Q1. Select the most appropriate option that can substitute the highlighted segment in the given sentence.
Sheela tried **for argue with him** though she knew that it was of no use.
(a) To argue with him
(b) Of argue with him
(c) In argue with him
(d) On argue with him

Q2. Select the most appropriate idiom for the given situation.
Don't annoy or irritate raghav, otherwise he will oppose our proposal in the meeting.
(a) Pass the buck
(b) Pour oil on troubled water
(c) Rub in the wrong way
(d) Loose the ground

Q3. Select the antonym of the word repel to fill in the blank.
Her bright blue eyes _____ everyone in the party.
(a) Disgust
(b) Vacillate
(c) Attract
(d) Amenable

Q4. Select the most appropriate antonym of the given word.
Ludicrous
(a) Ridiculous
(b) Insane
(c) Wise
(d) Pathetic

Q5. Select the most appropriate option that expresses the given sentence in active voice.
The car was manufactured by the company in a factory overseas.
(a) The factory overseas was used by the company to manufacture the car.
(b) The company manufactured the car in a factory overseas.
(c) The car was being manufactured by the company in a factory overseas.
(d) The car was manufactured in a factory overseas by the company.

Q6. Select the most appropriate idiom for the given statement.
Doing things in a hurry does not give fruitful results.
(a) Nothing succeeds like success.
(b) Still waters run deep.
(c) Haste is waste.
(d) Wisdom is too high for a fool.

Q7. Select the option that expresses the given sentence in passive voice.

The garment business has made archie rich.

(a) Archie has been made rich by the garment business.

(b) Archie have been made rich by the garment business.

(c) Archie had been made rich by the garment business.

(d) Archie is made rich by the garment business.

Q8. Select the most appropriate antonym of the word given in brackets to fill in the blank.

The _____ (chill) of the sun on his face was a welcome respite from the chilly morning air.

(a) Glow

(b) Blush

(c) Warmth

(d) Brightness

Q9. Select the incorrectly spelt word.

(a) Infer

(b) Neutral

(c) Apprehensive

(d) Maintanence

Q10. Parts of the following sentence have been given as options. One of them may contain an error. Select the option that contains the error. If you don't find any error, mark 'no error' as your answer.

By virtue off the power given to the leader, the followers accepted his decision.

(a) No error

(b) By virtue off

(c) The power given to the leader

(d) The followers accepted his decision

Q11. Select the most appropriate synonym of the highlighted word.

Education gives people the knowledge and skills they need to stay healthy, get jobs and foster **tolerance**.

(a) Entrench

(b) Distrust

(c) Lethargy

(d) Endurance

Q12. Select the most appropriate antonym of the highlighted word.

The doctor reassured Raman that the lump was **benign**, which brought immense relief to both him and his family.

(a) Harsh

(b) Rugged

(c) Malignant

(d) Healthy

Q13. Parts of a sentence are given below in jumbled order. Arrange the parts in the correct order to form a meaningful sentence.
A. Disrupted, posing major threats to progress
B. Global health systems have been
C. Health services have been
D. Overwhelmed and many essential
E. In fighting other deadly diseases
(a) BECDA
(b) EADCB
(c) BDCAE
(d) DEABC

Q14. Select the most appropriate option that can substitute the highlighted segment in the following sentence.
As the orchestra began to play, the audience was transported to another world,
enthralled by the psychological effects of the music and the skill of the musicians,
who performed each note with precision and passion.
(a) Influenced by the overall scenario
(b) Impacted by feelings
(c) Swept away by the emotive power
(d) Taken in by the effect on emotions

Q15. Select the option that can be used as a one-word substitute for the given group of words.
A person who is against the use of violence and war to settle disputes
(a) Fatalist
(b) Hedonist
(c) Pacifist
(d) Misogynist

Q16. Identity the correct spelling of the highlighted word.
Alcohol causes **intocsication**.
(a) Intoxication
(b) Intaxicasion
(c) Entoxkation
(d) Intakcication

Q17. Parts of a sentence are given below in jumbled order. Arrange the parts in the correct order to form a meaningful sentence.
P. So they design the advertisement of products in such a way
Q. The main target consumers of food companies
R. That consumers are stimulated to buy them repeatedly
S. Are children and youth of the country
(a) QRSP
(b) RPQS
(c) PRQS
(d) QSPR

Q18. Parts of the following sentence have been given as options. Select the option that contains an error.
The team of scientists were conducting experiments to test their hypothesis.
(a) Experiments to test
(b) The team of scientists
(c) Their hypothesis
(d) Were conducting

Q19. Parts of a sentence are given below in jumbled order. Arrange the parts in the correct order to form a meaningful sentence.
P. Due to the lofty hilly terrain, curves and cliffs
Q. The route to badrinath
R. Is one of the most arduous one
S. Amidst the most scenically beautiful place on the earth
(a) QRPS
(b) QSPR
(c) PRSQ
(d) PQRS

Q20. Select the most appropriate antonym of the given word.
Fixation
(a) Formulation
(b) Indifference
(c) Inclination
(d) Reformation

Directions (21-25):In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.
The solar system is made up of the sun, planets, moons, asteroids, and comets that 1._____ around it. Its mysteries and wonders have captured the imagination of people from all walks of life, and it continues to be an area of active research and exploration.the sun is at the centre of the solar system and is the largest object in it. The eight planets in the solar system, 2._____ earth, orbit around the sun in nearly circular paths. While the sun is at the centre of the solar system and dominates its gravitational pull, each planet has its own unique set of characteristics that makes it a fascinating object to study. Each planet in the solar system has unique characteristics and features. 3._____ planets, such as mercury and venus, are small and rocky, while others, like jupiter and saturn, are much larger and made up mostly of gas. The outer planets, uranus and neptune, are 4._____ as 'ice giants' because they contain more water, ammonia, and methane than the gas giants. In addition to the planets, the solar system also has numerous moons, asteroids, and comets. These objects provide important 5._____ about the formation and evolution of the solar system.

Q21. Select the most appropriate option to fill in blank 1.
(a) Form
(b) Orbit
(c) Stick
(d) Fly

Q22. Select the most appropriate option to fill in blank 2.
(a) Excluding
(b) Diluting
(c) Dissolving
(d) Including

Q23. Select the most appropriate option to fill in blank 3.
(a) Few
(b) Some
(c) Many
(d) A lot

Q24. Select the most appropriate option to fill in blank 4.
(a) Classified
(b) Magnified
(c) Restricted
(d) Indulged

Q25. Select the most appropriate option to fill in blank 5.
(a) Sets
(b) Derivations
(c) Clues
(d) Biases

Q26. Each of the letters in the word DONATE are arranged in alphabetical order How many letters are there in the English alphabetical series between the letter which is third from the left and the one which is second from the right?
(a) Seven
(b) Eight
(c) Six
(d) Nine

Q27. Identify the figure given in the options that when put in place of the question mark (?) will logically complete the series.
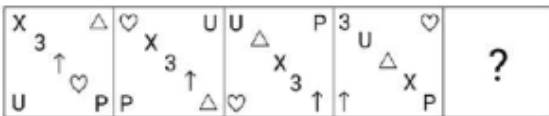
(a)

(b)

(c)

(d)

Q28. In a certain code language,
G+T means 'G is the father of T',
G-T means 'G is the sister of T',
G × T means 'G is the brother of T',
G ÷T means G is the daughter of T'.
Based on the above, If P ÷ Q – L + N × M, the how is N related to Q? related to Q?
(a) Son
(b) Brother
(c) Father
(d) Brother's son

Q29. Which term from among the given options can replace the question mark (?) in the following series to make it logically complete?
AN 37, ? EH 50, GE 58, IB 67
(a) DL 42
(b) DI 45
(c) CK 43
(d) CL 44

Q30. Which of the following interchanges in two mathematical operators will balance the equation given below?
85 – 28 × 3 + 114 ÷ 6 = 150
(a) + and ×
(b) - and ÷
(c) ÷ and ×
(d) + and -

Q31. 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 ca the whole numbers, without breaking down the mumbers into its constituent digits. Eg. 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.)
9:720
5:134
7:334
11 1322
(a) 7:334
(b) 5:134
(c) 9:720
(d) 11: 1322

Q32. EFHD is related to LMOK in a certain way based on the English alphabetical order, in the same way, OPRN is related to VWYU, To which of the following is JKMI related, following the same logic?
(a) QSPT
(b) TUWS
(c) QRTP
(d) RSTP

**Q33.** If 13 December 1969 is Saturday, then what will be the day of the week on 9 July 1978?
(a) Saturday
(b) Friday
(c) Sunday
(d) Monday

Q34. Select the letter cluster from among the given options that can replace the question mark (?) in the following series.
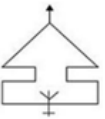AKRW, DNUZ GQXC, ?
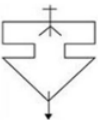(a) CZWR
(b) ISZE
(c) TJAA
(d) JTAF

Q35. Select the correct mirror image of the given figure when the mirror is placed at MN as shown.
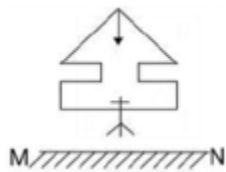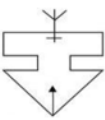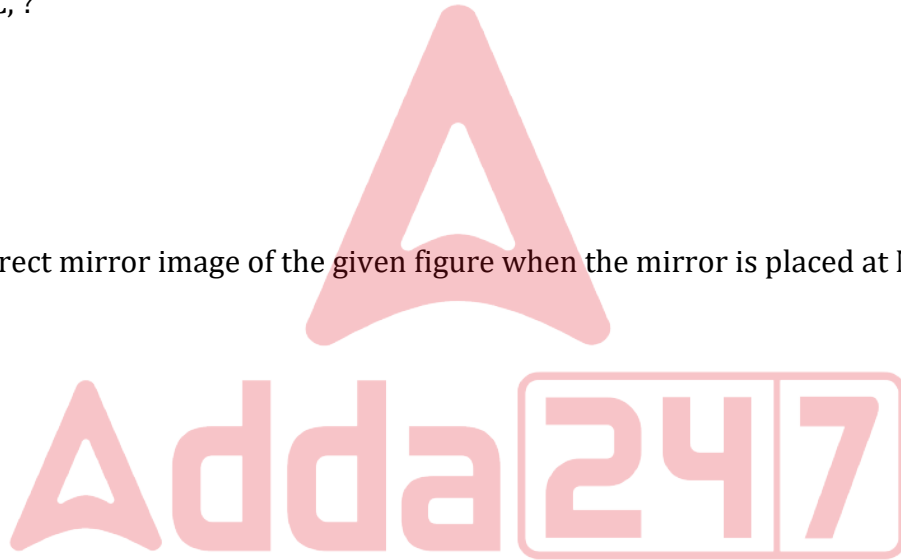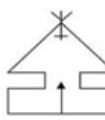

(a)

(b)

(c)

(d)

Q36. If 'A stands for '÷', B stands for '×', C stands for '+' and 'D' stands for ' – 'what will come in place of the question mark (?) in the following equation?

