RRB NTPC CBT-I Official Paper (Held On: 3 Mar 2021 Shift 2) (Previous Year Paper)

RRB NTPC • 2021 • 100 questions • 90 minutes • Answer key and solutions

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Q1. Simplify. 9 + (45 ÷ 9) - 8 × (-4)

(a) 8
(b) 38
(c) 46
(d) -171

Q2. A student must score 40% marks to pass an examination. He gets 70 marks and fails by 20 marks. Find the maximum marks.

(a) 125
(b) 225
(c) 360
(d) 175

Q3. A man bought a number of apples at 5 for Rs. 50 and an equal number at 6 for Rs. 50. If he sells them at 11 for Rs. 100, what would be his percentage profit or loss?

(a) (100)/(121)% profit
(b) (121)/(100)% loss
(c) (121)/(100)% profit
(d) (100)/(121)% loss

Q4. Which type of rocks are granite rocks?

(a) Schist Rocks
(b) Igneous Rocks
(c) Sedimentary Rocks
(d) Metamorphic Rocks

Q5. Read the given information carefully and answer the question that follows.

Six students P, Q, R, S, T and U, are the top six rank holders in a school. The rank of Q is between the ranks of R and S. Q is at the fourth rank. There are two students between the ranks of T and S. T is at the lowest rank among them. The rank of U is immediately above the rank of P.

Who is at the fifth rank?

(a) R
(b) T
(c) S
(d) P

Q6. The least multiple of 7 which when divided by 8, 12 and 16 leaves 3 as remainder in each case.

(a) 56
(b) 48
(c) 147
(d) 70

Q7. Select the option that is similar to the following numbers in a certain manner.

361, 729, 841

(a) 512
(b) 216
(c) 343
(d) 529

Q8. From which Asian country did Ahmad Shah Abdali come to India?

(a) Turkey
(b) Afghanistan
(c) Mongolia
(d) Persia

Q9. Read the given statements and conclusions carefully and decide which of the conclusions logically follow(s) from the statements.

Statements:

a. No blue is black.

b. No black is white.

c. Some white are grey.

d. All grey are green.

Conclusions:

i. Some green are not black.

ii. Some white are green.

iii. All green are grey.

(a) Only (ii) and (iii) follow.
(b) Only (i) and (iii) follow.
(c) Only (i) and (ii) follow.
(d) Only (i) follows.

Q10. Geet and Anshuman are children of Aditya's mother's brother. Roop has only one brother, Manjeet and no sisters. Ayushman is Rajkumar's son. Ayushman is the father of Manjeet. Roop's husband and Manjeet's wife do not have brothers or sisters. If Aditya is the son of Roop, how is Manjeet related to Geet?

(a) Father
(b) Husband
(c) Paternal uncle
(d) Maternal uncle

Q11. National Poet Ramdhari Singh 'Dinkar' was awarded Jnanpith Award for which of his following works?

(a) Sanskriti Ke Chaar Adhyay
(b) Urvashi
(c) Kurukshetra
(d) Rashmirathi

Q12. A shopkeeper bought 25 chairs from a manufacturer for Rs. 37,500 and sold them at a profit equal to the selling price of 5 chairs. Then the SP of one chair is:

(a) Rs. 1,500
(b) Rs. 1,875
(c) Rs. 1,200
(d) Rs. 1,250

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Q13. In a certain code language 'cockroach is insect' is written as 'pq mr lo', 'insect are species' is written as 'fl mr sn', 'is cockroach species' is written as 'lo pq fl'. What is the code for 'species insect' in that code language?

(a) fl mr
(b) sn mr
(c) lo mr
(d) fl lo

Q14. Simplify.

$9\sqrt{144/4} \times 3\sqrt{484} \times 1/\sqrt{729}$

(a) 88
(b) 84
(c) 63
(d) 66

Q15. The _____ takes the decision to declare any bill to be a money bill.

(a) President of India
(b) Chairman of the Rajya Sabha
(c) Speaker of the Lok Sabha
(d) Governor of the Reserve bank of India

Q16. The Physical Research Laboratory (PRL) which is a National Research Institute for space and allied sciences, is situated at:

(a) Thiruvananthapuram
(b) Hyderabad
(c) Bangalore
(d) Ahmedabad

Q17. Which of the following is NOT one of the three rivers whose interplay is responsible for the formation of the northern plains in India?

(a) Godavari
(b) Ganga
(c) Brahmaputra
(d) Indus

Q18. If $a + b = 4$ and $a^2 + b^2 = 10$ then the value of $a^3 + b^3$ is:

(a) 100
(b) 28
(c) 64
(d) -8

Q19. If '+' means '÷', '-' means '+', '×' means '-', and '÷' means '×', then find the value of

$48 \div 6 - 6 + 6 \times 2$

(a) 287
(b) 14
(c) 289
(d) 290

Q20. Provision of 'First Past the Post' in Indian Constitution has been adopted from the constitution of:

(a) Ireland
(b) France
(c) USA
(d) Britain

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Q21. Select the option that can replace the question mark (?) in the given equation. 8432 + 937 + 260 - ? = 5605 + 713

(a) 3311
(b) 3211
(c) 4311
(d) 15947

Q22. Radius of a solid spherical ball with volume 38808 cm3 is:

(a) (21)/(2) cm
(b) 21 cm
(c) 9261 cm
(d) 42 cm

Q23. Select the number from among the given options that can replace the question mark (?) in the following series.
117, 118, 120, 129, 193, ?

(a) 618
(b) 210
(c) 420
(d) 818

Q24. As of December 2020, who is the coach of Indian men's hockey team?

(a) Stephen Constantine
(b) Igor Stimac
(c) Shyam Thapa
(d) Graham Reid

Q25. Which one of the following Indian state is the leading producer of soybean in year 2019-20?

(a) Andhra Pradesh
(b) Maharashtra
(c) Rajasthan
(d) Madhya Pradesh

Q26. If (x+1) and (x+2) are factors of $ax^3 + 3x^2 + bx$ then the values of a and b are:

(a) a = 1 and b = 2
(b) a = 2 and b = 1
(c) a = 2 and b = 3
(d) a = 3 and b = 2

Q27. HCF of 12, 39 and 54 is:

(a) 6
(b) 1404
(c) 52
(d) 3

Q28. Six years hence Sunil will be twice as old as Kamal. Two years ago he was four times as old as Kamal. Find the present age of Kamal.

(a) 14 years
(b) 18 years
(c) 6 years
(d) 4 years

Q29. At which temperature is the density of water maximum?

(a) 247 K
(b) 273 K
(c) 244 K
(d) 277 K

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Q30. The Earth Hour programme began in:

(a) 2007
(b) 2008
(c) 2005
(d) 2006

Q31. How many decimal numbers can be found between 0.225 and 0.227?

(a) 2
(b) 226
(c) infinitely many
(d) 1

Q32. Which country hosted the G20 summit in 2019?

(a) Mexico
(b) India
(c) China
(d) Japan

Q33. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.

Statement:

"She has been sneezing and has runny nose since a year. She could be suffering from allergic rhinitis."-A doctor told a patient's mother.

Assumptions:

1. Very few diseases have the symptoms of a prolonged sneezing and runny nose.

II. One symptom of allergic rhinitis is a prolonged sneezing and runny nose.

III. Many diseases have the symptom of a prolonged sneezing and runny nose.

(a) Only assumption I and II are implicit.
(b) Assumption II and either I or III are implicit.
(c) Only assumption I is implicit.
(d) Only assumption II is implicit.

Q34. The Suez Canal, which is very significant for commerce, was constructed in which of the following countries?

(a) Brazil
(b) Argentina
(c) Oman
(d) Egypt

Q35. Each side of a square is increased by 50%. Find the percentage increase in its area.

(a) 25%
(b) 125%
(c) 50%
(d) 150%

Q36. A cryogenic engine makes use of which of the following as its fuel?

(a) Liquid oxygen
(b) Liquid hydrogen
(c) Oxygen and hydrogen
(d) Liquid oxygen and liquid hydrogen

Q37. Which among the following is a Saprophytic fungus?

(a) Algae
(b) Tapeworm
(c) Penicillium
(d) Cuscuta

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Q38. Which of the following Computer viruses damages the formatting of a document and does NOT allow it to edit?

(a) Macro virus
(b) Boot sector virus
(c) Worm
(d) File virus

Q39. Select the number that can replace the question mark (?) in the following series.

125, 216, 343, ?

(a) 441
(b) 729
(c) 576
(d) 512

Q40. Karuna reads (1)/(4)th of a book in one hour. What fraction of the book will she be able to read in 2 h 15 min?

(a) (9)/(16)
(b) (1)/(9)
(c) 9
(d) (1)/(8)

Q41. Pradhan Mantri Ujjwala Yojana was launched on:

(a) 1 May 2016
(b) 1 May 2018
(c) 1 May 2017
(d) 1 May 2015

Q42. The average marks obtained by a group of 25 students was 36. One student left the group, as a result of which the average of the remaining students rose to 37.5. Soon after another student joined the same group, as a result of which the average marks dropped to 37.2. Find the average marks of the student who left and the student who joined the group.

(a) 22.5
(b) 30
(c) 37.5
(d) 15

Q43. Each interior angle of a regular polygon is 140°.

Find the number of sides of the polygon.

(a) 9
(b) 18
(c) 15
(d) 12

Q44. What was 26^(th) January called in India before 1947?

(a) Republic Day
(b) Martyr's Day
(c) Constitution Day
(d) Independence Day

Q45. Which of the following did Emperor Akbar NOT construct?

(a) Agra Fort
(b) Buland Darwaza
(c) Jama Masjid of Delhi
(d) Fatehpur Sikri

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Q46. From _____ onwards, Economic Survey in India has been delinked from the Union Budget.

