges that primitive cultures face, including the encroachment of modern societies and environmental degradation, these cultures have an important role to play in our understanding of the human experience. Encroachment means 'intrusion on a person's territory, rights, etc.' The context refers to the challenges thrown at primitive cultures like intrusion of modern societies.

**25. Option (2) is correct.**

They offer a different perspective on the world and its complexities, and their traditions and knowledge have the potential to inform and enrich our modern lives. Since primitive cultures have an important role to play in our understanding of the human experience by offering a different outlook on the world and its complexities.

**26. Option (3) is correct.**

The pattern followed here is:
(1st term × 5) – 3 = 2nd term.
1st pair, (12, 57) = (12 × 5) – 3 = 57
2nd pair, (16, 77) = (16 × 5) – 3 = 77
Upon checking option (3), (8, 37) = (8 × 5) – 3 = 37

**27. Option (1) is correct.**

Given that: 3 days ago, it was a Friday
Which means today is Monday.
Now, to find out what was the day of the week 150 days ago, let's calculate the total number of weeks:
150 ÷ 7 = 21 with a remainder of 3
So, counting 3 days before Monday, we will arrive at Friday.

**28. Option (1) is correct.**

As per the pattern followed in the given options, we get:

(1) $C \xrightarrow{-4} Y \xrightarrow{+7} F$

(2) $O \xrightarrow{-4} J \xrightarrow{+2} L$

(3) $L \xrightarrow{-4} G \xrightarrow{+2} I$

(4) $U \xrightarrow{-4} P \xrightarrow{+2} R$

Hence, option (1) is the odd one out.

**29. Option (3) is correct.**

Given that: $25 \times 6 - 4 \div 18 + 9 = ?$
After interchanging the signs, we get
$25 - 6 \times 4 + 18 \div 9$
According to BODMAS rule,
$= 25 - 6 \times 4 + 2 = 25 - 24 + 2 = 1 + 2 = 3$

**30. Option (2) is correct.**

Given that: BP 74, ? , FT 64, HV 59, JX 54
According to the pattern followed here:

```
        B    P    74
      +2│  +2│  -5│
        D    R    69
      +2│  +2│  -5│
        F    T    64
      +2│  +2│  -5│
        H    V    59
      +2│  +2│  -5│
        J    X    54
```

So, the missing term is DR 69.

**31. Option (3) is correct.**
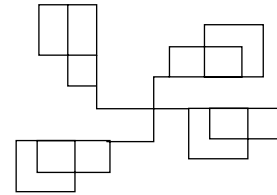
Given figure:



There are total 17 rectangles in the given figure.

**32. Option (2) is correct.**

Given that: FGO, HIR, JKU, LMX, ?
According to the pattern followed here, we get

```
        F    G    O
      +2│  +2│  +3│
        H    I    R
      +2│  +2│  +3│
        J    K    U
      +2│  +2│  +3│
        L    M    X
      +2│  +2│  +3│
        N    O    A
```
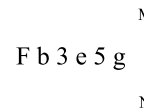
So, the missing term is NOA.

**33. Option (4) is correct.**

The pattern followed here is:
(1st term × 4) + 4 = 2nd term
On checking options, we get
(1) 37 : 152
   (37 × 4) + 4 = 152
(2) 61 : 248
   (61 × 4) + 4 = 248
(3) 39 : 160
   (39 × 4) + 4 = 160
(4) 53 : 208
   (53 × 4) + 4 = 216 [which is not equal to 208]
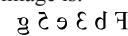
Hence, option (4) is the odd one out.

**34. Option (4) is correct.**

Given figure:

```
                      M
    F b 3 e 5 g       │
                      N
```

In the mirror image, left becomes right, and right becomes left.

Hence, the required image is:
ɓ Ϛ ǝ Ɛ q ꓱ

**35. Option (2) is correct.**

Given that: Latent : Dormant
'Latent' and 'Dormant' means something which exists but is hidden, concealed or not currently active yet has the ability to grow in the future.
So, both of the words are synonyms to each other.

Checking option (2), 'Picky' and 'Fussy' describes someone who is very selective, choosy, excessively concerned over small details or particular about minor things.

So, both of these words are also synonyms to each other.