42 A 7 B 11 C 57 D 10 = ?

(a) 109
(b) 113
(c) 118
(d) 111

Q37. In a certain code innguage, REPLACE is coded as 67 and 'PETRIFY" is coded as "106" How will 'CRACKED be coded in that language"

(a) 52
(b) 50
(c) 47
(d) 45

Q38. Which number will replace the question mark (?) to complete the given series?

15, 16, 20, 29, 45, ?

(a) 70
(b) 65
(c) 75
(d) 60

Q39. in the foilowing number-pairs, the second number is obtained by applying certain mathematical operations to the first mumber: Select the set in which the numbers are related in the same wiry as are the numbers of the following sets

(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 ete. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(45,80)

(37,64)

(a) (41,73)
(b) (52,114)
(c) (65,120)
(d) (39,69)

Q40. Which number from among the given options can replace the question mark (7) in the following series?

6, 12, ?, 32, 36, 72

(a) 24
(b) 21
(c) 16
(d) 18

Q41. Three of the following number pairs are alike in some manner and one is different. Select the odd mumber pair.

(NOTE: The second number in the given aumber pairs is formed by performing a certain operation on the first number The same operation is followed in all the number pairs except one. Find that odd number pair.)

(a) 297:33
(b) 189:21
(c) 100:12
(d) 63:7

Q42. Select the term from among the given options that can replace the question mark (?) in the following series based on the English alphabetical order.

BRG, DOI, FLK, HIM, ?

(a) IEM
(b) JFO
(c) JGN
(d) IGN

Q43. Read the given statements and conclusions carefully Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

All blue are dogs. No dog is silver. All pink are dogs.

Conclusions:

(I) Some pink are silver.
(II) No blue is pink is a possibility
(III) Some blue are silver
(a) Both conclusions II and III follow
(b) Only conclusion III follows
(c) Only conclusion II follows
(d) Both conclusions I and II follow

Q44. In a certain code language,

A+ B means 'A is the mother of B'

A-B means 'A is the brother of B'

A x B means 'A is the wife of B'

A ÷ B means 'A is the father of B'

Based on the above, how is S related to U if 'Q × R – S ÷ T + U'?

(a) Daughter
(b) Brother's wife
(c) Mother's father
(d) Mother's husband

Q45. Based on the alphabetical order, three of the following four letter clusters are alike in a certain way and thus form a group. Which of the following does NOT belong to that group?
(a) PSR
(b) TUX
(c) MPO
(d) YBA

Q46. Select the set in which the numbers are related in the same way as are the numbers of the following sets.
(NOTE: Operations should be performed on whole numbers, without breaking down the numbers into their 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.)
(22, 44, 8)
(32, 48, 6)
(a) (36, 64, 7)
(b) (42, 63, 6)
(c) (56, 128, 9)
(d) (48, 98, 8)

Q47. DGEC is related to KNLJ in a certain way based on the English alphabetical order. In the same way, NQOM is related to UXVT. To which of the following is ILJH related to, following the same logic?
(a) ORPN
(b) PSQO
(c) QTRP
(d) PTRQ

Q48. Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.

M
|
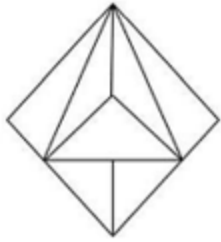|
G v 3 p a 2
|
|
N

(a) Ƨa q3 vꓱ
(b) Ƨ6qƐvꓱ
(c) Ƨ 6p Ɛvꓱ
(d) ƧɐdƐʌꓱ
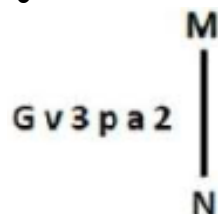
Q49. In a certain code language, 'LEASE' is coded as '14936' and 'PLEASE' is coded as '941360'. What is the code for 'P' in the given code language?
(a) 4
(b) 9
(c) 1
(d) 0

Q50. How many triangles are there in the given figure?

(a) 8

(b) 10

(c) 9

(d) 7

Q51. Which of the following expressions is equal to the expression $\frac{x^2-3x+2}{x^2-4}$?

(a) $\frac{x+1}{x-2}$

(b) $\frac{x-1}{x+2}$

(c) $\frac{x+1}{x+2}$

(d) $\frac{x-1}{x-2}$

Q52. What is the fourth proportional of $3\sqrt{5}$, $5\sqrt{8}$ and $3\sqrt{10}$?

(a) $10\sqrt{5}$

(b) $40\sqrt{2}$

(c) 30

(d) 20

Q53. If $\tan\theta = \frac{8}{15}$, then the value of $\sqrt{\frac{1-\sin\theta}{1+\sin\theta}}$ is:

(a) 1/5

(b) 3/5

(c) 2/5

(d) 4/5

Q54. Study the given table and answer the question that follows.
The table represents the mathematics marks of five students.

Name	Ajay	Pronoy	Mahendra	Jharna	Dipti
Marks	85	72	70	84	94

What is the average marks?

(a) 77

(b) 80

(c) 81

(d) 78

Q55. A man buys an article for 80 and marks it at 125. He then allows a discount of 40%. What is his percentage of loss or gain?
(a) 12% gain
(b) 10% gain
(c) 6.25% loss
(d) 12% loss

Q56. Subhas, a 3.15 m tall tee, and an 11.25 m tall building are positioned such that their feet on the ground are collinear and the tree is located between Subhas and the building. The tree is located at a distance of 7.5 m from Subhas and at a distance of 45 m from the building. Further, the eyes of Subhas, the top of the tree, and the top of the building fall in one line. Find the height (in m) from the ground at which Subhas' eyes are situated.
(a) 1.75
(b) 1.8
(c) 1.6
(d) 1.5

Q57. The lengths of two parallel chords of a circle are 10 cm and 24 cm lie on the opposite sides of the centre. If the smaller chord is 12 cm from the centre, what is the distance (in cm) between the two chords?
(a) 13
(b) 5
(c) 17
(d) 12

Q58. If θ is an acute angle and cos θ = 39/89 what is the value of sinθ?
(a) 49/89
(b) 79/89
(c) 80/89
(d) 50/59

Q59. Study the given pie chart and answer the question that follows.
The pie chart shows the distribution (in terms of central angles) of the number of professors in six different departments of a college.

Total number of professors = 600

Zoology, 50.4° Botany, 57.6° Statistics, 43.2° Economic, 86.4° Mathematics, 72° English, 50.4°

■ Botany ■ Economic ■ English ■ Mathematics ■ Statistics ■ Zoology
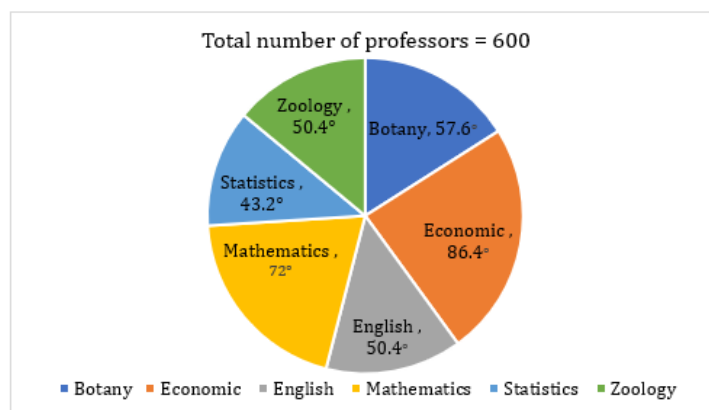
The number of professors in Economics and Mathematics is approximately (correct up to two decimal places) what per cent more than the number of professors in English and Statistics?
(a) 69.23%
(b) 59.09%
(c) 40.91%
(d) 70.91%

Q60. The marked price of a sunglass is 1,350. It is sold at 1,188 after allowing a certain discount. Find the rate of discount.
(a) 14%
(b) 12%
(c) 16%
(d) 10%

Q61. If $a + \frac{1}{a} = 5$, then determine the value of $a^3 + \frac{1}{a^3}$.
(a) 90
(b) 125
(c) 105
(d) 110

Q62. If tan θ. tan2θ = 1, then the value of cot 5θ is:
(a) -1
(b) 1
(c) -√3
(d) √3

Q63. A man sells rice at 8% profit and uses weight 25% less than the actual measure. What is his percentage profit?
(a) 44%
(b) 41%
(c) 23%
(d) 36%

Q64. The simple interest (in Rs, rounded off to the tens place) on Rs. 12,300 from 22 May 1993 to 2 August 1993 (both days are included) at the rate of 12% per annum is:
(a) 300
(b) 200
(c) 250
(d) 350

Q65. Two points P and Q are 3 cm apart. These two points lie on the circumference of a circle having radius 1.7 cm. What is the distance (in cm) of the line segment PQ from the centre of the circle?
(a) 0.8
(b) 1.0
(c) 0.4
(d) 0.6