(a) 1964
(b) 1960
(c) 1966
(d) 1962

Q47. The Sundarban delta is formed by which of the following rivers?

(a) Mahanadi and Brahmaputra
(b) Ganga and Mahanadi
(c) Ganga and Yamuna
(d) Ganga and Brahmaputra

Q48. If length of a rectangle is doubled, what change should be made in its breadth so that its area remains the same?

(a) Breadth should be made one fourth
(b) Breadth should be halved
(c) Breadth should be kept unchanged
(d) Breadth should be doubled

Q49. The National Library of India is situated at:

(a) New Delhi
(b) Mumbai
(c) Kolkata
(d) Chennai

Q50. Employee's State Insurance Corporation (ESIC) does NOT provide social security in respect of medical benefits to the employees of:

(a) Multinational Corporations
(b) Private Sector
(c) Government Sector
(d) Public Sector Undertakings

Q51. At what annual rate of compound interest, compounded semi-annually, will Rs. 57,600 become Rs. 72,900 in one year?

(a) 25% per annum
(b) 50% per annum
(c) 6.25% per annum
(d) 12.5% per annum

Q52. Simple interest on Rs. 50,000 at certain rate for 5 years is Rs. 20,000. The rate of interest is:

(a) 8% per annum
(b) 25% per annum
(c) 5% per annum
(d) 4% per annum

Q53. In which year did India join the United Nations?

(a) 1947
(b) 1962
(c) 1945
(d) 1950

Q54. What is the time difference between the actual passing of the Sun over the horizon and our being able to see the image of it on earth?

(a) 14 min
(b) 10 min
(c) 2 min

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(d) 8 min

Q55. Which kind of mirrors is used as rear view wing mirrors in vehicles?

(a) Concave
(b) Concave and convex
(c) Plane
(d) Convex

Q56. The 1857 revolt at Lucknow was led by:

(a) Vir Savarkar
(b) Tatya Tope
(c) Kunwar Singh
(d) Begum Hazrat Mahal

Q57. A scooterist travels for 5 h, the first half of the distance at 21 km/h, and the rest at 24 km/h. Find the distance travelled.

(a) 112 km
(b) 56 km
(c) 224 km
(d) 225 km

Q58. A man and a woman can complete a job in 8 and 12 days respectively. How many women must assist 2 men to complete the job in 2 days?

(a) 4
(b) 2
(c) 3
(d) 5

Q59. Evaluate: 3 tan25º tan35º tan45º tan55º tan65º

(a) 3√(3)
(b) 3
(c) 1
(d) 0

Q60. Out of the four letter-clusters listed, three are alike in some manner and one is different. Select the odd one.

(a) JLO
(b) QSU
(c) XZC
(d) CEH

Q61. Who was the UNO's first Secretary-General from the African continent?

(a) Dag Hammarskjöld
(b) Winston Churchill
(c) Boutros Boutros-Ghali
(d) Kurt Waldheim

Q62. India's first costume museum is situated at _____.

(a) West Bengal
(b) Goa
(c) Maharashtra
(d) Uttar Pradesh

Q63. Five chocolate cakes labeled A, B, C, D, and E are made by a baker. D is not as sweet as B. A is sweeter than E but not as sweet as D. B is sweeter than C. Which of the following is the sweetest?

(a) D
(b) B

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(c) E
(d) C

Q64. The SI unit of 'magnetic flux' is:
(a) Weber
(b) Pascal
(c) Farad
(d) Henry

Q65. Wood's Dispatch was concerned with which of the following reforms?
(a) Railways
(b) Education
(c) Irrigation
(d) Industry

Q66. The law of comparative advantage is popularly attributed to _____.
(a) Adam Smith
(b) David Ricardo
(c) Bertil Ohlin
(d) Eli Heckscher

Q67. Read the given statements and conclusions carefully and decide which of the conclusions logically follow(s) from the statements.
Statements:
Some girls are boys.
No boys are lazy.
Conclusions:
1. Some girls are lazy.
II. Some girls are not lazy.
(a) Only conclusion II follows.
(b) Only conclusion I follows.
(c) Either I or II follows.
(d) Both I and II follow.

Q68. Black soil is predominantly found in which one of the following states?
(a) Karnataka
(b) Jharkhand
(c) Odisha
(d) Maharashtra

Q69. In a certain coding language, "MOLECULES' is written as 'SLEUECLMO". How will 'TRANSDUCTION' be written as in that language?
(a) NOITCUDSNART
(b) NIOTUCDNSATR
(c) UCTIONTRANSD
(d) NOITCUARTDSN

Q70. Simplify.
10 - 2 1/5 + 5 1/5
(a) 13 1/5
(b) 5
(c) 87/5
(d) 13

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Q71. A and B together can do a piece of work in 21 days. With the help of C, they can finish it in 14 days. In how many days will C alone be able to finish the work?

(a) (35)/(2)days
(b) 35 days
(c) 42 days
(d) 7 days

Q72. The very first translation of the Bhagavad Gita into English was done by:

(a) Colebrook
(b) William Jones
(c) Charles Wilkins
(d) Max Mueller

Q73. Read the given information carefully and answer the question that follows.

Six friends Priti, Kamal, Rohit, Sweety, Meenu and Umesh, are sitting in a circle (but not necessarily in the same order). Their faces are towards the centre. Meenu is sitting second to the left of Rohit. Umesh is sitting between Rohit and Priti. Sweety is sitting to the immediate right of Priti.

Who is sitting between Rohit and Meenu?

(a) Priti
(b) Umesh
(c) Kamal
(d) Sweety

Q74. Mean of first ten odd natural numbers is:

(a) 19
(b) 10
(c) 11
(d) 9

Q75. An observer 1.5 m tall is 24.5 m away from a 26 m high tower. The angle of elevation of the top of the tower from the eye of the observer is:

(a) 160º
(b) 75º
(c) 45º
(d) 30º

Q76. Which of the following public sector enterprises comes under the category of Maharatna?

(a) IOCL
(b) BSNL
(c) MTNL
(d) HAL

Q77. The average of salaries of husband and wife is Rs. 65,000 and ratio of their salaries is 15 : 11 respectively. How much is the salary of the wife?

(a) Rs. 32,500
(b) Rs. 55,000
(c) Rs. 75,000
(d) Rs. 27,500

Q78. Select the option that is different from the rest.

(a) K23L
(b) B20U
(c) B12J
(d) C18O

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Q79. A letter of English alphabet is chosen at random. Probability of getting a vowel is:

(a) 5/26
(b) 1/4
(c) 5/21
(d) 6/25

Q80. What is the scientific name of green pea?

(a) Pisum savitum
(b) Zea mays
(c) Pisum sativum
(d) Triticum aestivum

Q81. In which of the following states is the Mathuri folk dance practiced?

(a) Telangana
(b) Jharkhand
(c) Goa
(d) Mizoram

Q82. Simplify.

(320 ÷ 8 × 8 ÷ 4 × 1/2)/(180 × 5 ÷ 45 - 4)

(a) 5/2
(b) 5/8
(c) 10
(d) 2/5

Q83. What is the term of office of the Chief Election Commissioner of India?

(a) Six year term or continue till the age of 70, whichever is earlier.
(b) Four year term or continue till the age of 60, whichever is earlier.
(c) Five year term or continue till the age of 65, whichever is earlier.
(d) Six year term or continue till the age of 65, whichever is earlier.

Q84. What is the name of India's first research station located at the International Arctic Research Base Ny-Alesund Svalbard, Norway?

(a) Himadri
(b) Maitri
(c) Bharathi
(d) Dakshin Gangotri

Q85. 1 EB is equal to _____.

(a) 1024 GB
(b) 1024 PB
(c) 1024 MB
(d) 1024 TB

Q86. Select the term that can replace the (?) in the following alphanumeric series.

IZ, 3X, 5V,?

(a) 7R
(b) 7T
(c) 7S
(d) 7G

Q87. Answer the question given below based on the given information.

A jeweler has five gold articles 'P', 'Q', 'R', 'S' and 'T', each of which weighs differently.

'T' weighs thrice as much as 'S'.

'S' weighs four times as much as 'R'.

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'R' weighs half as much as 'Q'.

'Q' weighs half as much as P.

'P' weighs less than 'T' but more than 'R'.

Which of the following gold articles is the lightest in weight?

(a) R
(b) T
(c) P
(d) S

Q88. Select the option that is related to the third number in the same way as the second number is related to the first number.

3 : 111 :: 7 : ?

(a) 252
(b) 259
(c) 245
(d) 266

Q89. In a certain language, RAIN is written as 4678 and WET is written as 135. How will ENTER be written as in that language?

(a) 38543
(b) 35834
(c) 35384
(d) 38534

Q90. Select the option that is different from the rest.

(a) Aluminum
(b) Platinum
(c) Silver
(d) Metal

Q91. Select the term that can replace the question mark (?) in the following series.

DW, FU, HS, ?

(a) KR
(b) KP
(c) JR
(d) JQ

Q92. 'JQM' is related to which of the following option in the same way as 'CEA' is related to 'EHC'?

(a) LTO
(b) MTP
(c) OVR
(d) MRP

Q93. Select the option that is related to the third term in the same way as the second term is related to the first term.

Soldier : Battle Tank :: Farmer : ?

(a) Land
(b) Crop
(c) Water
(d) Tractor

Q94. In a certain coding language, 'CUMIN' is written as 'AVKJL' and 'GUEST' is written as 'EVCTR'. How will 'ALIEN' be written as in that language?