Hence, option (2) best represents the similar relationship to the one expressed In the above pair of words.

**36. Option (4) is correct.**

Given that: 9 13 21 33 49 X

The pattern followed here is:

$$9 + (2 × 2) = 13$$
$$13 + (2 × 4) = 21$$
$$21 + (2 × 6) = 33$$
$$33 + (2 × 8) = 49$$

Similarly, $49 + (2 × 10) = 69$

So, 69 will come in place of X in given series.

**37. Option (3) is correct.**

Given that: 417, 429, 443, ? , 469

The pattern followed here is:

417 + 12 = 429

429 + 14 = 443

443 + 12 = 455

455 + 14 = 469

Hence, 455 is the missing number.

**38. Option (4) is correct.**

Given that: $63 – 23 × 132 ÷ 12 + 7 = 117$

After interchanging the symbols from the options, we get

(1)  $63 – 23 ÷ 132 × 12 + 7 = 63 – 23 ÷ 11 + 7 = 67.90$

(2)  $63 + 23 × 132 ÷ 12 – 7 = 63 + 23 × 11 – 7 = 309$

(3)  $63 ÷ 23 × 132 – 12 + 7 = 361.56 – 12 + 7 = 356.56$

(4)  $63 – 23 + 132 ÷ 12 × 7 = 40 + 11 × 7 = 117$

**39. Option (2) is correct.**

Given that: R $ A – F $ H

After decoding the statement, possible family tree will be,
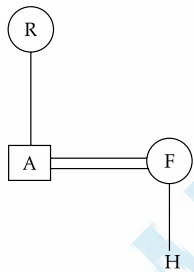


Hence, R is the husband's mother of F.

**40. Option (3) is correct.**

Given that:

ZPJ : FNF

SNT : YLP

The pattern followed here is:



And,



Similarly, upon checking option (3), we get



**41. Option (4) is correct.**

Given that:

4 – 24 – 6

2 – 6 – 3

The pattern followed here is:

$1^{st}$ term × $3^{rd}$ term = $2^{nd}$ term

Upon checking option (4), we get

5 × 7 = 35

Hence, it is related in the same way as are the other numbers of the triads.

**42. Option (3) is correct.**

If we compare both of the words we get,

The codes for the alphabets E, A, R, N, T are 2, 5, 3, 7, 1 (In random order), indicating that the only different letter remaining is 'U.'

Therefore, there is only 1 digit left for 'U' which is 4.
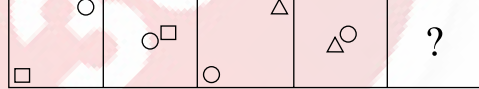
**43. Option (1) is correct.**

If we compare both of the words we get,

The codes for the alphabets R, O, M, P are 6, 2, 1, 8 (In random order), indicating that the only different letter remaining is 'F.'
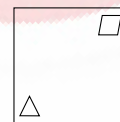
Therefore, there is only 1 digit left for 'F' which is 7.

**44. Option (3) is correct.**

Given figure:



According to the pattern followed and the symmetry, the required figure is:



**45. Option (4) is correct.**

Given that: 426, 423, 414, 387, 306, ?

The pattern followed here is:

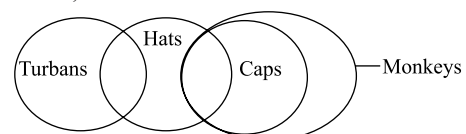$426 – 3^1 = 423$

$423 – 3^2 = 414$

$414 – 3^3 = 387$

$387 – 3^4 = 306$

$306 – 3^5 = 63$

Hence, 63 is the missing number.

**46. Option (1) is correct.**

According to the given statements, following Venn diagram can be made,



Hence, both conclusions (I) and (II) do not follow.
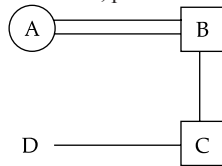
**47. Option (2) is correct.**

Given that: JK_MJJ_LMJJKK_MJJKKLL_

Upon inserting alphabets from option (2) to the series sequentially, we get

JKLMJJKLMJJKKLMJJKKLLM

Hence, it forms a logical series.