Q66. Two people A and B started running from the same point on a circular track of length 400 m in opposite directions with initial speeds of 10 m/s and 40 m/s, respectivel: Whenever they meet. A's speed doubles and B's speed halves. After what time from the start will they meet for the third time?
(a) 30 sec
(b) 24 sec
(c) 26 sec
(d) 28 sec

Q67. Two years ago, the population of the city was 5,00,000. If the annual birth rate and the annual death rate are 6% and 3%. respectively, what is the present population of the city?
(a) 536440
(b) 580440
(c) 530450
(d) 540550

Q68. Find the value of the given expression.
$\left(2\frac{1}{2} \div 1\frac{7}{8}\right) \div \left(9\frac{3}{8} \div 11\frac{2}{3} \ of\frac{1}{8}\right)$
(a) 33/135
(b) 11/135
(c) 28/135
(d) 57/135

Q69. Find the average of prime numbers lying between 69 and 92.
(a) 76
(b) 77
(c) 78
(d) 79

Q70. In ΔABC, P and Q are the middle points of the sides AB and AC, respectively. R is point on the segment PQ such that PR: RQ = 1:3. If PR = 6cm, then the value of BC :
(a) 46 cm
(b) 48 cm
(c) 44 cm
(d) 50 cm

Q71. The diameter of a sphere is 14 cm, then the volume of this sphere is (use $\pi = \frac{22}{7}$) :
(a) $1437\frac{1}{3} cm^3$
(b) $1683\frac{1}{3} cm^3$
(c) $1521\frac{2}{3} cm^3$
(d) $2125\frac{1}{3} cm^3$

Q72. If $x = (7 + 3\sqrt{5})$, then find the value of $x^2 + \frac{1}{x^2}$.

(a) $\frac{580+315\sqrt{5}}{8}$

(b) $\frac{799+328\sqrt{5}}{8}$

(c) $\frac{799+315\sqrt{5}}{12}$

(d) $\frac{799+315\sqrt{5}}{8}$

Q73. A person spent 12% of his salary on groceries, 8% on medicines, 20% on children's school fee and he had a balance of Rs. 36,000. Find his salary.
(a) Rs. 56,000
(b) Rs. 54,000
(c) Rs. 60,000
(d) Rs. 66,000

Q74. Study the given bar graph and answer the question that follows. The production of cement (in lakh tonnes) by a company during the last six years is presented by the bar graph.
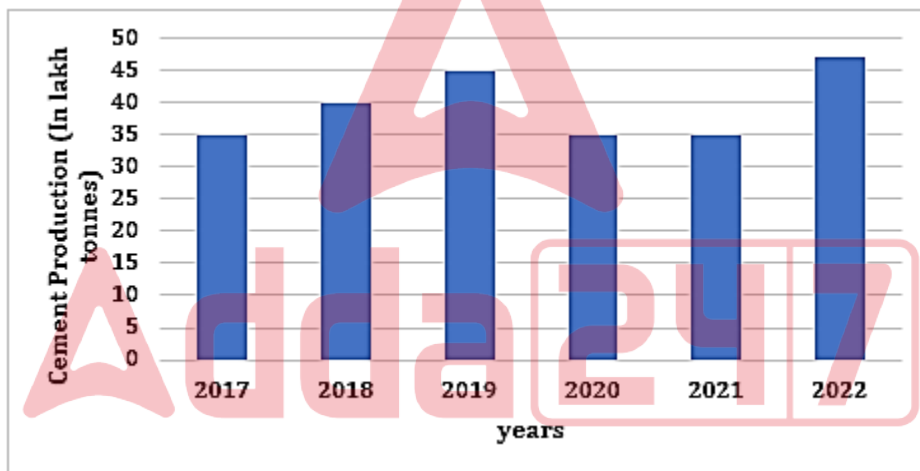
What is the average cement production (in lakh tonnes) during the given six years?
(a) 40.0
(b) 39.0
(c) 39.5
(d) 40.5

Q75. Three people A, B and C worked together and finished a work in 9 days. If A alone can finish the same work in 18 days, B alone in 30 days, then the number of days C alone will take is:
(a) 36 days
(b) 45 days
(c) 40 days
(d) 54 days

Q76. In 1851, who founded the science of hydrodynamics with his law of viscosity describing the velocity of a small sphere through a viscous fluid?
(a) Daniel Bernoulli
(b) George Gabriel Stokes
(c) Evangelista Torricelli
(d) Heinrich Gustav Magnus

Q77. The rate at which the Reserve Bank of India lends to other commercial banks for short term has been reduced. What is this rate called?
(a) Cash Reserve Rate
(b) Reverse Repo Rate
(c) Bank Rate
(d) Repo Rate

Q78. What was the percentage of India's population that belonged to the Muslim religion in 2011?
(a) 14.2%
(b) 11.9%
(c) 16.4%
(d) 18.5%

Q79. Kerala is famous for which of the following festivals?
(a) Pongal
(b) Ugadi
(c) Bihu
(d) Onam

Q80. Which state's police force launched the Trinetra App 2.0?
(a) Maharashtra
(b) Uttar Pradesh
(c) Karnataka
(d) Tamil Nadu

Q81. Which of these statements is true?
(a) Under competitive asset market conditions, the price of a bond must always be equal to its present value in equilibrium.
(b) Under competitive asser market conditions, the price of a bond must be less than its present value to benefit the seller
(c) Under competitive asset market conditions, the price of a bond must exceed its present value to benefit the buyer.
(d) Under competitive asset market conditions, the present value must exceed the price of a boud to benefit the seller.

Q82. Which of these is NOT one of the negative effects of the green revolution?
(a) Primarily medium and large farmers were able to benefit from the new technology of the green revolution.
(b) The green revolution benefited farmers who had access to land, capital, technology and know-how.
(c) The green revolution led to the displacement of tenant cultivators in many cases.
(d) The green revolution caused increased migration from urban to rural areas.

Q83. Which of the following is included in the M1 measure of money supply?
A) Currency with Public
B) Time Deposit with Post Office
C) Demand Deposits with Commercial Banks/RBI of Public Financial Institutions
(a) Both B and C
(b) Both A and C
(c) Only B
(d) Only A

Q84. Indian Academy of Sciences, founded in 1934 by CV Raman, is situated in _____.
(a) Mumbai
(b) Hyderabad
(c) Bangalore
(d) New Delhi

Q85. Who amongst the following raised the banner of revolt against Nasiruddin Khusrau?
(a) Nasiruddin Tughlaq
(b) Muhammad bin Tughlaq
(c) Feroz Shah Tughlaq
(d) Ghiyasuddin Tughlaq

Q86. When milk is converted into curd, which type of change is it?
(a) Reversible change
(b) Physical change
(c) Isothermal change
(d) Chemical change

Q87. Who has been selected for the prestigious 33rd Saraswati Samman for the year 2023?
(a) Prabha Varma
(b) Ayyappa Paniker
(c) K. Satchidanandan
(d) Sugathakumari

Q88. Which of the following physical divisions of India is densely populated?
(a) The North Indian Plains
(b) The islands
(c) The Himalayan Range
(d) The Thar Desert

Q89. Which of the following is a liberal principle of the Directive Principles of State Policy of the Indian Constitution?
(a) To secure right to work
(b) To secure uniform civil code
(c) To promote social welfare
(d) To promote equal justice

Q90. Which organization released the State of the Global Climate 2023 report?
(a) World Economic Forum
(b) World Health Organization
(c) World Meteorological Organization (WMO)
(d) International Monetary Fund

Q91. Which of the following is NOT a capital expenditure for the central government?
(a) Loan to state government
(b) Improvement of fixed assets
(c) Salaries and old-age pensions
(d) Construction of roads and bridges

Q92. Which of the following is a yellowish green to green coloured gemstone often found in mafic and ultramatic igneous rocks such as basalt, gabbro, dunite, diabase and peridotite?
(a) Bornite
(b) Olivine
(c) Tremolite
(d) Garnet

Q93. Which of the following is a public sector industry?
(a) BHEL
(b) Dabur Industry
(c) Bajaj Auto
(d) TISCO

Q94. Who was the author of the famous book 'The Economic History of India'?
(a) Dadabhai Naoroji
(b) PC Dutta
(c) RG Bhandarkar
(d) RC Dutt

Q95. Jagoi and Thabal Chongba are the famous dances of which Indian state?
(a) Uttar Pradesh
(b) Odisha
(c) Manipur
(d) Nagaland

Q96. The Joint Military Exercise "LAMITIYE-2024" is between the armies of:
(a) India and Seychelles
(b) India and Sri Lanka
(c) India and Bangladesh
(d) India and Nepal

Q97. In 1830, which American scientist created the world's most powerful electromagnet, the Albany magnet, which could lift up to 750 pounds of metal at a time?
(a) John Cockcroft
(b) William Gilbert
(c) Joseph Henry
(d) Edward Purcell

Q98. Who was the first American male athlete to win the Marathon gold medal in the Olympic Games?
(a) Abebe Bikila
(b) Thomas Hicks
(c) Frank Shorter
(d) John Hayes

Q99. Which of the following Articles about fundamental duties is related to the respect of the National Anthem?
(a) Article 51A (B)
(b) Article 51A (C)
(c) Article 51A (A)
(d) Article 51A (D)

Q100. Begum Akhtar is associated with which of the following fields?
(a) Writing
(b) Politics
(c) Painting
(d) Ghazal

Solutions

S1. Ans.(a)
Sol. The correct phrase is "to argue with him," which properly uses the infinitive form "to argue" necessary for this sentence structure.

S2. Ans.(c)
Sol. The idiom "**rub in the wrong way**" means to annoy or irritate someone, which matches the given situation where annoying Raghav could lead him to oppose the proposal.