(a) YMGFL
(b) BJKLF

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(c) UHFTR
(d) VTFSE

Q95. Jean and Catherine are the maternal aunts of Cinderella. Charles is the husband of Cinderella. Isabella is the mother of mother-in-law of Charles. How is Isabella related to Jean?
(a) Mother
(b) Sister
(c) Maternal Aunt
(d) Grandmother

Q96. Each of the six friends A, B, C, D, E and F is reading one book among the books G, H, I, J, K and L in a reading program. A and B are not reading books G, J and L. F is reading book H. B, C and D are not reading the books I and L. Which book is being read by A?
(a) K
(b) G
(c) I
(d) J

Q97. 'Income' is related to which of the following options in the same way as 'Expenditure' is related to 'EMI'?
(a) Salary
(b) Revenue
(c) Profit
(d) Tax

Q98. Select the option that can replace the question mark (?) in the following series.
A3A, Y8E, ?, 033M, G53Q
(a) U18I
(b) S30I
(c) U20I
(d) T22I

Q99. Consider the given statement and decide which of the given assumptions is are implicit in the statement.
Statement:
"In the latest edition of your book, we misspelled your name on the book cover. We are very sorry ma'am"-A novel editor told his client.
Assumptions:
I. It is crucial to print the correct name of the author on the book cover.
II. It is not very important to print the correct name of the author on the book cover.
(a) Neither assumptions are implicit.
(b) Both assumptions are implicit.
(c) Only assumption II is implicit.
(d) Only assumption I is implicit.

Q100. Omelette is related to Egg in the same way as Metal is related to:
(a) Aluminium
(b) Gold
(c) Iron
(d) Ore

ANSWER KEY

1	c	2	b	3	d	4	b	5	a	6	c	7	d	8	b	9	c	10	a
11	b	12	b	13	a	14	d	15	c	16	d	17	a	18	b	19	a	20	d

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21	a	22	b	23	d	24	d	25	d	26	a	27	d	28	c	29	d	30	a
31	c	32	d	33	d	34	d	35	b	36	d	37	c	38	a	39	d	40	a
41	a	42	d	43	a	44	d	45	c	46	a	47	d	48	b	49	c	50	a
51	a	52	a	53	c	54	c	55	d	56	d	57	a	58	c	59	b	60	b
61	c	62	b	63	b	64	a	65	b	66	b	67	a	68	d	69	b	70	d
71	c	72	c	73	c	74	b	75	c	76	a	77	b	78	b	79	a	80	c
81	a	82	a	83	d	84	a	85	b	86	b	87	a	88	b	89	d	90	d
91	d	92	a	93	d	94	a	95	a	96	c	97	a	98	a	99	d	100	d

SOLUTIONS

Q1. Answer: (c) 46

Given:

Expression: 9 + (45 ÷ 9) - 8 × (-4)

Formula Used:

Order of Operations (PEMDAS/BODMAS): Parentheses, Exponents, Multiplication and Division (left to right), Addition and Subtraction (left to right)

Calculation:

=> 9 + (45 ÷ 9) - 8 × (-4)

=> 9 + 5 - 8 × (-4)

=> 9 + 5 - (-32)

=> 9 + 5 + 32

=> 46

The correct answer is option 3.

Q2. Answer: (b) 225

Given:

A student must score 40% marks to pass an examination.

He gets 70 marks and fails by 20 marks.

Formula Used:

Required marks to pass = Marks obtained + Marks needed to pass

Passing percentage = (Required marks to pass / Maximum marks) × 100

Calculation:

Marks needed to pass = 20

Required marks to pass = 70 + 20

Required marks to pass = 90

Let Maximum marks be M.

Passing percentage = 40%

Therefore,

40% of M = 90

40/100 × M = 90

=> M = (90 × 100)/40

=> M = 225

The maximum marks are 225.

Q3. Answer: (d) (100)/(121)% loss

Given:

A man bought a number of apples at 5 for Rs. 50.

He bought an equal number of apples at 6 for Rs. 50.

He sells them at 11 for Rs. 100.

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Formula Used:

Cost Price (CP) = Total Cost / Total Number of Apples

Selling Price (SP) = Total Selling Price / Total Number of Apples

Profit or Loss Percentage = ((SP - CP) / CP) × 100

Calculation:

Let the number of apples bought in each case be x.

Cost for first set of apples: 5 apples for Rs. 50

Cost for x apples = (50/5) × x = 10x

Cost for second set of apples: 6 apples for Rs. 50

Cost for x apples = (50/6) × x = 8.33x

Total Cost Price (CP) = 10x + 8.33x

CP = 18.33x

Total apples bought = x + x = 2x

Selling Price for 11 apples = Rs. 100

Selling Price for 1 apple = 100 / 11

Selling Price for 2x apples = 2x × (100 / 11)

SP = (200x / 11)

Profit or Loss Percentage = ((SP - CP) / CP) × 100

Profit or Loss Percentage = (((200x / 11) - 18.33x) / 18.33x) × 100

=> Profit or Loss Percentage = (((200 / 11) - 18.33) / 18.33) × 100

=> Profit or Loss Percentage = ((18.18 - 18.33) / 18.33) × 100

=> Profit or Loss Percentage = (-0.15 / 18.33) × 100

=> Profit or Loss Percentage = -0.818% = 100/121%

The man incurs a loss of (100 / 121)%.

Q4. Answer: (b) Igneous Rocks

The correct answer is Igneous Rocks.

Key Points

• Granite rocks are igneous rocks. They form from the slow cooling and solidification of magma beneath the Earth's surface, making them intrusive (plutonic) igneous rocks.

• Granite is known for its coarse-grained texture.

• It consists mainly of quartz, feldspar, and mica, giving it a speckled appearance.

• Its durability and aesthetic appeal make it widely used in construction and decorative applications.

Additional Information

Type of Rock	Formation	Characteristics	Examples	Uses
Schist Rocks	Formed from existing rocks under intense heat and pressure (Metamorphic).	Flaky, foliated texture; minerals like mica align in layers.	Mica Schist, Garnet Schist	Decorative stone, roofing, flooring
Sedimentary Rocks	Formed from the accumulation and compaction of sediments (deposited by water, wind, or ice).	Layered appearance, may contain fossils; softer than other rock types.	Sandstone, Limestone, Shale	Building materials, reservoirs for oil and groundwater
Metamorphic Rocks	Formed when existing rocks undergo transformation due to heat, pressure, or fluids (without melting).	Foliated or non-foliated texture depending on mineral alignment.	Marble, Slate, Gneiss	Architecture, sculptures, flooring, decorative use

Q5. Answer: (a) R

Given: Six students P, Q, R, S, T and U, are the top six rank holders in a school.

1) Q is at the fourth rank.

2) T is at the lowest rank among them.

3) The rank of Q is between the ranks of R and S.

Highest rank holder	
Rank	Student
1	
2	
3	R / S
4	Q
5	R / S
6	T
Lowest rank holder	

4) There are two students between the ranks of T and S.

5) The rank of U is immediately above the rank of P.

Highest rank holder	
Rank	Student
1	U
2	P
3	S
4	Q
5	R
6	T
Lowest rank holder	

Thus, according to the final arrangement R is at the fifth rank.

Hence, "Option 1" is the correct answer.

Q6. Answer: (c) 147

Given:

We need to find the least multiple of 7, which when divided by 8, 12, and 16 leaves a remainder of 3.

Formula used:

Let the least number be N. N when divided by 8, 12, and 16 leaves a remainder of 3.

So, (N - 3) is divisible by the LCM of 8, 12, and 16.

Calculation:

LCM of 8, 12, and 16 = 48

=> N - 3 = 48k (where k is a constant)

=> N = 48k + 3

We are asked to find the least multiple of 7, so:

=> 48k + 3 must be divisible by 7

48k + 3 ≡ 0 (mod 7)

48 ≡ 6 (mod 7), so:

6k + 3 ≡ 0 (mod 7)

=> 6k ≡ -3 (mod 7)

=> 6k ≡ 4 (mod 7) (since -3 ≡ 4 mod 7)

Multiply both sides by the modular inverse of 6 modulo 7, which is 6:

=> k ≡ 24 (mod 7)

=> k ≡ 3 (mod 7)

The least value of k = 3.

Substitute k = 3 into N = 48k + 3:

=> N = 48 × 3 + 3 = 144 + 3 = 147

Therefore The least multiple of 7 is 147.

Q7. Answer: (d) 529

The logic followed here is:

361 = √361 → 19

729 = √729 → 27

841 = √841 → 29

So checking each option one by one:

Option 1) 512 = 3√512 → 8

Option 2) 216 = 3√216 → 6

Option 3) 343 = $^{3}\sqrt{343}$ → 7

Option 4) 529 = √841 → 23

Thus, out of all the options '529' follows the same logic as given.

Hence, "Option 4" is the correct answer.

Q8. Answer: (b) Afghanistan

The correct answer is Afghanistan.

Key Points

• Ahmad Shah Abdali was born in 1723 in the city of Herat, which is in present-day Afghanistan.

• He was the founder of the Durrani Empire, which became one of the major powers in the region during the 18th century.

• He is best known for his invasions of India, particularly against the Maratha Empire.

• His most notable campaign was the Third Battle of Panipat in 1761, where he defeated the Marathas, significantly impacting the power dynamics in India.

Additional Information

Country	Ruler	Reign	Notable Invasion
Turkey	Muhammad Ghori	Late 12th century	Multiple invasions, notably the Second Battle of Tarain (1192).
Turkey	Iltutmish	1211–1236	Consolidated the empire after Ghori's invasions.
Turkey	Alauddin Khilji	1296–1316	Expanded territories through military campaigns, including invasions of southern India.
Mongolia	Genghis Khan	1206–1227	Conducted raids into northern India; did not directly invade.
Mongolia	Tamerlane (Timur)	1370–1405	Invaded India in 1398, sacking Delhi and causing widespread destruction.
Persia	Nadir Shah	1736–1747	Invaded India in 1739, sacking Delhi after the Battle of Karnal.
Persia	Timur (Tamerlane)	1370–1405	Invaded India in 1398, capturing and devastating Delhi.
Persia	Safavid Empire	1501–1736	Engaged in military campaigns against the Mughal Empire.