**48. Option (3) is correct.**

Given that: A × B/C – D

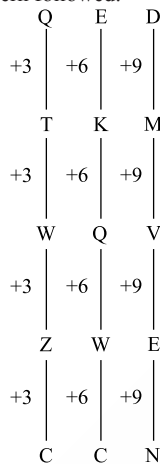After decoding the statement, possible family tree will be:



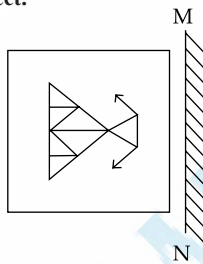Hence, B is the father of D.

**49. Option (3) is correct.**

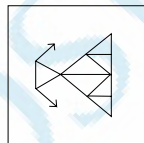Given that: QED TKM WQV ZWE ?

According to the pattern followed:



Hence, CCN is the missing term.

**50. Option (1) is correct.**



According to the pattern followed and the symmetry, the required figure is:



**51. Option (4) is correct.**

Market price, M.P. = ₹6500

∴ Selling price, S.P. = $\dfrac{100-10}{100} \times 6500 = ₹5850$

∵ Profit percentage = 20%

∴ Cost price, C.P. = $\left[\dfrac{100}{100+20}\right] \times 5850 = ₹4875$

**52. Option (2) is correct.**

It is clear from the table that only Maharashtra has a continuous increase in number of students.

**53. Option (1) is correct.**

X can complete the work in 20 days.

Y can complete the work in 12 days.

Z can complete the work in 28 days.

∴ They will complete the work together in

$$= \dfrac{1}{\dfrac{1}{20}+\dfrac{1}{12}+\dfrac{1}{28}} \text{ days}$$

= 5.915 days

= 6 days (approximately)

**54. Option (3) is correct.**

Let the side of cube = $a$ units

∴ Surface area of cube = $6a^2$ sq. units

New side of cube = $6 \times \left(\dfrac{22}{25}a\right)^2$ sq. units

∴ Decrease in the surface area

$$= \dfrac{6a^2 - 6\times\left(\dfrac{22}{25}a\right)^2}{6a^2} \times 100$$

= 22.56%

**55. Option (4) is correct.**

Let cost price of item = ₹100
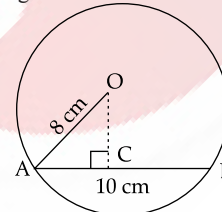
Selling price to get 14% profit = ₹114

∵ Trader allow 5% discount. So, market price

$$= \dfrac{114 \times 100}{95} = 120$$

∴ Market price is 20% than the cost price.

**56. Option (1) is correct.**

As per the given, figure will be:



∵ Perpendicular from the centre bisect the chord

⟹ AC = $\dfrac{AB}{2}$ = 5 cm

By Pythagoras theorem

$$OC = \sqrt{OA^2 - AC^2}$$
$$= \sqrt{8^2 - 5^2} = \sqrt{39} \text{ units.}$$

**57. Option (3) is correct.**

Let the cost price of sofa set = ₹$x$

Selling price after 25% discount

$$= ₹\dfrac{75}{100}x = ₹\dfrac{3}{4}x$$

According to question,

$$x - \dfrac{3}{4}x = 22400$$

⟹ $\dfrac{x}{4}$ = 22400

⟹ $x$ = 89600

She paid for the sofa = $\dfrac{3}{4} \times 89600 = ₹67200$

**58.** **Option (4) is correct.**

$$\because \quad y - \frac{1}{y} = 8$$

$$\Rightarrow \left(y - \frac{1}{y}\right)^2 = 8^2$$

$$\Rightarrow \quad y^2 + \frac{1}{y^2} - 2 \times y \times \frac{1}{y} = 64$$

$$\Rightarrow \quad y^2 + \frac{1}{y^2} - 2 = 64$$

$$\Rightarrow \quad y^2 + \frac{1}{y^2} = 64 + 2 = 66$$

**59.** **Option (1) is correct.**

$$l + m + n = 0$$

$$\Rightarrow \quad l^3 + m^3 + n^3 = 3lmn \qquad \ldots(i)$$

Now, $\left[\dfrac{l^2}{mn} + \dfrac{m^2}{ln} + \dfrac{n^2}{lm}\right]^2$

$$= \left[\frac{l^3 + m^3 + n^3}{lmn}\right]^2$$

$$= \left[\frac{3lmn}{lmn}\right]^2 = 3^2$$

[Using equation (i)]