S3. Ans.(c)
Sol. "**Repel**" means to drive or force back or away, so "attract" is the correct antonym as it means to draw toward.
Synonyms: repulse, deter.
Antonyms: attract, allure.
Meanings:
- **Disgust** - cause to feel revulsion or profound disapproval.
- **Vacillate** - alternate or waver between different opinions or actions.
- **Attract** - cause to come to a place or participate in a venture by offering something of interest or advantage.
- **Amenable** - open and responsive to suggestion; easily persuaded or controlled.

S4. Ans.(c)
Sol. "**Ludicrous**" means so foolish, unreasonable, or out of place as to be amusing; "wise" is its antonym.
Synonyms: ridiculous, absurd.
Antonyms: sensible, wise.
Meanings:
- **Ridiculous** - deserving or inviting derision or mockery; absurd.
- **Insane** - in a state of mind which prevents normal perception, behavior, or social interaction.
- **Wise** - having or showing experience, knowledge, and good judgment.
- **Pathetic** - arousing pity, especially through vulnerability or sadness.

S5. Ans.(b)
Sol. Active voice: in active voice the subject is the one doing the action.
Passive voice: in passive voice the subject is the recipient of the action.
To convert active voice into passive voice the object becomes the subject and the subject becomes the object.
For simple past tense as given in the question the structure for changing a sentence from active to passive and vice versa is:
(active voice) subject + v2+ object.
(passive voice) object+ was/were + v3+ by + subject.

S6. Ans.(c)
Sol. "**Haste is waste**" is the appropriate idiom indicating that doing things too quickly can lead to wasteful or undesirable outcomes, aligning with the idea that hurried actions do not yield good results.

S7. Ans.(a)
Sol. Active voice: in active voice the subject is the one doing the action.
Passive voice: in passive voice the subject is the recipient of the action.
To convert active voice into passive voice the object becomes the subject and the subject becomes the object.
In present perfect tense as given in the question the structure for changing a sentence from active to passive and vice versa is:
Subject + has/have+ v3+ object. (active voice)
Object+ has/have+ been+ v3+ by + subject. (passive voice)

S8. Ans.(c)
Sol. "**Chill**" refers to an unpleasant feeling of coldness, making "warmth" the appropriate antonym to describe the comforting heat of the sun.
Synonyms: coldness, coolness.
Antonyms: warmth, heat.
Meanings:
- **Glow** - a steady light without flames.
- **Blush** - develop a pink tinge in the face from embarrassment or shame.
- **Warmth** - the quality, state, or sensation of being warm; moderate heat.
- **Brightness** - the quality of being bright or sending out or reflecting light.

S9. Ans.(d)
Sol. "**Maintenance**" is the correct spelling for the word meaning the process of maintaining or being maintained, not "maintanence."
Meanings of all four options:
- **Infer** - deduce or conclude information from evidence and reasoning rather than explicit statements.
- **Neutral** - not helping or supporting either side in a conflict or disagreement.
- **Apprehensive** - anxious or fearful that something bad or unpleasant will happen.
- maintanence (should be **Maintenance**) - the process of maintaining or being maintained.

S10. Ans.(b)
Sol. The phrase "by virtue off" contains a spelling error. It should be "by virtue of," which means because of or thanks to.

S11. Ans.(d)
Sol. "**Foster**" means to encourage or promote the development of something, typically something regarded as good; "endurance" is the closest in meaning.
Synonyms: promote, encourage.
Antonyms: neglect, suppress.
Meanings:
- **Entrench** - establish (an attitude, habit, or belief) so firmly that change is very difficult or unlikely.
- **Distrust** - the feeling that someone or something cannot be relied upon.
- **Lethargy** - a lack of energy and enthusiasm.
- **Endurance** - the ability to endure an unpleasant or difficult process or situation without giving way.

S12. Ans.(c)
Sol. "**Benign**" means gentle and kindly, in the medical sense it refers to a condition that is not harmful in effect. "malignant," which means very virulent or infectious, is the correct antonym.
Synonyms: harmless, non-threatening; antonyms: malignant, harmful.
Meanings:
- **Harsh** - unpleasantly rough or jarring to the senses.
- **Rugged** - (of ground or terrain) having a broken, rocky, and uneven surface.
- **Malignant** - (of a disease) very virulent or infectious.
- **Healthy** - in good health.

S13. Ans.(c)
Sol. The correct order is BDCAE. "Global health systems have been" (B) logically precedes "overwhelmed and many essential" (D), followed by "health services have been" (C), which flows into "disrupted, posing major threats to progress" (A), concluding with "in fighting other deadly diseases" (E). This order creates a complete narrative about the impact on global health systems and their services.

S14. Ans.(c)
Sol. "Swept away by the emotive power" accurately describes the audience's experience of being deeply moved by the music and the musicians' performance, matching the original description's emotional impact.

S15. Ans.(c)
Sol. A "**pacifist**" is someone who believes in and actively opposes war and violence, fitting the description provided.
Meanings:
* **Fatalist** - a person who believes that all events are predetermined and therefore inevitable.
* **Hedonist** - a person who believes that the pursuit of pleasure is the most important thing in life.
* **Pacifist** - a person who believes that war and violence are unjustifiable.
* **Misogynist** - a person who dislikes, despises, or is strongly prejudiced against women.

S16. Ans.(a)
Sol. "Intoxication" is the state of being intoxicated or drunk, correctly spelled as "intoxication," not "intocsication."

S17. Ans.(d)
Sol. The correct order is QSPR. "The main target consumers of food companies" (Q) logically precedes "are children and youth of the country" (S), which specifies the demographic targeted. "So they design the advertisement of products in such a way" (P) follows, indicating the marketing strategy, and finally, "that consumers are stimulated to buy them repeatedly" (R) concludes the sequence, explaining the outcome of the advertising strategy.

S18. Ans.(d)
Sol. The error is in "were conducting," as the subject "the team of scientists" is considered a singular collective noun and thus requires the singular verb form "was" instead of "were." the corrected phrase would be "was conducting."

S19. Ans.(a)
Sol. The correct order is QRPS. "The route to Badrinath" (Q) naturally introduces the subject, followed by "is one of the most arduous one" (R), which describes the route. "Amidst the most scenically beautiful place on the earth" (S) provides additional scenic context, and finally, "Due to the lofty hilly terrain, curves and cliffs" (P) explains why the route is arduous. This order maintains logical and grammatical coherence.

S20. Ans.(b)
Sol. "**Fixation**" refers to an obsessive interest or feeling that may be difficult to give up. "indifference," which is a lack of interest or concern, serves as its antonym.
Synonyms: obsession, preoccupation.
Antonyms: indifference, disinterest.

Meanings:
- **Formulation** - the action of creating or preparing something methodically.
- **Indifference** - lack of interest, concern, or sympathy.
- **Inclination** - a person's natural tendency or urge to act or feel in a particular way.
- **Reformation** - the action or process of reforming an institution or practice.

S21. Ans.(b)
Sol. The correct word to fill blank 1 is "**orbit**," which refers to the path of celestial bodies as they move around a star. In the context of the solar system, planets, moons, asteroids, and comets orbit the sun.
Meanings:
- **Form** - to bring together parts to create something.
- **Orbit** - the curved path of a celestial object or spacecraft around a star, planet, or moon.
- **Stick** - to attach or adhere to a surface.
- **Fly** - to move through the air using wings.

S22. Ans.(d)
Sol. The best fit for blank 2 is "**including**," which indicates that earth is one of the planets that orbit the sun. The sentence discusses the planets in the solar system, specifically including earth in this context.
Meanings:
- **Excluding** - to leave out or not include.
- **Diluting** - to make thinner or weaker by adding water or another solvent.
- **Dissolving** - to mix a solid substance with a liquid until it becomes part of the liquid.
- **Including** - containing as part of the whole.

S23. Ans.(b)
Sol. "**Some**" is the most appropriate choice for blank 3, indicating that among the planets, there are specific ones, like mercury and venus, that share certain characteristics. This word provides a general reference without quantifying.
Meanings:
- **Few** - not many, but more than one.
- **Some** - an unspecified amount or number of.
- **Many** - a large number of.
- **A Lot** - a large amount or number of.

S24. Ans.(a)
Sol. The correct word for blank 4 is "**Classified**," referring to the categorization of uranus and neptune as 'ice giants' based on their compositions.
Meanings:
- **Classified** - arranged in classes or categories.
- **Magnified** - make something appear larger than it is, especially with a lens or microscope.
- **Restricted** - limited in extent, number, scope, or action.
- **Indulged** - allow oneself to enjoy the pleasure of.

S25. Ans.(c)
Sol. "Clues" is the most fitting option for blank 5, as these objects in the solar system (moons, asteroids, comets) provide evidence or hints about the solar system's formation and evolution.
Meanings:
- **Sets** - groups or collections of things that belong together or resemble one another.
- **Derivations** - the obtaining or developing of something from a source or origin.
- **Clues** - pieces of evidence or information used in the detection of a crime or solving of a mystery.
- **Biases** - inclinations or prejudices for or against one person or group, especially in a way considered to be unfair.