Q9. Answer: (c) Only (i) and (ii) follow.

The least possible Venn diagram for the given statements is as shown below :

Conclusions:

i. Some green are not black → Follow (As no black is white, some white are grey and all grey are green. As black cannot be white which has some part common with grey which whole comes in green, therefore it is true.)

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ii. Some white are green → Follow (As some white are grey and all grey are green. As white has some part common with grey which whole comes in green, therefore it is true.)

iii. All green are grey → Does not follow (As all grey are green. So it is possible but not definite)

Therefore Here, Only conclusion (i) and (ii) follows.

Hence, the correct answer is "Option 3"

Q10. Answer: (a) Father

Given:

1) Aditya is the son of Roop.

2) Roop has only one brother, Manjeet and no sisters.

3) Roop's husband and Manjeet's wife do not have brothers or sisters.

4) Geet and Anshuman are children of Aditya's mother's brother.

5) Ayushman is the father of Manjeet.

6) Ayushman is Rajkumar's son.

Thus, Manjeet is Geet's father.

Hence, the correct answer is "Option 1"

Mistake PointsAyushman and Anshuman are two different persons.

Ayushman is the paternal grandfather of Anshuman.

Q11. Answer: (b) Urvashi

The correct answer is Urvashi.

Key Points

• Ramdhari Singh 'Dinkar' was awarded the Jnanpith Award in 1972 for his notable work titled "Urvashi."

• This work is a significant contribution to Hindi literature and showcases his prowess in poetry.

• The Jnanpith Award is one of the highest literary honors in India, established in 1961 by the Jnanpith Trust.

• It recognizes outstanding contributions to Indian literature in various languages recognized in the Eighth Schedule of the Indian Constitution.

Additional Information

• Sanskriti Ke Chaar Adhyay is a significant work by Ramdhari Singh 'Dinkar' that explores the four essential aspects of Indian culture: Dharma (righteousness), Artha (wealth), Kama (desire), and Moksha (liberation).

• "Kurukshetra" is another notable poem by Dinkar that revolves around the epic Mahabharata and the battle of Kurukshetra, which symbolizes the eternal struggle between good and evil.

• "Rashmirathi" is a celebrated epic poem by Dinkar that narrates the life of Karana, a central character in the Mahabharata, highlighting his struggles, loyalty, and valor.

Q12. Answer: (b) Rs. 1,875

Given:

Cost Price (CP) of 25 chairs = Rs. 37,500

Profit = Selling Price (SP) of 5 chairs

Formula Used:

Profit = SP - CP

SP of 25 chairs = CP + Profit

Calculation:

Let SP of one chair be Rs. x.

SP of 25 chairs = 25 × x

Profit = SP of 5 chairs = 5 × x

So, CP + Profit = SP of 25 chairs

=> Rs. 37,500 + 5x = 25x

=> Rs. 37,500 = 25x - 5x

=> Rs. 37,500 = 20x

=> x = Rs. 37,500 / 20

=> x = Rs. 1,875

The SP of one chair is Rs. 1,875.

Q13. Answer: (a) fl mr

According to the given information,

Thus, according to the given codes 'fl mr' is the code for the word 'species insect'.

Hence, the correct answer is "Option 1".

Q14. Answer: (d) 66

Given:

(9√ 144)/4 × 3 √484 × 1/√729

Concept Used:

√144 = 12

√484 = 22

√729 = 27

Calculation:

=> (9 × 12)/4 × 3 × 22 × 1/27

=> 9 × 3 × 3 × 22 × 1/27

=> 66

Therefore The correct answer is 66.

Q15. Answer: (c) Speaker of the Lok Sabha

The correct answer is Speaker of the Lok Sabha.

Key Points

• According to Article 110 of the Indian Constitution, a Money Bill is defined as a bill that deals exclusively with matters related to taxation, public expenditure, or borrowing, and the Speaker has the authority to determine whether a bill qualifies as a Money Bill.

• A Money Bill can only be introduced in the Lok Sabha, not in the Rajya Sabha.

• After it is passed by the Lok Sabha, it is sent to the Rajya Sabha for consideration, but the Rajya Sabha must return it to the Lok Sabha within 14 days.

• The Rajya Sabha (Council of States) cannot amend or reject a Money Bill. It can only make recommendations on it, which the Lok Sabha may or may not accept.

Additional Information

Position	Related Article	Appointment	Removal
President of India	Article 52	Appointed by an electoral college.	Can be removed by impeachment under Article 61.
Chairman of the Rajya Sabha	Article 89	The Vice President of India serves as the Chairman.	Can be removed by a process similar to impeachment under Article 67(b).
Speaker of the Lok Sabha	Article 93	Elected by members of the Lok Sabha.	Can be removed by a no-confidence motion.
Governor of the Reserve Bank of India	Section 7 of the RBI Act	Appointed by the Government of India.	Can be removed by the Government before the completion of their term.

Q16. Answer: (d) Ahmedabad

The correct answer is Ahmedabad.

Key Points

• The Physical Research Laboratory (PRL) was established in 1947 by Dr. Vikram Sarabhai and plays a significant role in research related to space and allied sciences.

• The laboratory aims to promote research in space and allied sciences, including astronomy, astrophysics, atmospheric sciences, and space technology.

• It has been involved in significant projects, such as the Mars Orbiter Mission (Mangalyaan) and the Indian Space Research Organisation's (ISRO) satellite programs.

Important PointsSarabhai was instrumental in establishing the Indian National Committee for Space Research (INCOSPAR) in 1962, which laid the groundwork for the Indian Space Research Organisation (ISRO) in 1969.

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Q17. Answer: (a) Godavari

The correct answer is Godavari.

Key Points

• The Godavari is the second-longest river in India, flowing for about 1,465 kilometers (910 miles).

• It originates from the Western Ghats near Nasik in Maharashtra and flows eastward across the states of Maharashtra, Telangana, Andhra Pradesh, Chhattisgarh, and Odisha before emptying into the Bay of Bengal.

• The Godavari holds great religious and cultural importance in India.

• It is often referred to as the "Ganges of the South" and is a major pilgrimage site. Hence, its interplay is responsible for the formation of the northern plains.

Additional Information

• Ganga (Ganges):

• It Originates in the Himalayas and flows through states like Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, and West Bengal before emptying into the Bay of Bengal.

• Brahmaputra:

• Originates in Tibet and flows through Assam and Arunachal Pradesh in India before entering Bangladesh, where it merges with the Ganges.

• Indus:

• Originates in Tibet, flows through Ladakh, and then through Pakistan, though a small part flows through the northern region of India.

Q18. Answer: (b) 28

Given:

a - b = 4

a2 + b2 = 10

Formula Used:

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

$a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$

Calculation:

(a + b)2 = a2 + b2 + 2ab

=> $4^2 = 10 + 2ab$

=> 2ab = 16 - 10

=> ab = 6/2 = 3

Now,

a3 + b3 = (a + b)(a2 + b2 - ab)

a3 + b3 = (4)(10 - 3) = 4 × 7

=> a3 + b3 = 28

Therefore The correct answer is 28.

Q19. Answer: (a) 287

Given Equation: 48 ÷ 6 - 6 + 6 × 2 = ?

BODMAS Rule:

Decoding the given information:

Symbol	•	•	×	÷
Meaning	÷	•	•	×

Now replacing the sign from left to right using BODMAS Rule, we get:

=> 48 × 6 + 6 ÷ 6 - 2 = ?

=> 48 × 6 + 1 - 2 = ?

=> 288 + 1 - 2 = ?

=> 289 - 2 = 287.

Hence, the correct option is "Option 1".

Q20. Answer: (d) Britain

The correct answer is Britain.

Key Points

• The provision of 'First Past the Post' (FPTP) in the Indian Constitution has been adopted from the Constitution of the United Kingdom.

• This electoral system is used for electing members of the Lok Sabha (House of the People) and state legislative assemblies in India.

• The system is straightforward for voters to understand and for officials to administer. Election results can be counted and announced relatively quickly compared to more complex voting systems.

• How FPTP Works

• Each electoral constituency elects one representative.

• Voters cast their vote for their preferred candidate. In FPTP, voters typically mark their choice for one candidate only.

• The candidate who receives the most votes in that constituency wins. Importantly, they do not need to secure an absolute majority (more than 50% of the votes); they just need to have more votes than any other candidate.

Additional Information

Constitutional Feature	Country of Origin
Parliamentary System	United Kingdom
Fundamental Rights	United States
Directive Principles of State Policy	Ireland
Emergency Provisions	Germany
Single Citizenship	United Kingdom
Independent Judiciary	United States and Canada
FPTP Electoral System	United Kingdom
Bicameral Legislature	United States
Socialist Principles	Soviet Union
Preamble	United States

Q21. Answer: (a) 3311

Given:

8432 + 937 + 260 - ? = 5605 + 713

Calculation:

8432 + 937 + 260 - ? = 5605 + 713

8432 + 937 + 260 - ? = 6318

9369 + 260 - ? = 6318

9629 = 6318 + ?

9629 = 6318 + ?

? = 9629 - 6318

? = 3311

The correct answer is option 1 (3311).

Q22. Answer: (b) 21 cm

Given:

Volume of the solid spherical ball = 38808 cm^3

Formula Used:

Volume of a sphere: $V = 4/3\ \pi\ r^3$

r = radius of sphere

Calculation:

$V = 4/3\ \pi\ r^3$

$\Rightarrow 38808 = 4/3\ \pi\ r^3$

=> $r^3 = (38808 \times 3)/(4\ \pi)$

=> $r^3 = 116424/(4\ \pi)$

=> $r^3 = (116424\times 7)/(4 \times 22)$, $\pi = 22/7$

=> $r^3 = 9261$

Now, take the cube root of both sides:

=> r = cbrt9261

=> r = 21 cm

The radius of the solid spherical ball is 21 cm.