$$= 9$$

**60.** **Option (4) is correct.**

Cost price of 13 chairs = ₹150 × 13 = ₹1950

Cost price of 15 chairs = ₹130 × 15 = ₹1950

$$\therefore \quad \text{Average cost of chairs} = \frac{1950 + 1950}{13 + 15}$$

$$= ₹139.2$$

$$\cong ₹139$$

**61.** **Option (1) is correct.**

$$\tan\left(5\theta - 10°\right) = \cot\left(5\phi + 20°\right)$$

$$\Rightarrow \quad \tan\left(5\theta - 10°\right) = \tan\left(90° - \left(5\phi + 20°\right)\right)$$

$$[\because \cot A = \tan\left(90° - A\right)]$$

$$\Rightarrow \quad 5\theta - 10° = 70° - 5\phi$$

$$\Rightarrow \quad 5\theta + 5\phi = 70° + 10° = 80°$$

$$\Rightarrow \quad \theta + \phi = 16°$$

**62.** **Option (1) is correct.**

As per given, the figure will be:
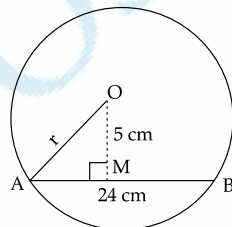


$\because$ Perpendicular from the centre bisects the chord.

Using Pythagoras theorem in triangle OAM,

$$r = \sqrt{OM^2 + AM^2}$$

$$= \sqrt{5^2 + 12^2} \qquad \left[\because AM = \frac{AB}{2} = 12 \text{ cm}\right]$$

$$= \sqrt{169} = 13 \text{ cm}$$

$\therefore$ Radius of circle = $r$ = 13 cm

**63.** **Option (2) is correct.**

Initial capital = ₹160000

Capital after one year $= \left[\dfrac{100 - 10}{100}\right] \times 160000$

$$= ₹144000$$

Capital after 2nd year $= \left[\dfrac{100 + 5}{100}\right] \times 144000$

$$= ₹151200$$

Capital after 3rd year $= \left[\dfrac{100 + 25}{100}\right] \times 151200$

$$= ₹189000$$

$\therefore$ Profit after 3 years $= 189000 - 160000$

$$= ₹29000$$

**64.** **Option (2) is correct.**

Let principal amount = ₹P

and rate of simple interest = $r$%

According to question:

$$8P = \frac{P \times r \times 21}{100}$$

$$\Rightarrow \quad r = \frac{800}{21}\% = 38.1\% \cong 38\%$$

Let new rate of interest = $r'$

According to question

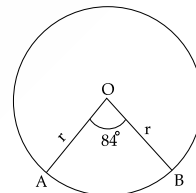$$11P = \frac{P \times r' \times 25}{100}$$

$$\Rightarrow \quad r' = 44\%$$

Increase in rate of interest:

$$= (44 - 38)\%$$

$$= 6\%$$

**65.** **Option (2) is correct.**

As per the given, the figure will be



Let radius of circle = $r$ cm

Length of the area $\overset{\frown}{AB}$ = 22 cm

$$\because \quad \overset{\frown}{AB} = \frac{\theta}{360} \times 2\pi r$$

$$\Rightarrow \quad 22 = \frac{84°}{360} \times 2 \times \frac{22}{7} r$$

$$\Rightarrow \quad r = \frac{360 \times 7}{84 \times 2} = 15 \text{ cm}$$

**66.** **Option (2) is correct.**

$$\because \quad \sin\theta \cdot \cos\theta = 2\cos^3\theta - \frac{1}{4}\cos\theta$$

$$\Rightarrow \sin\theta . \cos\theta = \cos\theta \left[ 2\cos^2\theta - \frac{1}{4} \right]$$

$$\Rightarrow \quad \sin\theta = 2\,\cos^2\theta - \frac{1}{4} = 2\left(1 - \sin^2\theta\right) - \frac{1}{4}$$