S26. Ans.(d)
Sol. DONATE
Alphabetical order – ADENOT
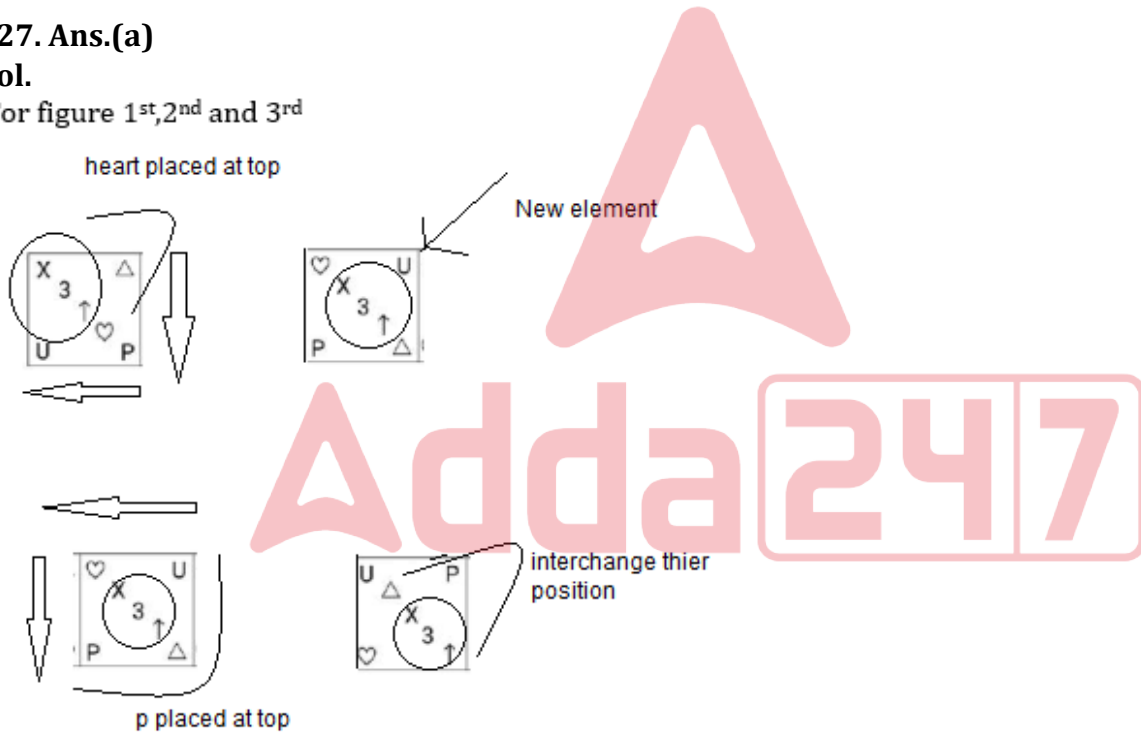Third from the left = E
Second from right = O
English alphabetical series (ABCD) letters between E and O = 15 – 5 -1 = 9

S27. Ans.(a)
Sol.

For figure 1st,2nd and 3rd

3rd figure to 4th figure is given accoring to 1st to 2nd
Similarly, 4th to 5th is accoring to 2nd to 3rd .
Option a is true.

S28. Ans.(d)
Sol.

N is brother's son of Q.

S29. Ans.(c)
Sol.

```
+2  -3
AN    37
          ⟩ +6
CK    43
          ⟩ +7
EH    50
          ⟩ +8
GE    58
          ⟩ +9
IB    67
```

S30. Ans.(d)
Sol. When interchanging + and -
85 – 28 × 3 + 114 ÷ 6 = 150
85 + 28 × 3 – 114 ÷ 6 = 150
85 + 84 – 19 = 150
169 – 19 – 150
150 = 150

S31. Ans.(b)
Sol.
Second number = cube of first number – first number
720 = 729 – 9
134 = 125 + 9
334 = 343 – 9
1322 = 1331 – 9
All have (-9) except 5: 134 so it is different from others.

S32. Ans.(c)
Sol. +7, +7, +7, +7 in all letters
JKMI = QRTP

S33. Ans.(c)
Sol.
13 dec 1969 to 31 dec 1969 = 18 days , odd day = 4
1970 to 1978 = (2 leap + 6 normal), odd days = (4+6= 10), 3 odd days
1 jan 1978 + 9 july 1978
Days = jan (31) + feb (28) + mar (31)+ apr (30) + may (31)+ jun (30) + jul (9) = 190 days
Odd days = $\frac{190}{7} = 1\ odd\ day$
Day = Saturday + (4 + 3 + 1) = Saturday + $\frac{8}{7}$ (final 1 odd day) = Sunday

S34. Ans.(d)
Sol. AKRW, DNUZ GQXC, ?
First letter + 3 (in each of the terms)
Second letter + 3 (")
Third letter + 3 (")
Fourth letter + 3 (")
G – (+3) = J
Similarly, Q – T, X – A and C – F
? = JTAF

S35. Ans.(c)
Sol. Option c is correct mirror image of fiven figure.

S36. Ans.(b)
Sol. 42 A 7 B 11 C 57 D 10 = ?
42 ÷ 7 × 11 + 57 – 10 = ?
66 + 57 – 10 = ?
66 + 47 = ?
113 =?

S37. Ans.(a)
Sol. Sum of place values of the letters + number of letters
REPLACE = (18 + 5 + 16+12 +1+3+5) + 7 = 67
PETRIFY = 99 + 7 = 106
CRACKED = 45 + 7 = 52

S38. Ans.(a)
Sol. 15, 16, 20, 29, 45, ?
+1, + 4, +9, +16, +25
? = 45 + 25 = 70

S39. Ans.(c)
Sol. First number × 2 – 10 = second number
45 × 2 – 10 = 80
37 × 2 – 10 = 64
65 × 2 – 10 = 120

S40. Ans.(c)
Sol. 6, 12, ?, 32, 36, 72
6 × 2 = 12
? = 12 + 4 = 16
16 × 2 = 32
32 + 4 = 36
36 × 2 = 72

S41. Ans.(c)
Sol. All first number completely divided by second numbers in 9 times except option c.
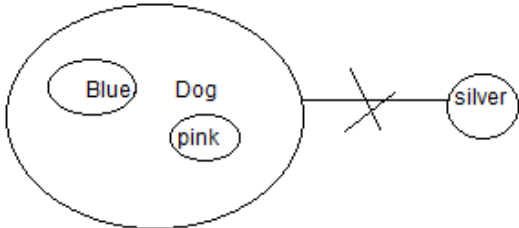
S42. Ans.(b)
Sol. First letter – (+2), Next = J
Second letter – (- 3), next = F
Third letter – (+2). Next = O

S43. Ans.(c)
Sol.

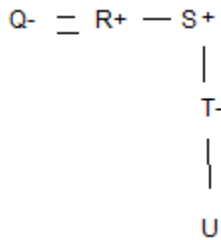All pink is dog and no dog is silver so, some pink can never be silver.
No relation is given between blue and pink so we can say any positive or negative relation in possibility.
All blue is dog and no dog is silver so, some blue can never be silver.
Only conclusion II follows

S44. Ans.(c)
Sol.

S is mother's father of U.

S45. Ans.(b)
Sol. Third letter = first letter + 1
Second letter = third letter + 1
All follows this logic except option b.

S46. Ans.(b)
Sol.
$$\frac{first \times third}{4} = second \ number$$
$$\frac{22 \times 8}{4} = 44$$
$$\frac{32 \times 6}{4} = 48$$
Similarly, $\frac{42 \times 6}{4} = 63$

S47. Ans.(b)
Sol. +7, +7, +7, +7 in all letters
ILJH – PSQO

S48. Ans.(b)
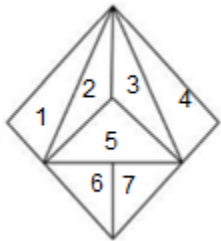**Sol.** Option b is correct mirror image of the given figure.

S49. Ans.(d)
Sol. 'LEASE' is coded as '14936'
'PLEASE' is coded as '941360
In both LEASE is common and code 13469 is common so remaing P is coded as remaining digit 0.

S50. Ans.(c)
Sol.

6+7 = 1 triangle
2+3+5 = 1 triangle
Total 9 triangle in the given figure.

S51. Ans.(b)
Sol.

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

$$=\frac{x^2-2x-x+2}{x^2-2^2}$$

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

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

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

S52. Ans.(d)
Sol.

Let the fourth proportional $= x$

$$\frac{3\sqrt{5}}{5\sqrt{8}}=\frac{3\sqrt{10}}{x}$$

$$\frac{1}{5\sqrt{8}}=\frac{\sqrt{2}}{x}$$

$$x = 5\sqrt{8}\times\sqrt{2}\ = 5\times4 = 20$$

S53. Ans.(b)

sol.

$\tan \theta = \frac{P}{B} = \frac{8}{15}$

By pythagoram thoream $H = \sqrt{P^2 + B^2}$, $H = \sqrt{8^2 + 15^2}$, $H = \sqrt{64 + 225}$, $H = \sqrt{289} = 17$

$\sin \theta = \frac{P}{H} = \frac{8}{17}$

$\sqrt{\frac{1-\sin\theta}{1+\sin\theta}}$

Putting the value of $\sin \theta = \frac{8}{17}$

$= \sqrt{\frac{1-\frac{8}{17}}{1+\frac{8}{17}}}$

$= \sqrt{\frac{\frac{17-8}{17}}{\frac{17+8}{17}}}$

$= \sqrt{\frac{9}{25}}$

$= \frac{3}{5}$

S54. Ans.(c)

sol.

Total marks obtained by all 5 students = 85 + 72 + 70 + 84 + 94 = 405

Average marks obtain by students = total marks/total students

$\frac{405}{5} = 81$

S55. Ans.(c)

sol.

Selling price (S.P) = 125 × (100 - 40)%

125 × 60% = Rs.75

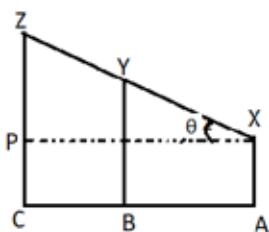loss% = $\frac{(80-75)}{80} \times 100\%$ = $\frac{50}{8}\%$ = 6.25%

S56. Ans.(b)

sol.

the height of the tree = 3.15 m

The height of the building = 11.25 m

The distance between Subhas and the tree = 7.5 m

The distance between the tree and the building = 45 m

Let the height from the ground at which Subhas's eyes are situated be h.