Q23. Answer: (d) 818

The logic followed here is:

Hence, "Option 4" is the correct answer.

Q24. Answer: (d) Graham Reid

The correct answer is Graham Reid.

Key Points

• As of December 2020, the coach of the Indian men's hockey team was Graham Reid. He took over the role in 2019.

• Indian men's hockey team recently won the Men's Hockey Asian Champions Trophy, securing their fifth title by defeating China 1-0 in the final.

• This victory marked a successful start to the team's campaign after the Paris Olympics 2024, where they also performed admirably, clinching the bronze medal.

• Current Key Details:

• Coach: Craig Fulton

• Captain: Harmanpreet Singh

• Current FIH Ranking: The team is ranked 5th in the world, having climbed two spots after their performance in the Olympics.

Additional Information

• Stephen Constantine: He is an English football manager and former player known for his role as the head coach of the Indian national football team.

• Igor Stimac: A Croatian football manager and former player, Stimac took over as the head coach of the Indian national team after Constantine.

• Shyam Thapa: A legendary Indian football player and now a coach, Thapa has had a significant impact on Indian football throughout his career.

Q25. Answer: (d) Madhya Pradesh

The correct answer is Madhya Pradesh.

Key Points

• In the year 2019-20, Madhya Pradesh was the leading producer of soybeans in India.

• The state has favorable climatic conditions and suitable soil for soybean cultivation, making it the largest producer in the country.

• As of 2024, Madhya Pradesh continues to be the leading producer of soybeans in India. In the 2023-24 crop year, India's soybean production is projected to reach approximately 12.1 million metric tonnes, with Madhya Pradesh accounting for a significant portion of this output.

Additional Information

State	Major Products
Andhra Pradesh	Rice, Maize, Groundnut, Tobacco
Maharashtra	Sugarcane, Jowar, Bajra, Vegetables
Rajasthan	Wheat, Barley, Mustard, Chickpea

Q26. Answer: (a) a = 1 and b = 2

Given:

(x+1) and (x+2) are factors of ax3 + 3x2 + bx

Calculation:

Polynomial ax3 + 3x2 + bx

Since (x + 1) and (x + 2) are factors of polynomial

putting x = -1 and x = -2 gives the value of polynomial = 0

Putting x = -1

=> $a(-1)^3 + 3(-1)^2 + b(-1) = 0$

=> -a + 3 - b = 0

=> a + b = 3 ----- (i)

Putting x = -2

=> a(-2)3 + 3(-2)2 + b(-2) = 0

=> -8a + 3 × 4 - 2b = 0

=> 8a + 2b = 12

=> 4a + b = 6 ----- (ii)

Subtracting equation (i) from (ii),

=> 3a = 3

=> a = 1

From equation (i)

1 + b = 3

b = 3 - 1 = 2

Therefore The correct answer is option 1.

Q27. Answer: (d) 3

Given:

Numbers: 12, 39, 54

Concept Used:

The Highest Common Factor (HCF) is the largest number that divides all the given numbers without leaving a remainder.

Calculation:

Prime factorization of 12: $2^2 \times 3$

Prime factorization of 39: 3 × 13

Prime factorization of 54: 2×3^3

Common factor: 3

HCF = 3

The HCF of 12, 39, and 54 is 3.

Q28. Answer: (c) 6 years

Given:

Six years hence Sunil will be twice as old as Kamal.

Two years ago Sunil was four times as old as Kamal.

Formula Used:

Let the present age of Sunil be S years and the present age of Kamal be K years.

1. S + 6 = 2(K + 6)

2. S - 2 = 4(K - 2)

Calculation:

From equation 1:

S + 6 = 2K + 12

=> S = 2K + 12 - 6

=> S = 2K + 6

From equation 2:

S - 2 = 4K - 8

=> S = 4K - 6

Equating both equations for S:

2K + 6 = 4K - 6

=> 6 + 6 = 4K - 2K

=> 12 = 2K

=> K = 12 / 2

=> K = 6

The present age of Kamal is 6 years.

Q29. Answer: (d) 277 K

The correct answer is 277K.

Key Points

• The density of water is at its maximum at 4 degrees Celsius (39.2 degrees Fahrenheit or 277 Kelvin).

• When water freezes at 0°C (273.15 K), its density is lower than in any liquid state.

• At 4°C (39.2°F) The density of pure water is at its maximum, approximately 1 g/cm³ (or 1000 kg/m³).

• The boiling point of water is 100°C (212°F) and The freezing point of pure water is 0°C (32°F).

Additional Information

• Density at Different Temperatures

0°C (32°F)	**About 0.9998 g/cm³**
10°C (50°F)	About 0.9997 g/cm³
25°C (77°F)	About 0.997 g/cm³
60°C (140°F)	About 0.9832 g/cm³
100°C (212°F)	About 0.9584 g/cm³

Q30. Answer: (a) 2007

The correct answer is 2007.

Key Points

• Earth Hour is a global environmental movement organized by the World Wildlife Fund (WWF) in 2007.

• Earth Hour began in Sydney, Australia, as a small grassroots movement aiming to bring attention to climate change.

• It is observed every year on the last Saturday of March, from 8:30 PM to 9:30 PM local time.

• The theme for the Earth Hour program in 2024 is "Give an Hour for Earth".

Additional Information

Programs related to Earth Issues	**Year**
Intergovernmental Panel on Climate Change (IPCC)	1988
The Paris Agreement	2015
Convention on Biological Diversity (CBD)	1993
Global Environment Facility (GEF)	1991
Clean Seas Campaign	2017
Sustainable Development Goals (SDGs)	2015
Green Climate Fund (GCF)	2010

Q31. Answer: (c) infinitely many

Given:

Range of decimal numbers: 0.225 to 0.227

Formula Used:

Number of decimal numbers between two given numbers = Number of real numbers in the interval

Calculation:

The interval (0.225, 0.227) represents all real numbers between 0.225 and 0.227, excluding the endpoints.

Real numbers between any two distinct real numbers are infinite.

Therefore, there are infinitely many decimal numbers between 0.225 and 0.227.

Q32. Answer: (d) Japan

The correct answer is Japan.

Key Points

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• The 2019 G20 summit was held at the International Exhibition Center in Osaka, Japan.
• The event took place on June 28-29, 2019. It was the first time Japan hosted a G20 summit.
• The G20 consists of 19 countries and the European Union, representing the major economies of the world.
• India was represented by its Prime Minister, Narendra Modi.

Additional Information

• Mexico hosted the 2012 G20 Los Cabos Summit from June 18-19, 2012.
• China hosted its first G20 summit in Hangzhou in 2016.
• The 2023 G20 Summit was held in New Delhi, India, from September 9-10, 2023.
• 2023 India's G20's Motto: "Vasudhaiva Kutumbakam" or "One Earth · One Family · One Future"
• 2024 Brazil's G20's Motto: "Building a just world and a sustainable planet"

Q33. Answer: (d) Only assumption II is implicit.

Given Statement: "She has been sneezing and has runny nose since a year. She could be suffering from allergic rhinitis."-A doctor told a patient's mother.

Now,

Assumptions:

1. Very few diseases have the symptoms of a prolonged sneezing and runny nose - Not Implicit (There is no information in the statement to suggest that only a few diseases have these symptoms.)

2. One symptom of allergic rhinitis is a prolonged sneezing and runny nose - Implicit (The doctor is suggesting that the patient's symptoms could be due to allergic rhinitis, implying that these symptoms are associated with the condition.)

3. Many diseases have the symptom of a prolonged sneezing and runny nose - Not Implicit (The statement does not provide information about the number of diseases that share these symptoms.)

Here, Only assumption II is implicit.

Hence, the correct answer is "Option 4".

Q34. Answer: (d) Egypt

The correct answer is Egypt.

Key Points

• The Suez Canal is an artificial sea-level waterway in Egypt, connecting the Mediterranean Sea to the Red Sea through the Isthmus of Suez.
• The canal is approximately 193.30 kilometers (120.11 miles) long.
• Construction began in 1859 and the canal officially opened on November 17, 1869.
• In March 2021, the Ever Given, a large container ship, ran aground and blocked the canal for six days.

Additional Information

• Brazil has an extensive coastline stretching approximately 7,491 kilometers (4,655 miles) along the Atlantic Ocean.
• The Amazon River is the largest river in Brazil and the second longest in the world.
• Argentina has an extensive Atlantic Ocean coastline stretching about 4,989 kilometers (3,100 miles).
• Argentina’s landscape includes the Andes Mountains in the west, the Pampas plains in the central region, and Patagonian plateaus in the south.
• Oman is located on the southeastern coast of the Arabian Peninsula, Muscat is the capital city of Oman.

Q35. Answer: (b) 125%

Given:

Original side of the square = a

New side of the square = a + 50% of a = 1.5a

Formula Used:

Area of a square = side²

Calculation:

Original area = a^2

New area = $(1.5a)^2$

New area = $1.5a \times 1.5a$

New area = $2.25a^2$

Percentage increase in area = (New Area - Original Area)/(Original Area) × 100

=> Percentage increase in area = $(2.25a^2 - a^2)/(a^2) \times 100$

=> Percentage increase in area = $(1.25a^2)/(a^2) \times 100$

=> Percentage increase in area = 1.25×100

=> Percentage increase in area = 125%

The correct answer is option 2.

Q36. Answer: (d) Liquid oxygen and liquid hydrogen

The correct answer is Liquid Oxygen and liquid hydrogen.

Key Points

• A cryogenic engine is a type of rocket engine that utilizes cryogenic propellants which are liquids.

• Liquid Hydrogen (LH2): Typically used as the fuel.