$$\Rightarrow \quad 4\sin\theta = 8 - 8\sin^2\theta - 1$$

$$\Rightarrow \quad 8\,\sin^2\theta + 4\sin\theta - 7 = 0$$

$$\Rightarrow \quad \sin\theta = \frac{-4 \pm \sqrt{4^2 - 4 \times 8 \times (-7)}}{2 \times 8}$$

$$= \frac{-4 \pm \sqrt{240}}{16}$$

$$= \frac{-1 \pm \sqrt{15}}{4}$$

∵ θ is acute angle

$$\Rightarrow \quad \sin\theta = \frac{\sqrt{15} - 1}{4}$$

**67. Option (4) is correct.**

$$\sin 45° + \cos 45° = \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} = \frac{2}{\sqrt{2}} = \sqrt{2}$$

**68. Option (1) is correct.**

Let the volume of mixture = 24a litres.

Volume of chemical X = 15a l and volume of water = 9a l

48 litres of mixture will have 30l chemical X and 18l water.

According to question

$$\frac{15a - 30}{9a - 18 + 48} = \frac{11}{13}$$

$$\Rightarrow \quad 195a - 390 = 99a + 330$$
$$\Rightarrow \quad 96a = 720$$
$$\Rightarrow \quad a = 7.5$$

Now quantity of water after replacement

$$= 9 \times 7.5 + 30$$
$$= 97.5 \text{ litres}$$

**69. Option (1) is correct.**

Ratio of profit of P, Q and R = 1000:1200:1500

$$= 10:12:15$$

Share of Q in profit of ₹660 = $\frac{12}{37} \times 666 = ₹216$

**70. Option (1) is correct.**

$$\because \quad (a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$$

$$\Rightarrow \quad 20^2 = 262 + 2(ab + bc + ca)$$

$$\Rightarrow \quad 400 - 262 = 2(ab + bc + ca)$$

$$\Rightarrow \quad ab + bc + ca = \frac{138}{2} = 69$$

**71. Option (4) is correct.**

$$\frac{\left[ 4\frac{1}{3} + 3\frac{1}{3} \times 1\frac{4}{5} \div 3\frac{3}{4} \times \left(1\frac{1}{2} + 1\frac{1}{3}\right) \right]}{\left( \frac{2}{3} \div \frac{5}{6} \times \frac{2}{3} \right)}$$

$$= \frac{\left[ \frac{13}{3} + \frac{10}{3} \times \frac{9}{5} \div \frac{15}{4} \times \left(\frac{3}{2} + \frac{4}{3}\right) \right]}{\frac{2}{3} \times \frac{6}{5} \times \frac{2}{3}}$$

$$= \frac{\left[ \frac{13}{3} + \frac{10}{3} \times \frac{9}{5} \times \frac{4}{15} \times \frac{17}{6} \right]}{\frac{8}{15}}$$

$$= \frac{\left[ \frac{13}{3} + \frac{68}{15} \right]}{\frac{8}{15}} = \frac{\frac{65 + 68}{15}}{\frac{8}{15}}$$

$$= \frac{133}{8} = 16\frac{5}{8}$$

**72. Option (1) is correct.**

Profit % of A = $\frac{148 - 122}{122} \times 100 = 21.31\%$

Profit % of B = $\frac{166 - 135}{135} \times 100 = 22.95\%$

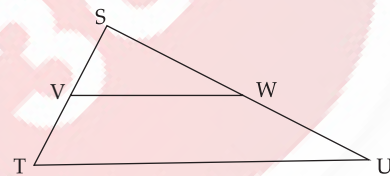Profit % of C = $\frac{240 - 186}{186} \times 100 = 29.03\%$

Profit % of D = $\frac{220 - 170}{170} \times 100 = 29.41\%$

Profit % of E = $\frac{188 - 166}{166} \times 100 = 13.25\%$

Clearly company D has maximum profit.