XA = OB = PC = h

From the question:

YB = 3.15 m ; ZC = 11.25 m

AB = 7.5 m ; BC = 45 m

XO = AB = 7.5 m

OP = BC = 45 m

XP = XO + OP

XP = 7.5 m + 45 m

∴ XP = 52.5 m

Now,

OY = BY - OB

OY = 3.15 - h

PZ = ZC - PC

PZ = 11.25 - h

In ΔXPZ,

$\tan\theta = \dfrac{PZ}{PX}$

$\tan\theta = \dfrac{11.25-h}{52.5}$ --------------(1)

Similarly, in ΔXPZ,

$\tan\theta = \dfrac{OY}{OX}$

$\tan\theta = \dfrac{3.15-h}{7.5}$ --------------(2)

From eq. (1) & (2)

$\dfrac{11.25-h}{52.5} = \dfrac{3.15-h}{7.5}$

11.25 - h = 7(3.15 - h)

11.25 - h = 22.05 - 7h

7h - h = 22.05 - 11.25

6h = 10.8

$h = \dfrac{10.8}{6}$

h = 1.8 m

S57. Ans.(c)

Sol. Length of smaller chord = 10 cm

Length of large chord = 24 cm
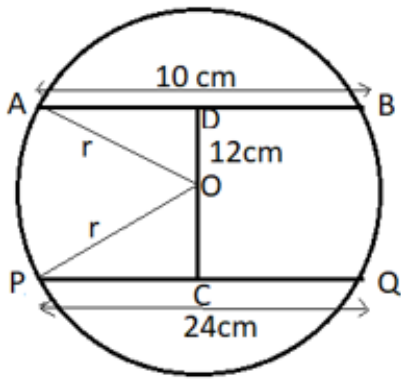
Distance between centre and smaller chord = 12 cm

Distance from the centre divides the chord into half and perpendicular to it.

By Pythagoras theorem:

$H^2 = P^2 + B^2$

Where, H = hypotenuse ; P = perpendicular ;

b = base ;

AD = 10/2 = 5 cm

OD = 12 cm

By Pythagoras theorem

$H^2 = P^2 + B^2$

$r^2 = 12^2 + 5^2$

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

Now,

OP (r) = 13 cm ; PC = 12 cm

By Pythagoras theorem

$H^2 = P^2 + B^2$

$13^2 = P^2 + 12^2$

$P = \sqrt{(169 - 25)} = 5$ cm

Total distance = OD + OC = 12 + 5 = 17 cm

S58. Ans.(c)

sol.

By Pythagoras theorem:

$H^2 = P^2 + B^2$

$\cos \theta = \dfrac{B}{H}$; $\sin \theta = \dfrac{P}{H}$

Where, P = perpendicular ; B = Base

and H = Hypotenuse

$\cos \theta = \dfrac{39}{89} = \dfrac{B}{H}$

By Pythagoras theorem:

$H^2 = P^2 + B^2$

$(89)^2 = P^2 + (39)^2$

$P^2 = 89^2 - 39^2$

$P = \sqrt{\{(89 - 39) \times (89 + 39)\}}$

$P = \sqrt{(50 \times 128)}$

$P = 80$

Now, $\sin \theta = \dfrac{P}{H} = \dfrac{80}{89}$

S59. Ans.(a)
Sol.
According to the question:

$360° = 600$

$1° = \frac{600}{360} = \frac{5}{3}$

Total number of Professor in Economics = $86.4 \times \left(\frac{5}{3}\right) = 144$

Total number of Professor in Mathematics = $72 \times \left(\frac{5}{3}\right) = 120$

Sum of professor in Economics and mathematics = $144 + 120 = 264$

Total number of Professor in English = $50.4 \times \left(\frac{5}{3}\right) = 84$

Total number of Professor in Statistics = $43.2 \times \left(\frac{5}{3}\right) = 72$

Sum of professor in English and Statistics = $84 + 72 = 156$

Required percentage = $\frac{\{(264 - 156) \times 100\}}{156}$

$= \frac{10800}{156}$

$= \frac{900}{13}$

$= 69.23\%$

S60. Ans.(b)
sol.
Marked price (M.P) = Rs.1350

Selling price (S.P) = Rs.1188

Discount% = $\frac{M.P - S.P}{M.P}$

Rate of discount = $\frac{\{(1350 - 1188) \times 100\}}{1350}$

$= \frac{1620}{135}$

$= 12\%$

S61. Ans.(d)
sol.

$a + \frac{1}{a} = 5$

Formula : $x + \frac{1}{x} = k$, $x^3 + \frac{1}{x^3} = k^3 - 3k$

Then $a + \frac{1}{a} = 5$,

$a^3 + \frac{1}{a^3} = (5)^3 - 3 \times 5 = 125 - 15 = 110$

S62. Ans.(c)
sol.
$\tan\theta . \tan2\theta = 1$ when

concept : $\tan\alpha . \times \tan\beta = 1$, then $\alpha + \beta = 90°$

$\theta + 2\theta = 90°$

$3\theta = 90°$

$\theta = 30°$

then the value of cot $5\theta = 5 \times 30° = 150°$, $\cot(90° + 60°) = -\tan 60° = -\sqrt{3}$

S63. Ans.(a)

sol.

Profit % on rice = 8%

Percentage less in weight = 25%

If profit = P%

C.P : S.P = 100 : (100 + P%)

Profit% = 8%

C.P : S.P = 100 : 108 = 25 : 27

Percentage less in weight = 25%

1000 : 750 = 4 : 3

C.P : S.P = 3 : 4

Total C.P : total S.P = 75 : 108

Gain % = $\frac{\{(108 - 75) \times 100\}}{75}$

$\frac{33 \times 4}{3}$% = 44%

S64. Ans.(a)

sol.

Principal (P) = Rs.12,300

Rate (R) = 12% ; Time (T) = 73 days

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

S.I = $\frac{P \times R \times T}{100}$

= $\frac{12300 \times 12 \times 73}{365 \times 100}$

= $\frac{123 \times 12}{5}$

= 1476/5 = 295.2 ≈ 300
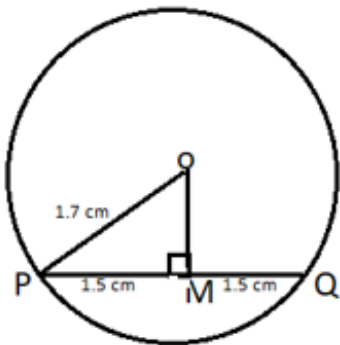
S65. Ans.(a)

sol.

PQ = 3 cm

Radius (OP) = 1.7 cm

The distance of a chord from the centre cuts the chord in half and perpendicular to it.

OM ⊥ PQ

$PM = \frac{3}{2} = 1.5$ cm

Now, By Pythagoras theorem

$H^2 = P^2 + B^2$

$(1.7)^2 = OM^2 + (1.5)^2$

$OM^2 = 1.7^2 - 1.5^2$

$OM = \sqrt{\{(1.7 + 1.5)(1.7 - 1.5)\}}$

$OM = \sqrt{\{3.2 \times 0.2\}} = \sqrt{0.64}$

$OM = 0.8$ cm

S66. Ans.(c)

sol.

length of the circular track = 400 m

Speed of A = 10 m/s

Speed of B = 40 m/s

Distance = relative speed × time

Distance = relative speed × time

$400 = 50 \times T$

$T = \frac{400}{50} = 8$ sec

Now, According to the question:

A new speed = 20 m/s

B new speed = 20 m/s

Distance = relative speed × time

$400 = 40 \times T$

$T = \frac{400}{40} = 10$ sec

A's new speed = 40 m/s

B's new speed = 10 m/s

Distance = relative speed × time

$400 = 50 \times T$

$T = \frac{400}{50} = 8$ sec

Total time to meet for third time = 8 + 10 + 8 = 26 sec

S67. Ans.(c)

Sol. Population of the city = 500000

Birth rate = 6% ; death rate = 3%

Present population = past population $(1 + R\%)^T$

R = rate% ; T = time

Effective rate = 6 - 3 = 3%

Present population = past population $(1 + R\%)^T$

$500000 \times (1 + 3\%)^2$

$500000 \times 103\% \times 103\%$

530450

S68. Ans.(c)
sol.

$$\left(2\tfrac{1}{2} \div 1\tfrac{7}{8}\right) \div \left(9\tfrac{3}{8} \div 11\tfrac{2}{3} \; of \tfrac{1}{8}\right)$$

$$= \left(\tfrac{5}{2} \div \tfrac{15}{8}\right) \div \left(\tfrac{75}{8} \div \tfrac{35}{3} \; of \tfrac{1}{8}\right)$$

$$= \left(\tfrac{5}{2} \times \tfrac{8}{15}\right) \div \left(\tfrac{75}{8} \times \tfrac{24}{35}\right)$$

$$= \tfrac{4}{3} \div \tfrac{45}{7}$$

$$= \tfrac{28}{135}$$

S69. Ans.(d)
sol.

Average $= \dfrac{S}{N}$

Where S = sum of all the numbers

and N = count of numbers

Sum of prime number between 69 to 92 = 71 + 73 + 79 + 83 + 89 = 395

Average of prime number between 69 to 92 = $\dfrac{395}{5}$ = 79

S70. Ans.(b)
Sol. PR : RQ = 1 : 3

PR = 6 cm

The line segment in a triangle joining the midpoint of any two sides

is parallel to its third side and is also half of the length of the third side.

Calculation:
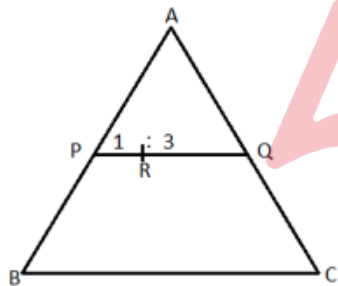
PR : PQ = 1 : 3

1 unit = 6 cm

PQ = 4 units = 4 × 6 = 24 cm

Then the value of BC = 24×2 = 48 cm

S71. Ans.(a)
sol.

Diameter of sphere (D) = 14 cm

Volume of the sphere = $\left(\tfrac{4}{3}\right) \times \pi \times r^3$

Diameter = 2 × r

Radius of sphere = $\dfrac{14}{2}$ = 7 cm

Volume of the sphere $= (\frac{4}{3}) \times \pi \times r^3$

$= (\frac{4}{3}) \times (\frac{22}{7}) \times (7)^3$

$= (\frac{4}{3}) \times 22 \times 49$

$= \frac{4312}{3} = 1437\frac{1}{3}$ cm³

S72. Ans.(d)
sol.