• Liquid Oxygen (LOX): Commonly used as the oxidizer

• These propellants are stored at temperatures below their boiling points: −253°C (−423°F) for liquid hydrogen and −183°C (−297°F) for liquid oxygen

Additional Information

• Different types of engines in rockets are

1. Solid Rocket Engines -Use solid propellants, which are a mixture of fuel and oxidizer bound together.

2. Liquid Rocket Engines -There are two main types of liquid rocket engines: bipropellant and monopropellant

3. Hybrid Rocket Engines -Combine elements of both solid and liquid engines. Typically, use a solid fuel and a liquid or gaseous oxidizer

4. Electric Propulsion Engines -Electric propulsion uses electrical energy to accelerate propellant ions.

5. Nuclear Thermal and Nuclear Electric Engines (Experimental/Advanced) -Uses a nuclear reactor to heat a propellant like hydrogen.

Q37. Answer: (c) Penicillium

The correct answer is Penicillium.

Key Points

• Penicillium is a Saprophytic fungus that grows on decaying organic matter.

• Penicillium is well known for producing Penicillin, the antibiotic discovered by Alexander Flemming.

• The colonies of Penicillium fungi are often blue or green.

• Some Penicillium species produce mycotoxins, which can be harmful to humans and animals.

Additional Information

• Algae belong to multiple groups within the kingdom Protista.

• Major groups include Green algae (Chlorophyta), Red algae (Rhodophyta), Brown algae (Phaeophyta), Diatoms (Bacillariophyta), and Blue-green algae

• Tapeworms belong to the kingdom Animalia and the phylum Platyhelminthes.

• Each proglottid contains both male and female reproductive organs, making them hermaphroditic.

• Cuscuta belongs to the kingdom Plantae and is now classified in the family Convolvulaceae (morning glory family).

• They are characterized by their thin, thread-like, leafless stems that are yellow, orange, or red, and rarely green.

Q38. Answer: (a) Macro virus

The correct answer is Macro Virus.

Key Points

• A macro virus is a type of malicious software encoded as a macro, which is a series of commands and instructions.

• Typically written in macro languages used by these applications, such as VBA (Visual Basic for Applications) for Microsoft Office documents.

• Concept Virus: One of the earliest and most famous macro viruses, which appeared in 1995 and targeted Microsoft Word documents.

• Often spread through email attachments or files downloaded from the internet.

Additional Information

• A boot sector virus is a type of malware that infects the boot sector of floppy disks or the Master Boot Record (MBR) of hard disks.

• First Discovery: One of the earliest and most famous boot sector viruses is the Brain virus discovered in 1986.

• It was created by Basit Farooq Alvi and Amjad Farooq Alvi, who were Pakistani brothers.

• The first well-known computer worm is the Morris worm, also known as the Internet Worm was released on November 2, 1988.

• Robert Tappan Morris, a graduate student at Cornell University, created the Morris worm.
• The first file virus to affect PCs was the Lehigh virus. The Lehigh virus was discovered in 1987.
• It was named after Lehigh University in the United States, where the virus was first identified on campus.

Q39. Answer: (d) 512

The logic followed here is:
Hence, "Option 4" is the correct answer.

Q40. Answer: (a) (9)/(16)

Given:
Karuna reads 1/4 of a book in one hour.
Formula Used:
Fraction read = (Reading speed) × (Time)
Calculation:
Reading speed = 1/4 of a book per hour
Time = 2 hours 15 minutes = 2.25 hours
Fraction read in 2.25 hours = 1/4 × 2.25
=> Fraction read = 1/4 × 9/4
=> Fraction read = 9/16
Karuna will be able to read 9/16 of the book in 2 hours and 15 minutes.

Q41. Answer: (a) 1 May 2016

The correct answer is 1 May 2016.
Key Points
• The Pradhan Mantri Ujjwala Yojana (PMUY) was launched on May 1, 2016, by Prime Minister Narendra Modi.
• Beneficiaries are mainly women from BPL households, with a special focus on SC/ST communities.
• The applicant must be a woman, over 18 years of age, from a BPL household, and without an existing LPG connection.
• Families identified under Socio-Economic Caste Census (SECC) 2011 data.
Additional Information

SCHEME/POLICY	LAUNCHED IN YEAR
Pradhan Mantri Jan Dhan Yojana(PMJDY)	2014
Make in India Scheme	2014
Swachh Bharat Mission	2014
Pradhan Mantri Awaas Yojana	2015
Pradhan Mantri Ujjwala Yojana	2016
Pradhan Mantri Fasal Bima Yojana(PMFBY)	2016
Pradhan Mantri Garib kalyan Yojana(PMGKY)	2020
Jal Jeevan Mission	2020
Atal Pension Yojana(APY)	2015

Q42. Answer: (d) 15

Shortcut Trick
Marks of student who left = Old Avg − (Increase in Avg × New Strength) = 36 − (1.5 × 24) = 0
Marks of student who joined = New Avg + (Decrease in Avg × Old Strength) = 37.2 + (−0.3 × 24) = 30
Average of these two students = (0 + 30) ÷ 2 = 15
Therefore The correct answer is 15.
Alternate Method
Given: Initial students = 25, Initial Average = 36. After 1 left, Average = 37.5. After 1 joined, Average = 37.2.
Formula: Total Sum = Average × Number of items

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=> Total marks of 25 students = 25 × 36 = 900
=> Total marks after 1 student leaves (24 students) = 24 × 37.5 = 900
=> Marks of the student who left = 900 − 900 = 0
=> Total marks after 1 more student joins (25 students) = 25 × 37.2 = 930
=> Marks of the student who joined = 930 − 900 = 30
=> Average marks of both students = (0 + 30) ÷ 2 = 15
Therefore The correct answer is 15.
Additional Information
Effect of Adding an Item
Value of new item = New Average + (Change in Average × Previous Number of items).
Effect of Removing an Item
Value of removed item = Previous Average − (Change in Average × New Number of items).
Weighted Average
Combined Average = (n1x1 + n2x2) ÷ (n1 + n2), where n is count and x is the average.

Q43. Answer: (a) 9

Given:
Each interior angle of the regular polygon = 140º
Formula Used:
Each interior angle of a regular polygon = ((n-2) × 180º)/n
Calculation:
Given each interior angle = 140º
We need to find the number of sides (n) of the polygon.
Using the formula:
((n-2) × 180º)/n = 140º
=> (n-2) × 180º = 140º × n
=> 180n - 360 = 140n
=> 180n - 140n = 360
=> 40n = 360
=> n = 36040
=> n = 9
The number of sides of the polygon is 9.

Q44. Answer: (d) Independence Day

The correct answer is Independence Day.
Key Points
• Before 1947, January 26 was celebrated as "Independence Day" or "Poorna Swaraj Day" in India.
• This declaration was made during the Lahore Session of the Indian National Congress, held in December 1929.
• This date was chosen later to be the Republic Day of India on January 26, 1950.
• The President of the Lahore Session of the Indian National Congress in 1929 was Pandit Jawaharlal Nehru.
Additional Information
• Martyrs' Day or Shaheed Diwas on January 30 commemorates the assassination of Mahatma Gandhi in 1948.
• Constitution Day (India), also known as Samvidhan Divas or National Law Day, is celebrated on 26th November.
• Adoption Date: On 26th November 1949, the Constituent Assembly of India adopted the Constitution of India.
• Enforcement Date: The Constitution came into effect on 26th January 1950, which is celebrated as Republic Day.
• Drafting Committee: The committee included esteemed members such as Alladi Krishnaswamy Iyer, K.M. Munshi, Muhammad Saadullah, B.L. Mitter, D.P. Khaitan, and N. Gopalaswami Ayyangar.
• Dr. B.R. Ambedkar was the chairman of the Drafting Committee established on 29th August 1947 to draft the Constitution.

Q45. Answer: (c) Jama Masjid of Delhi

The correct answer is Jama Masjid of Delhi.
Key Points
• Masjid-i-Jehan-Numa commonly known as the Jama Masjid Located in Old Delhi, India.

• Commissioned by Mughal Emperor Shah Jahan, It was inaugurated by the first Imam, Syed Abdul Ghafoor Shah Bukhari.
• Architectural Style: Islamic architecture, Architect: Ustad Khalil.
• Two Minarets: Each 40 meters high, flanking the mosque. Three Domes: Situated above the prayer hall are its key elements.

Additional Information

• Buland Darwaza (Door of Victory) is located at Fatehpur Sikri in Agra.
• It was built in 1602 AD by Mughal Emperor Akbar to commemorate his victory over Gujarat in 1573.
• Agra Fort was designated as a UNESCO World Heritage Site in the year 1983.
• Shah Jahan was held a prisoner in Agra Fort by his son Aurangzeb.
• Fatehpur Sikri was the first planned city of the Mughals.
• Upon moving the capital to Lahore in 1585, Fatehpur Sikri remained an area for temporary visits by the Mughal emperors.

Q46. Answer: (a) 1964

The correct answer is 1964.

Key Points

• The Economic Survey in India was delinked from the Union Budget starting from the year 1964.
• The Economic Survey is presented in the Parliament before the Union Budget.
• The Economic Survey provides a comprehensive overview of the country's economic development over the past year.
• It is an important document that helps in understanding the economic challenges and opportunities facing the country.