**73. Option (3) is correct.**



As per the given VW ∥ TU

and $\frac{VW}{TU} = \frac{2}{7}$

∵    VW ∥ TU

$\Rightarrow \Delta SVW \parallel \Delta STU$

∴ $\frac{ar(\Delta SVW)}{ar(\Delta STU)} = \left(\frac{VW}{TU}\right)^2 = \left(\frac{2}{7}\right)^2 = \frac{4}{49}$

$\Rightarrow \frac{ar(VWUT)}{ar(\Delta STU)} = \frac{49 - 4}{49} = \frac{45}{49} = 45:49$

**74. Option (3) is correct.**

Speed of boat in still water = 9 km/h

Let speed of stream = x km/h and boat travel a distance y km up-down in river.

According to question

$$2 \times \frac{y}{x + 9} = \frac{y}{9 - x}$$

$$\Rightarrow \quad 18 - 2x = x + 9$$
$$\Rightarrow \quad 3x = 9$$
$$\Rightarrow \quad x = 3$$

∴ Speed of stream = 3 km/h

**75. Option (3) is correct.**

Total production = 12960

Annual production of maize = $\frac{95}{360} \times 12960 = 3420$ tonnes.

**76. Option (3) is correct.**

| Country | Borrowed Features of Indian Constitution |
|---------|------------------------------------------|
| Japan | Procedure established by Law |
| Ireland | 1. Directive Principles of State Policy<br>2. Nomination of members to Rajya Sabha<br>3. Method of election of the president |
| Canada | 1. Federation with a strong Centre<br>2. Vesting of residuary powers in the Centre<br>3. Appointment of state governors by the Centre<br>4. Advisory jurisdiction of the Supreme Court |
| South Africa | 1. Procedure for amendment in the Indian Constitution<br>2. Election of members of Rajya Sabha |

**77. Option (4) is correct.**

The measurement of the money supply is always determined at a specific moment in time. It represents the cumulative sum of all forms of money held by the general public within a country at a particular instance. This encompasses both physical currency in the possession of the public and the funds deposited in commercial banks as demand deposits.

**78. Option (4) is correct.**

Gugga Naumi festival is celebrated in Haryana. It falls in the lunar month of Bhadon, which is roughly between August - September. The festival honours Gugga Ji, a folk deity who had powers to treat snake poison and its effects. On this day, fairs are held across the regions. This festival is also celebrated in Punjab, Rajasthan, and Himachal Pradesh.

**79. Option (1) is correct.**

'Dressage' is an equestrian sport and art that involves training horses and riders to perform a series of precise and highly controlled movements. It is often referred to as 'horse ballet' and represents the highest expression of horse training, requiring both horse and rider to rely on memory. 'Equestrian' sports encompass activities that prominently feature horses and typically involve riding."

**80. Option (4) is correct.**

Shovana Narayan is a renowned Kathak dancer trained under Birju Maharaj. She is a career officer with Indian Audit and Accounts Service. In 1992, she was awarded Padma Shri.

Padma Shri is the fourth highest civilian award in India following Bharat Ratna, Padma Vibhushan, and Padma Bhushan. The award is conferred in recognition of 'distinguished contributions in various spheres of activity including the arts, education, industry, literature, science, acting, medicine, social service and public affairs.'

**81. Option (1) is correct.**

Indore topped the Swachh Vayu Survekshan 2023, followed by Agra and Thane, in the first category of million plus population. Conversely, the lowest-performing cities in this category were Madurai, Howrah, and Jamshedpur.

The Swachh Vayu Survekshan (SVS) is an initiative of the Ministry of Environment, Forest and Climate Change (MoEFCC) to rank cities on the basis of air quality and implementation of activities approved under the National Clean Air Programme (NCAP). This assessment covers 131 non-attainment cities.

These 131 cities are divided into three groups based on their population. Cities are required to conduct self-assessments using the framework provided on the PRANA online portal, and this assessment is carried out annually."

**82. Option (3) is correct.**

| Books | Author/Editor |
|-------|---------------|
| G20 @ 2023: The Roadmap to Indian Presidency | V. Srinivas |
| India & the G20: Legacy & Prospects for Multilateralism amidst a Polycrisis | Patrick Bond and Sonal Raghuvanshi |
| 20 Years of G20: From Global Cooperation to Building Consensus | Rajat Kathuria and Prateek Kukreja |

**83. Option (4) is correct.**

The JS Verma Committee was established in 1998 by the government, under the leadership of Atal Bihari Vajpayee, with the mandate to operationalize the suggestions for teaching fundamental duties to the citizens of the country. The fundamental duties of Indian citizens are outlined in Part IV-A of the Indian Constitution under Article 51A. Initially, there were ten fundamental duties, but their number was increased to eleven following the 86th Constitutional Amendment Act.