$x = (7 + 3\sqrt{5})$

$(a + b)^2 = a^2 + b^2 + 2ab$

$(a - b)^2 = a^2 + b^2 - 2ab$

$x = (7 + 3\sqrt{5})$

then, $\frac{1}{x} = \frac{1}{7 + 3\sqrt{5}}$

$\frac{7 - 3\sqrt{5}}{\{7^2 - (3\sqrt{5})2\}}$

$= \frac{7 - 3\sqrt{5}}{4}$

Then

$x^2 + (\frac{1}{x^2})$

$(7 + 3\sqrt{5})^2 + \{\frac{(7 - 3\sqrt{5})}{4}\}^2$

$= 7^2 + (3\sqrt{5})^2 + 2 \times 7 \times 3\sqrt{5} + \{\frac{7^2 + (3\sqrt{5})2 - 2 \times 7 \times 3\sqrt{5})/}{16}\}$

$= 49 + 45 + 42\sqrt{5} + \frac{49 + 45 - 42\sqrt{5}}{16}$

$= 94 + 42\sqrt{5} + \frac{94 - 42\sqrt{5}}{16}$

$= \frac{1504 + 672\sqrt{5} + 94 - 42\sqrt{5}}{16}$

$= \frac{1598 + 630\sqrt{5}}{16}$

$= \frac{799 + 315\sqrt{5}}{8}$
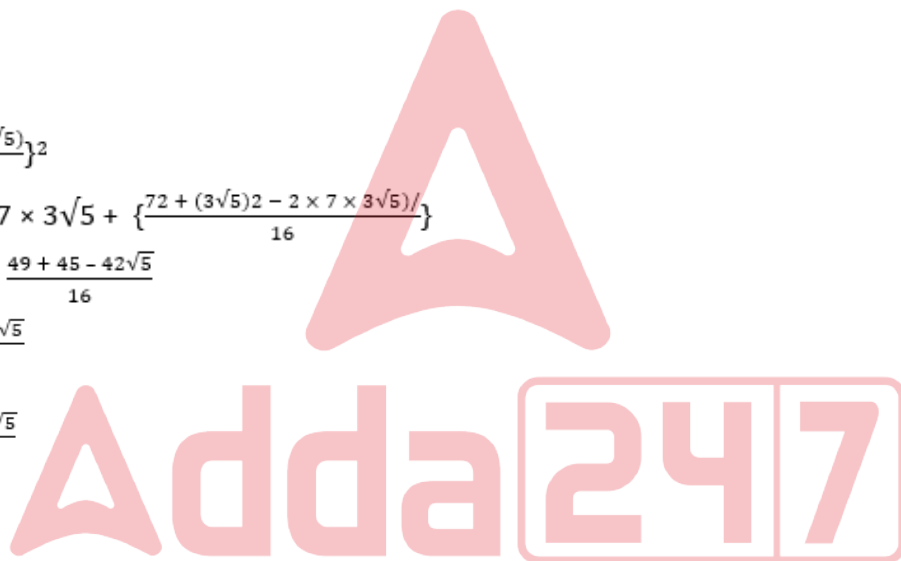
S73. Ans.(c)
sol.

Expense for groceries = 12%

Expense for medicines = 8%

Expense for school fee = 20%

Remaining income = Rs.36000

Total expenses = 12 + 8 + 20 = 40%

According to the question:

60% = 36000

$100\% = \frac{\{36000 \times 100\}}{60}$

Income of the person = 60000

S74. Ans.(c)
sol.

Total cement production during six years = 35 + 40 + 45 + 35 + 35 + 47 = 237

Average cement production during six years = $\frac{237}{6}$ = 39.5

S75. Ans.(b)
sol.

(A + B + C) can complete the work = 9 days

A can complete the work = 18 days

B can complete the same work = 30 days

Let the total work = LCM of 9 , 18 and 30 = 90 unit

Then the efficiency of A = $\frac{90}{18}$ = 5 unit/day

The efficiency of B = $\frac{90}{30}$ = 3 unit/day

Efficiency of A + B + C = $\frac{90}{9}$ = 10 unit/day

A + B + C = 10

5 + 3 + C = 10

C = 2

Time taken to complete the work by C = $\frac{90}{2}$ = 45 days

S76. Ans.(b)
Sol. The correct answer is (b) George Gabriel Stokes. Sir George Gabriel Stokes made significant contributions to fluid dynamics, including his formulation of Stokes' law in 1851, which describes the force of viscosity experienced by spherical particles moving through a fluid. This law is critical in the study of the science of hydrodynamics.

In 1851, George Gabriel Stokes developed what is now known as Stokes' law. This law mathematically describes the frictional force exerted on spherical objects with very small Reynolds numbers (indicating laminar, not turbulent flow) in a viscous fluid. Stokes' law is given by:

$F = 6\pi\eta rv$

Where:

- F is the frictional force,
- η is the dynamic viscosity of the fluid,
- r is the radius of the spherical object,
- v is the velocity of the object relative to the fluid.

Importance in Hydrodynamics:

- **Hydrodynamics**: This is a branch of physics that deals with the properties of fluids in motion. Stokes' contributions to this field helped lay foundational principles, particularly in understanding how fluid friction affects various phenomena.
- **Viscosity**: The measure of a fluid's resistance to gradual deformation by shear stress or tensile stress. Stokes' law helps in calculating drag or resistance in a fluid, which is a key aspect in the study of viscosity.

S77. Ans.(d)
Sol. The rate at which the Reserve Bank of India (RBI) lends to commercial banks for short term purposes is called the **Repo Rate**.
Therefore, the correct answer is (d) Repo Rate
The Repo Rate is a tool used by the RBI to control liquidity and inflation in the economy. By adjusting this rate, the RBI influences the cost of borrowing for banks, thereby affecting the overall economic activity. Lowering the Repo Rate makes borrowing cheaper for banks, which can lead to more loans and increased spending in the economy.

S78. Ans.(a)
Sol. The correct answer is (a) 14.2%
In the 2011 Census of India, the percentage of the population that belonged to the Muslim religion was 14.2%.
The data on religious demographics in India from the 2011 Census provides detailed information on the composition of the population by religion. According to this census, the percentage distribution of major religious communities is a key metric for understanding the demographic makeup of the country.

S79. Ans.(d)
Sol. The correct answer is (d) Onam
Onam is the most famous festival in the Indian state of Kerala. It is a harvest festival and is celebrated with joy and enthusiasm all over the state by people of all communities. According to legend, Onam is celebrated to commemorate King Mahabali, whose spirit is said to visit Kerala during the time of Onam.

S80. Ans.(b)
Sol. Correct answer is (b)
Uttar Pradesh Police has launched the state-of-the-art digital platform Trinetra App 2.0 to help in the investigation and crackdown on criminals. Trinetra App 2.0 has been designed to help in crime prevention and investigation in the state.
Artificial Intelligence (AI) solutions company Staqu Technologies has launched AI powered Crime GPT Trinetra 2.0. This tool works in collaboration with the UP government and the Special Task Force.

S81. Ans.(a)
Sol. The correct answer is (a) Under competitive asset market conditions, the price of a bond must always be equal to its present value in equilibrium.
This statement is true because under competitive market conditions, the equilibrium price of a bond—or any asset—reflects its present value, which is the discounted sum of all future cash flows expected from the bond. This includes interest payments and the principal amount at maturity. The discount rate used reflects the market's required rate of return based on the bond's risk level.
In a competitive market, the forces of supply and demand ensure that the price of the bond adjusts to a level where it equals the present value of its expected future cash flows. This means buyers are willing to pay, and sellers are willing to accept, a price that reflects the true economic value of the bond based on its risk and time value of money. This alignment guarantees that neither the buyer nor the seller has an inherent advantage at the point of transaction when the market is in equilibrium.

S82. Ans.(d)
Sol. The correct answer is (d) The green revolution caused increased migration from urban to rural areas. This statement is not true as one of the negative effects of the green revolution. In fact, the green revolution often caused the opposite effect: increased migration from rural to urban areas. This occurred because the green revolution's introduction of high-yield crop varieties and mechanization reduced the need for labor in agriculture, leading to a surplus of rural laborers who then moved to cities in search of better employment opportunities. Additionally, as the green revolution tended to benefit wealthier and larger farmers, smaller farmers and laborers often found themselves without adequate means to sustain their livelihoods in rural settings, prompting urban migration.

S83. Ans.(b)
Sol. The correct answer is (b) Both A and C
The M1 measure of money supply typically includes:
1. **Currency with Public:** This refers to all currency (notes and coins) that is held by the public outside of the vaults of the central bank and commercial banks. It does not include cash held by the banks themselves.
2. **Demand Deposits with Commercial Banks/RBI of Public Financial Institutions:** These are the deposits in bank accounts from which money can be withdrawn at any time without any advance notice to the bank. Demand deposits thus provide the liquidity necessary for transactions and are a major component of the money supply as they function like cash for the purposes of making payments.
Option (b) correctly identifies the components of M1 included in the question. Time deposits with the post office, mentioned in Option A, are not part of M1 as they are not immediately liquid and cannot be used directly for transactions. They are part of broader money supply measures like M2 or M3, depending on the classification system.

S84. Ans.(c)
Sol. The correct answer is (c) Bangalore
The Indian Academy of Sciences, founded in 1934 by Nobel Laureate Sir C.V. Raman, is situated in Bangalore. The Academy was established with the aim of promoting the progress and upholding the cause of science, both in pure and applied branches. It is committed to the dissemination and advancement of scientific knowledge in various disciplines.