Additional Information

• Economic Survey
• The Economic Survey is an annual document released by the Ministry of Finance, Government of India.
• It is presented in the Parliament ahead of the Union Budget and is considered an important precursor to the budget.
• The Survey reviews the developments in the Indian economy over the past financial year, summarizes the performance on major development programs, and highlights the policy initiatives of the government and the prospects of the economy in the short to medium term.
• The document is prepared by the Department of Economic Affairs, Ministry of Finance under the guidance of the Chief Economic Advisor.
• Union Budget
• The Union Budget of India, also referred to as the Annual Financial Statement, is the annual budget of the Republic of India.
• The Government presents it on the first day of February so that it can be materialized before the beginning of the new financial year in April.
• The budget is divided into revenue budget and capital budget. The revenue budget includes the government's revenue receipts and expenditure, while the capital budget includes the government's capital receipts and payments.
• The Budget is a crucial document that lays down the government's financial strategy and priorities for the upcoming financial year.
• Chief Economic Advisor
• The Chief Economic Advisor (CEA) is a position in the Government of India, usually an economist of high repute, who is responsible for advising the government on economic matters.
• The CEA heads the Economic Division of the Department of Economic Affairs and is responsible for the preparation of the Economic Survey.
• The CEA also provides inputs on various economic policies and strategies, and plays a key role in drafting and formulating economic policies.
• The position of the CEA is critical for the formulation of policies that aim to foster economic growth and stability.

Q47. Answer: (d) Ganga and Brahmaputra

The correct answer is Ganga and Brahmaputra.

Key Points

• The Sundarban delta is formed by the confluence of two major rivers: the Ganga and the Brahmaputra.
• It is the largest delta in the world, covering an area of approximately 10,000 square kilometers.
• The delta is known for its unique mangrove forests, which are home to a diverse range of flora and fauna, including the famous Royal Bengal Tiger.
• The Sundarban delta plays a crucial role in the ecology of the region, acting as a buffer against cyclones and tidal surges.

Additional Information

• Ganga River:

• The Ganga is one of the major rivers of India, originating from the Gangotri Glacier in the Himalayas.

• It flows through several states in India, including Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, and West Bengal, before emptying into the Bay of Bengal.

• The river is considered sacred in Hinduism and is worshipped as the goddess Ganga.

• The Ganga River basin is one of the most fertile and densely populated regions in the world.

• Brahmaputra River:

• The Brahmaputra originates from the Angsi Glacier in Tibet and flows through China, India, and Bangladesh.

• It is known as the Yarlung Tsangpo in Tibet, the Brahmaputra in India, and the Jamuna in Bangladesh.

• The river is known for its strong currents and seasonal flooding, which play a significant role in the agriculture and economy of the region.

• The Brahmaputra River basin is home to diverse ecosystems, including forests, wetlands, and grasslands.

• Sundarban Mangrove Forest:

• The Sundarban mangrove forest is the largest contiguous mangrove forest in the world, located in the delta region of the Padma, Meghna, and Brahmaputra river basins.

• The forest is a UNESCO World Heritage Site and is known for its rich biodiversity, including species like the Royal Bengal Tiger, saltwater crocodile, and Indian python.

• The Sundarbans provide important ecosystem services, such as carbon sequestration, protection against coastal erosion, and habitat for fish and other marine species.

• The region faces challenges such as habitat loss, climate change, and human-wildlife conflict, necessitating conservation efforts to protect this unique ecosystem.

Q48. Answer: (b) Breadth should be halved

Given:

Original Length = L

Original Breadth = B

Formula Used:

Area of Rectangle = Length × Breadth

Calculation:

Original Area = L × B

New Length = 2L

Let new breadth be B_(new)

To keep the area same:

New Area = Original Area

=> (2L) × B_(new) = L × B

=> B_(new) = (L × B) / 2L

=> B_(new) = B / 2

The breadth should be halved.

Q49. Answer: (c) Kolkata

The correct answer is Kolkata.

Key Points

• The National Library of India is located in Kolkata, West Bengal.

• It is the largest library in India by volume and public record.

• The National Library is housed in the Belvedere Estate, a historic mansion.

• It serves as a repository of information for research and preservation of all kinds of documents.

Additional Information

• National Library of India

• The National Library of India is the country's largest library by volume and also the library of public record.

• It is an institution under the Ministry of Culture, Government of India.

• The library’s primary mission is to collect, disseminate, and preserve the cultural and intellectual heritage of the nation.

• The National Library is notable for its vast collection of books, manuscripts, periodicals, and other documents in multiple languages and disciplines.

• Belvedere Estate

• The Belvedere Estate, where the National Library is housed, was originally the residence of the Governor-General of India until 1911.
• The estate is located in Alipore, Kolkata, and is a significant historical site.
• It features colonial architecture and is surrounded by lush gardens and open spaces.
• The estate also includes a number of other buildings that serve different functions related to the library.
• Library Collections
• The National Library boasts an extensive collection of over 2.2 million books.
• It includes rare manuscripts, journals, periodicals, and newspapers dating back several centuries.
• The library has a special collection of books in Indian languages, foreign languages, and English.
• It also serves as a repository for all publications printed in India under the Delivery of Books and Newspapers (Public Libraries) Act, 1954.

Q50. Answer: (a) Multinational Corporations

The correct answer is Multinational Corporations.

Key Points

• Government Sector: True. Generally, employees working in the government sector are not covered under the ESIC scheme because the government has its health care and employee welfare schemes. Government employees benefit from different health insurance and medical schemes specifically designed for them.

Additional Information

• Private Sector: False. The ESIC scheme very much includes employees in the private sector, provided the establishment meets the criteria set by ESIC in terms of the number of employees and the nature of the business, among other factors.
• Multinational Corporations (MNCs): False. Employees working in MNCs that operate in India and fall within the employee threshold as stipulated by ESIC regulations are covered under the ESIC scheme.
• The key determinant is not the multinational nature but rather compliance with ESIC eligibility criteria.
• Public Sector Undertakings (PSUs): False. Employees of Public Sector Undertakings can be covered under ESIC, depending on the specific terms and conditions governing their employment and the applicability of ESIC regulations to the undertaking.
• Like in the private sector, compliance with ESIC criteria is the key determinant.

Q51. Answer: (a) 25% per annum

Given:

Principal Amount (P) = Rs. 57,600

Amount (A) = Rs. 72,900

Time (T) = 1 year

Compounding frequency = Semi-annually

Formula Used:

Compound Interest Formula: A = P (1 + (r)/(n))^(nt)

Where:

• A = Amount
• P = Principal
• r = Annual interest rate (in decimal)
• n = Number of times interest is compounded per year
• t = Time the money is invested for (in years)

Calculation:

Given that interest is compounded semi-annually, n = 2.

We need to find the annual rate of interest (r).

Using the formula:

72,900 = 57,600 (1 + (r)/(2))^(2×1)

=> (1 + (r)/(2))² = (72,900)/(57,600)

=> (1 + (r)/(2))² = 1.266

Taking the square root on both sides:

=> 1 + (r)/(2) = √(1.266)

=> 1 + (r)/(2) = 1.125

=> (r)/(2) = 1.125 - 1

=> (r)/(2) = 0.125

=> r = 0.25

=> r = 25%

The correct answer is option 1.

Q52. Answer: (a) 8% per annum

Given:

Principal (P) = Rs. 50,000

Time (T) = 5 years

Simple Interest (SI) = Rs. 20,000

Formula Used:

Simple Interest (SI) = (P × R × T) / 100

Calculation:

Using the formula SI = (P × R × T) / 100, we need to find the rate of interest (R).

Given SI = Rs. 20,000, P = Rs. 50,000, and T = 5 years.

=> 20,000 = (50,000 × R × 5) / 100

=> 20,000 = 250,000R / 100

=> 20,000 = 2,500R

=> R = 20,000 / 2,500

=> R = 8

The rate of interest is 8% per annum.

Q53. Answer: (c) 1945

The correct answer is 1945.

Key Points

• India became a member of the United Nations on 30 October 1945.

• India was one of the original 51 member countries that established the United Nations.

• The United Nations was founded after World War II to prevent future wars and conflicts.

• India has been an active member of the United Nations and has contributed to various peacekeeping missions.

Additional Information

• United Nations (UN)

• The United Nations is an international organization founded in 1945. It is currently made up of 193 Member States.

• The mission and work of the United Nations are guided by the purposes and principles contained in its founding Charter.

• The UN is best known for its peacekeeping, peacebuilding, conflict prevention, and humanitarian assistance activities.

• The UN also works on a broad range of fundamental issues, from sustainable development and environment protection to disaster relief and human rights.

• UN Peacekeeping Missions

• UN peacekeeping missions are operations led by the United Nations to help countries navigate the difficult path from conflict to peace.

• Peacekeeping has proven to be one of the most effective tools available to the UN to assist host countries navigate the difficult path from conflict to peace.

• India has a long history of service in UN peacekeeping, having contributed more personnel than any other country.

• Over the years, India has participated in 49 out of the 71 UN peacekeeping missions established around the world.

• Founding of the UN

• The United Nations was established on 24 October 1945 after the end of World War II.

• The UN Charter was signed on 26 June 1945 by the representatives of 50 countries.

• The UN officially came into existence on 24 October 1945, when the Charter had been ratified by China, France, the Soviet Union, the United Kingdom, the United States, and by a majority of other signatories.

• 24 October is now celebrated as United Nations Day each year.

Q54. Answer: (c) 2 min

The correct answer is 2 min.

Key Points

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• The time difference between the actual passing of the Sun over the horizon and our being able to see the image of it on Earth is approximately 2 minutes.

• This phenomenon occurs due to the refraction of light in Earth's atmosphere.

• As light from the Sun enters Earth's atmosphere, it is bent or refracted, causing the Sun to appear slightly higher in the sky than it actually is.

• This effect allows us to see the Sun for a few minutes before it has actually risen and a few minutes after it has actually set.

Additional Information

• Refraction:

• Refraction is the bending of light as it passes from one medium to another with different densities.

• In the context of the Sun's image, light travels from the vacuum of space into Earth's atmosphere, which has a higher density.

• This bending causes the light to change direction, making the Sun appear to be at a different position than where it actually is.

• Atmospheric Refraction:

• Atmospheric refraction is the effect of Earth's atmosphere on the apparent position of celestial objects.

• It is most noticeable during sunrise and sunset, when the path of sunlight through the atmosphere is longest.