The LP Singh Committee was appointed in 1978 and provided recommendations to improve the functioning of the Central Bureau of Investigation (CBI).

The Abhijit Sen Committee, formed in 1997, led the Commission on Agricultural Costs and Prices (CACP), which is responsible for determining the Minimum Support Price (MSP) for agricultural produce. Abhijit Sen also chaired the High-Level Committee on Long-Term Grain Policy.

The Paul Appleby Committee, established in 1953, was tasked with studying Public Administration in India. Paul Appleby played a key role in the establishment of the Indian Institute of Public Administration in India."

**84. Option (3) is correct.**

Cochin International Airport (CIA) is the first fully solar powered airport in the world. Solar energy meets all of its electrical needs. In terms of traffic, it is the largest airport in Kerala and the seventh largest in India. The first solar photovoltaic power station plant was placed on the Arrival Terminal Block's rooftop in 2013. It was awarded with the Champions of Earth award 2018, the United Nation's highest environmental honour.

**85. Option (2) is correct.**

The African Union has become a permanent member of the G-20 group to make it G-21. It is the first major expansion of the group since 1999. The African Union (AU) consists of 55 member countries and was represented by AU President Azali Assoumani, who also serves as the President of Comoros.

The 2023 G20 summit was held in New Delhi from 9th-10th September 2023 under the Presidency of India. The summit's theme was 'Vasudhaiva Kutumbakam,' which translates to 'One Earth, One Family, and We Share One Future.'"

**86. Option (3) is correct.**

The Vernacular Press Act was passed in the year 1878 with the aim to limit the freedom of Indian press. This act was proposed by Lytton, the then viceroy of India. This act intended to provide a better control of the vernacular press. It intended to suppress, punish and repress 'seditious writing' in 'publications in oriental languages.' It is also known as 'The Gagging act.' Under the provisions of this act, there was discrimination between English and vernacular press and there was no right to appeal with the vernacular press. This act was repealed during the tenure of Viceroy Lord Ripon.

**87. Option (3) is correct.**

Asgari Bai was a famous Indian Dhrupad singer. Dhrupad is a genre of Hindustani classical music and is the oldest known style of major vocal styles associated with Hindustani classical music. In the past, Dhrupad has been used as a meditative tool for attaining self realization.

**88. Option (3) is correct.**

GNP at MP minus net factor income from abroad results in GDP at MP. GNP, or Gross National Product, represents the total value of goods and services owned by the citizens of a country. GNP is not constrained by geographical boundaries; it encompasses economic activity related to a country's citizens regardless of where it occurs.

Net Factor Income from Abroad (NFIA) signifies the difference between income earned by foreigners in India and income earned by Indians in foreign countries.

MP, or Marginal Product, denotes the change in output observed with a per-unit change in an input, assuming all other factors remain constant.

GDP, or Gross Domestic Product, is a monetary measure of all the final goods and services sold within a country's geographical boundaries over a specific time period. It includes only those final goods for which consumers have made payments, and the goods have been sold

**89. Option (1) is correct.**

NNP stands for Net National Product at Factor Cost. It is the net value of all the goods and services produced by the citizens of a country and includes all the incomes earned by the citizens whether living in India or abroad. National income is also known as Net National Product at Factor Cost. The 'Per Capita Income (PCI)' of the country is obtained by dividing NNP by the total population of the country.

**90. Option (2) is correct.**

If uncertainty in the measurement of position and momentum are equal then uncertainty in the measurement of velocity is equal to $1/2m \sqrt{h/\pi}$.

**91. Option (2) is correct.**

The book 'Rajatarangini' was written by the Kashmiri historian Kalhana in the 12th century CE. The title of the book, which means 'The River of Kings,' indicates its content as a historical chronicle of the kings of Kashmir. It was composed in Sanskrit and comprises 7826 verses, organized into eight books known as 'tarangas' or 'waves.'