S85. Ans.(d)
Sol. The correct answer is (d) Ghiyasuddin Tughlaq
Ghiyasuddin Tughlaq, the founder of the Tughlaq dynasty in India, was the one who raised the banner of revolt against Nasiruddin Khusrau. Nasiruddin Khusrau Shah was the ruler of the Delhi Sultanate briefly before Ghiyasuddin Tughlaq's rise to power. The situation leading to this revolt involved complex power dynamics within the Sultanate.
Ghiyasuddin Tughlaq, originally named Ghazi Malik, was a governor under the previous regime. He revolted against the then Sultan, Khusrau Khan, who had usurped power from the last ruler of the Khilji dynasty.
Ghiyasuddin Tughlaq successfully overthrew Khusrau Khan in 1320 and established the Tughlaq dynasty. His reign marked the beginning of a new era in the Delhi Sultanate, characterized by a more structured administration and military strength.

S86. Ans.(d)
Sol. The correct answer is (d) Chemical change
When milk is converted into curd, it undergoes a chemical change. This process involves the fermentation of lactose (milk sugar) into lactic acid by the bacteria present in the starter culture. The increase in lactic acid causes the milk to change its chemical structure, leading to the coagulation of milk proteins, which forms curd. This transformation alters the chemical composition of the milk, making it a chemical change. Additionally, this change is irreversible, meaning once milk has turned into curd, it cannot be changed back to milk.

S87. Ans.(a)
Sol. Correct answer is (a)
- Noted Malayalam poet and author Prabha Varma has been selected for the prestigious 33rd Saraswati Samman for the year 2023. He won the award for his novel in verse 'Roudra Sathwikam' published in 2022.
- The Saraswati Samman, instituted by the K.K. Birla Foundation in 1991, is one of the highest literary honors in India. It recognizes outstanding literary works in any of the Indian languages published in the last 10 years.
- Some of his notable works are the poetry collections 'Souparnika', 'Arkkapoornima', 'Shyama Madhavam', novels 'Chandana Nazhi', 'Aardram', and 'Kanal Chilambu'. He writes in both English and Malayalam.
- Varma has received several prestigious awards including the Kerala Sahitya Akademi Award, Kendra Sahitya Akademi Award, Vayalar Award, and State and Filmfare awards for best lyrics.

S88. Ans.(a)
Sol. The correct answer is (a) The North Indian Plains
The North Indian Plains, also known as the Indo-Gangetic Plains, are one of the most densely populated regions in India and the world. This region extends from Punjab in the west to West Bengal in the east and is characterized by its fertile alluvial soil which is replenished annually by the extensive river systems of the Ganges, Brahmaputra, and their tributaries.
Key factors contributing to high population density in the North Indian Plains:
1. **Fertility of Soil:** The fertile alluvial soils of the plains are ideal for agriculture, which supports intensive farming and a variety of crops such as wheat, rice, and sugarcane. This agricultural productivity supports and sustains a large population.
2. **Flat Terrain:** The flat and even terrain facilitates the construction of infrastructure, including roads and railways, more efficiently than mountainous or irregular terrain. This makes the area more accessible and suitable for urban and industrial development, attracting more people to live in the region.
3. **Water Resources:** The presence of numerous rivers ensures ample water supply, not just for agriculture but also for drinking and other domestic uses, supporting a high population density.
4. **Historical and Cultural Significance:** The region has been the center of major historical, cultural, and political developments in India's history, which has led to the establishment of numerous cities and towns over centuries. Cities like Delhi, Lucknow, Patna, and Kolkata are part of this plain and are among the most populous cities in India.

S89. Ans.(b)
Sol. The correct answer is (b) To secure uniform civil code
The Directive Principles of State Policy in the Indian Constitution include various guidelines that are intended to guide the State in its governance role. These principles, while not enforceable by any court, are considered fundamental in the governance of the country and the State is duty-bound to apply these principles in making laws.
Among the options listed, the principle to secure a uniform civil code is considered a liberal principle. This is outlined in **Article 44** of the Indian Constitution, which states that the State shall endeavor to secure for the citizens a uniform civil code throughout the territory of India.

S90. Ans.(c)
Sol. The organization that released the State of the Global Climate 2023 report is (c) World Meteorological Organization (WMO).
Key Highlights of the Report:
- The heat content of the world's oceans reached a record high in 2023, with the highest level of ocean heat content ever recorded.
- This increase in ocean heat content is attributed to anthropogenic climate drivers such as greenhouse gas (GHG) emissions and changes in land use.
- Global average sea-surface temperatures (SST) were at a record high in 2023, with several months breaking previous records by significant margins.
- Exceptional heating was observed in various regions including the eastern North Atlantic, the Gulf of Mexico, the Caribbean, the North Pacific, and large areas of the Southern Ocean.

S91. Ans.(c)
Sol. The correct answer is (c) Salaries and old-age pensions
Salaries and old-age pensions are not capital expenditures; they are considered current or revenue expenditures. Capital expenditures involve spending on assets that provide benefits over a long period, such as construction of infrastructure or improvement of fixed assets.

S92. Ans.(b)
Sol. The correct answer is (b) Olivine
Olivine is a gemstone-quality mineral that typically ranges in color from yellowish green to a more intense green. It is a silicate mineral that commonly occurs in mafic and ultramafic igneous rocks such as basalt, gabbro, dunite, diabase, and peridotite.
Details about Olivine:
1. **Composition:** Olivine is composed of magnesium iron silicate. The magnesium to iron ratio varies between the two endmembers, forsterite (Mg-rich) and fayalite (Fe-rich).
2. **Properties:** Olivine crystals are typically small and often granular, though larger, more transparent specimens can be cut into attractive gemstones known as peridot.
3. **Formation:** It forms under high temperatures and is one of the first minerals to crystallize from a magma during the cooling process, due to its high melting point.
4. **Uses and Significance:** Besides its use as a gemstone, olivine is also studied for its role in geological processes such as mantle dynamics and magmatism. It is sometimes considered for its potential in carbon sequestration due to its chemical reaction with CO_2 to form carbonates.

S93. Ans.(a)
Sol. The correct answer is (a) BHEL
Bharat Heavy Electricals Limited (BHEL) is a public sector industry under the control of the Government of India. BHEL is one of India's largest engineering and manufacturing enterprises, primarily involved in the design, engineering, manufacture, construction, testing, commissioning, and servicing of a wide range of products and services for the sectors of power, transmission, industry, transportation, renewable energy, oil & gas, and defense.

S94. Ans.(d)
Sol. The correct answer is (d) RC Dutt
Romesh Chunder Dutt was the author of the famous book "The Economic History of India". Romesh Chunder Dutt was an Indian civil servant, economic historian, writer, and translator of Ramayana and Mahabharata.

S95. Ans.(c)
Sol. The correct answer is (c) Manipur
Jagoi and Thabal Chongba are famous dances from the Indian state of Manipur. Here's a detailed look at these dances:
1. **Jagoi**: This term broadly refers to the classical dance form of Manipur, often synonymous with Manipuri dance, a major Indian classical dance form. Jagoi is renowned for its grace, expressiveness, and themes based on Vaishnavism, particularly revolving around the love stories of Radha and Krishna. The dance is characterized by its fluid movements and exquisite costumes, including the distinctive skirt-like dress known as "Potloi".
2. **Thabal Chongba**: This is a popular folk dance of Manipur, traditionally performed during the festival of Holi. "Thabal" means "moonlight" and "Chongba" means "dance," hence it is a dance performed under moonlight. The dance involves boys and girls holding hands and dancing in a circle to the rhythm of the music, which traditionally includes folk songs played on indigenous instruments. In recent times, modern music and drums are also used.

S96. Ans.(a)
Sol. Correct answer is (a)
The Joint Military Exercise "LAMITIYE-2024" is between the armies of India and Seychelles
- The 'Lamitiye' joint military exercise will be conducted in Seychelles from 18-27 March 2024.
- 'Lamitiye' means 'Friendship' in Creole language.
- It has been organized in Seychelles since 2001. In this sequence, this is its 10th joint exercise this year.
Objective of Exercise 'Lamitiye-2024':
- 'Exercise Lamitiye-2024' aims to enhance interdiction operations in peri-urban scenarios under Chapter VII of the UN Charter.
- The exercise will promote cooperation and interoperability between the two sides during peacekeeping operations.
- The exercise will also build and promote bilateral military ties besides exchange of skills, experience and simulated exercises between the two armies.

About Seychelles:
- Capital: Victoria
- Currency: Seychellois Rupee
- President: Wavel Ramkalawan

S97. Ans.(c)
Sol. The correct answer is (c) Joseph Henry
In 1830, Joseph Henry, an American scientist, created the Albany magnet, which was then the world's most powerful electromagnet. His development of the electromagnet was a significant advancement in the field of electromagnetism. The Albany magnet was capable of lifting up to 750 pounds of metal, demonstrating the practical potential of electromagnetic devices. Henry's innovations and experiments were crucial in the understanding and further development of electromagnetism, which later played a pivotal role in the development of various electrical devices and technologies.

S98. Ans.(b)
Sol. The first American male athlete to win the Marathon gold medal in the Olympic Games was Thomas Hicks, So the answer is (b).

S99. Ans.(c)
Sol. The correct answer is (c) Article 51A (a)
Article 51A (a) of the Indian Constitution stipulates the fundamental duty of every citizen of India to abide by the Constitution and respect its ideals and institutions, the National Flag, and the National Anthem. This duty is part of a broader set of fundamental duties listed under Article 51A, added by the 42nd Amendment in 1976, which outline moral obligations that help promote a spirit of patriotism and to uphold the unity of India. These duties are intended as a constant reminder to citizens that while enjoying their rights, they should also be conscious of duties they owe to their country, its national symbols, and institutions.

S100. Ans.(d)
Sol. The correct answer is (d) Ghazal
Begum Akhtar, also known as Akhtari Bai Faizabadi, was a renowned Indian singer famous for her deep and soulful performances in the genres of ghazal, dadra, and thumri, which are classical forms of Indian music. She was one of the most acclaimed ghazal singers of her time, known for her unique and emotive voice that powerfully conveyed the complexity of emotions inherent in ghazal music. Her contribution to Indian classical music earned her the title of Mallika-e-Ghazal (Queen of Ghazals).