**92. Option (4) is correct.**

Chhau dance is a popular semi classical Indian dance form. There are three styles of Chhau- Purulia Chhau of West Bengal, Seraikella Chhau of Jharkhand, and Mayurbhanj Chhau of Odisha. These dances are performed during the regional festivals of the respective states. These dancers depict stories of Hindu epics such as Ramayana and Mahabharata, along with folklore and local legends. It was inscribed as an Intangible Cultural Heritage of Humanity by UNESCO in 2010.

**93. Option (3) is correct.**

The Milam Glacier serves as the source of the Gori Ganga. Located in the Kumaon Himalayas of Uttarakhand, it flows through the Milam Valley before eventually joining the Kali River.

The Ganga River, a trans-boundary river, flows through both Bangladesh and India. It stretches over 2,525 kilometers in length and originates from the Gangotri Glacier in the Western Himalayas. Initially known as the Bhagirathi River at its source, it later meets the Alaknanda River at Devprayag in Uttarakhand, forming the sacred Ganga River.

The Sutlej River courses through Himachal Pradesh and Punjab in India, also bearing the name Satadru. It is associated with the Bhakra Dam and stands as the longest of the five rivers that traverse Punjab. Furthermore, it serves as the easternmost tributary of the Indus River.

The Yamuna River, the longest tributary of the Ganges River in India, originates from the Yamunotri Glacier in Uttarakhand. It flows through several states, including Uttarakhand, Himachal Pradesh, Delhi, Uttar Pradesh, and Haryana, before merging with the Ganges at the Triveni Sangam point in Allahabad.

The Sangam is renowned for hosting the Kumbh Mela every 12 years.

**94. Option (2) is correct.**

Foreign competition often encourages domestic companies to improve their efficiency and quality to remain competitive in the global marketplace. This incentive to produce efficiently can lead to cost savings, innovation, and increased competitiveness.

**95. Option (4) is correct.**

Mitochondria has the ability to make copies of themselves, known as self-duplicating units. They possess the genetic material and DNA required for the duplication. Mitochondria are also known as the powerhouse of the cell because they are the site of cellular respiration, during which energy in the form of ATP (Adenosine Triphosphate) is produced and released. This energy is required to conduct different cellular and chemical activities in the cell.

**96. Option (3) is correct.**

| List I | List II |
|---|---|
| Service Tax | Tax revenue |
| Interests Receipts | Non- tax revenue |
| Sale of Share of PSUs | Capital receipt |
| Salaries and Pension | Revenue expenditure |

**97. Option (2) is correct.**

Alkenes are a class of organic compounds characterized by the presence of at least one carbon-carbon double bond (-C=C-). This double bond is a key feature of alkenes and distinguishes them from other hydrocarbons like alkanes, which have only single bonds, and alkynes, which have at least one carbon-carbon triple bond. So, in alkenes, carbon atoms are connected by double bonds.

**98. Option (1) is correct.**

| Name of the Company | CFO | CEO | Headquarters |
|---|---|---|---|
| Tesla | Vaibhav Taneja | Elon Musk | Austin, Texas, United States |
| Meta | Susan Li | Mark Zuckerberg | California, US |
| Microsoft | Amy Hood | Satya Nadella | Washington, US |
| Alphabet | Ruth Porat | Sundar Pichai | California, US |

**99. Option (3) is correct.**

The hindi version of the constitution of India was written by Vasant Krishan Vaidya. Originally, the constitution was written in English by Prem Bihari Narain Raizada. The constitution of India was adopted by the Constituent Assembly on 26th November, 1949 and came into force on 26th January, 1950. The constituent assembly was responsible for drafting the constitution and it took 2 years, 11 months and 18 days to draft it. Dr. BR Ambedkar was the chairman of the drafting committee of constitution of India and Dr Rajendra Prasad was the President of the assembly.

**100. Option (3) is correct.**

Isonephs refer to lines drawn on a map connecting points with the same amount of cloud cover.

Isohels are the lines on a map that connect points having the same duration of sunshine.

Isocheim is a line on a map connecting points having the same average temperature in winter. Isochalaz is a line on map with constant frequency of hail storms.

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