• This phenomenon also causes the apparent flattening of the Sun's disk near the horizon.

• Twilight:

• Twilight is the time period during which the Sun is below the horizon but its light is scattered in the upper atmosphere.

• There are three types of twilight: civil, nautical, and astronomical, each defined by the position of the Sun relative to the horizon.

• Refraction plays a key role in extending the duration of twilight by allowing the Sun's light to reach the observer before it has actually risen and after it has set.

Q55. Answer: (d) Convex

The correct answer is Convex.

Key Points

• Convex mirrors are used as rear view wing mirrors in vehicles because they provide a wider field of view compared to flat or concave mirrors.

• This wider field of view helps drivers see more of the area behind and to the sides of their vehicle, reducing blind spots and increasing safety.

• Convex mirrors cause objects to appear smaller than they are, which means they appear farther away. This can help drivers better judge the distance of vehicles behind them.

• These mirrors are also designed to be durable and resistant to breaking, which is important for external automotive applications.

Additional Information

• Concave Mirrors:

• Concave mirrors are curved inward, like the inside of a bowl.These mirrors are used in applications where magnification is needed, such as in shaving mirrors and makeup mirrors.

• They can focus light to a single point, making them useful in devices like telescopes and flashlights.

• However, they are not suitable for rear view mirrors because they have a limited field of view and can distort distances.

• Plane Mirrors:

• Plane mirrors are flat mirrors that reflect images in their normal proportions, reversed from left to right.

• They are commonly used in bathrooms and bedrooms.

• Plane mirrors provide a realistic image without distortion but have a limited field of view.

• They are not ideal for rear view mirrors in vehicles because they do not cover a wide enough area to be useful for safety purposes.

• Convex Mirrors:

• Convex mirrors are curved outward, like the outside of a sphere.

• They provide a wider field of view than plane mirrors, which is why they are used in vehicle wing mirrors.Objects in convex mirrors appear smaller and farther away, which helps drivers better judge distances.

• They are also used in security and surveillance applications to provide a broad view of an area.

Q56. Answer: (d) Begum Hazrat Mahal

The correct answer is Begum Hazrat Mahal.

Key Points

• Begum Hazrat Mahal was one of the leading figures of the Indian Rebellion of 1857.

• She was the wife of Nawab Wajid Ali Shah, the ruler of Awadh (Oudh), whose kingdom was annexed by the British.

• After the annexation of Awadh, she took charge of the revolt at Lucknow and played a significant role in the uprising against the British East India Company.

• Begum Hazrat Mahal is remembered for her bravery and leadership in the struggle for independence and is considered a national hero in India.

Additional Information

• 1857 Revolt (Indian Rebellion of 1857)

• The Indian Rebellion of 1857, also known as the First War of Indian Independence, was a major, but ultimately unsuccessful, uprising in India against the rule of the British East India Company.

• The revolt began on 10 May 1857 in the form of a mutiny of sepoys of the Company's army in the town of Meerut.

• It soon escalated into other mutinies and civilian rebellions, particularly in the upper Gangetic plain and central India.

• Significant leaders of the revolt included Rani Lakshmibai of Jhansi, Tantia Tope, and Bahadur Shah Zafar in addition to Begum Hazrat Mahal.

• Annexation of Awadh

• Awadh (Oudh) was annexed by the British East India Company in 1856 under the pretext of misgovernance by Nawab Wajid Ali Shah.

• This annexation was part of Lord Dalhousie's Doctrine of Lapse, which aimed to annex Indian states with no clear heir or perceived misrule.

• The annexation of Awadh was one of the key events that led to widespread discontent and ultimately the 1857 revolt.

• Nawab Wajid Ali Shah

• Nawab Wajid Ali Shah was the last Nawab of Awadh (Oudh).

• He was known for his patronage of the arts, particularly music and dance.

• After the annexation of Awadh, he was exiled to Calcutta (Kolkata) by the British.

Q57. Answer: (a) 112 km

Given:

Time travelled = 5 h

Speed for the first half of the distance = 21 km/h

Speed for the second half of the distance = 24 km/h

Formula Used:

Distance = Speed × Time

Calculation:

Let the total distance be D km.

Distance for the first half = D/2

Distance for the second half = D/2

Time for the first half = (D/2) / 21

Time for the second half = (D/2) / 24

Total time = Time for the first half + Time for the second half

5 = (D/2) / 21 + (D/2) / 24

=> 5 = (D/42) + (D/48)

=> 5 = D(1/42 + 1/48)

=> 5 = D(48 + 42) / (42 × 48)

=> 5 = D(90) / (2016)

=> 5 = 90D / 2016

=> 5 × 2016 = 90D

=> 10080 = 90D

=> D = 10080 / 90

=> D = 112

The distance travelled is 112 km.

Q58. Answer: (c) 3

Given:

Time taken by a man to complete the job = 8 days

Time taken by a woman to complete the job = 12 days

2 men and some women need to complete the job in 2 days
Formula Used:
Work done by 1 man in 1 day = 1 / Time taken by a man
Work done by 1 woman in 1 day = 1 / Time taken by a woman
Total work done = Work done by 2 men in 2 days + Work done by 'n' women in 2 days
Calculation:
Work done by 1 man in 1 day = 1/8
Work done by 2 men in 1 day = 2 × 1/8 = 1/4
Work done by 1 woman in 1 day = 1/12
Work done by 'n' women in 1 day = n × 1/12
Work done by 2 men in 2 days = 2 × 1/4 = 1/2
Work done by 'n' women in 2 days = 2 × (n × 1/12) = n/6
Total work done by 2 men and 'n' women in 2 days = 1/2 + n/6
Since the total work is 1 job:
=> 1/2 + n/6 = 1
=> n/6 = 1 - 1/2
=> n/6 = 1/2
=> n = 1/2 × 6
=> n = 3
The correct answer is option 3.

Q59. Answer: (b) 3

Given:
Expression to evaluate: 3 tan25º tan35º tan45º tan55º tan65º
Formula Used:
Utilize the identity: tan(90º - θ) = cot(θ) and tan45º = 1
Calculation:
First, recall the trigonometric identities:
tan(90º - 25º) = tan65º
tan(90º - 35º) = tan55º
Given expression:
3 tan25º tan35º tan45º tan55º tan65º
Using the identities:
tan65º = cot25º and tan55º = cot35º
Therefore, the expression becomes:
3 tan25º tan35º tan45º cot35º cot25º
Note that tanθ × cotθ = 1
So, the expression simplifies to:
3 × (tan25º × cot25º) × (tan35º × cot35º) × tan45º
=> 3 × 1 × 1 × 1
=> 3
The correct answer is option 2: 3

Q60. Answer: (b) QSU

The logic followed here is:
Option 1) JLO
Option 2) QSU
Option 3) XZC
Option 4) CEH
Thus, out of all the options 'QSU' is the odd one out.
Hence, "Option 2" is the correct answer.

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Q61. Answer: (c) Boutros Boutros-Ghali

The correct answer is Boutros Boutros-Ghali.

Key Points

• Boutros Boutros-Ghali was the first Secretary-General of the United Nations from the African continent.

• He served as the sixth Secretary-General of the United Nations from January 1992 to December 1996.

• Boutros-Ghali was an Egyptian diplomat and a scholar of international law and relations.

• During his tenure, he was known for his efforts in peacekeeping missions and his publication of "An Agenda for Peace".

Additional Information

• United Nations Secretary-General

• The Secretary-General is the chief administrative officer of the United Nations and heads the UN Secretariat.

• The role includes managing the UN's operations, representing the organization to the world, and upholding the principles of the UN Charter.

• The Secretary-General is appointed by the General Assembly upon the recommendation of the Security Council.

• Terms are typically five years, with the possibility of reappointment.

• Boutros Boutros-Ghali's Contributions

• During his tenure, Boutros-Ghali focused on reforming the UN, emphasizing conflict prevention and resolution.

• He authored "An Agenda for Peace" which proposed ways to strengthen and improve the capacity of the United Nations in conflict resolution and peacekeeping.

• Boutros-Ghali was also involved in addressing numerous global crises, including the Rwandan Genocide and the conflict in Bosnia.

• Despite his efforts, his tenure faced criticism for some perceived failures, leading to the United States vetoing his reappointment for a second term.

• African Representation in the UN

• Boutros-Ghali's appointment was significant as it represented increased African involvement in international diplomacy and leadership.

• It highlighted the growing role of developing nations in global governance.

• His term helped to bring more attention to African issues and the importance of international support for the continent.

• Following Boutros-Ghali, another African, Kofi Annan from Ghana, served as the Secretary-General from 1997 to 2006.

Q62. Answer: (b) Goa

The correct answer is Goa.

Key Points

• India's first costume museum, known as "Moda Goa Museum and Research Centre," was inaugurated in Goa.

• The museum was established by renowned Indian fashion designer Wendell Rodricks.

• The museum is housed in a 450-year-old traditional Goan villa in the village of Colvale.

• It showcases various exhibits reflecting the history of Goan costumes and the evolution of Goan fashion over the centuries.

Additional Information

• Moda Goa Museum and Research Centre

• Founded by Wendell Rodricks, an iconic Indian fashion designer known for promoting Goan culture through his work.

• The museum aims to preserve and promote the unique sartorial heritage of Goa and its influence on Indian fashion.

• It features a diverse collection of costumes, accessories, and textiles, providing insights into the socio-cultural history of Goa.

• The museum also serves as a research center for students and scholars interested in the study of costume and fashion history.

• Wendell Rodricks

• Wendell Rodricks was a celebrated Indian fashion designer and author, born on 28 May 1960 in Goa.

• He was known for his minimalist designs and for incorporating traditional Goan elements into contemporary fashion.

• Rodricks was a vocal advocate for LGBTQ+ rights and a promoter of sustainable fashion.

• He received several prestigious awards, including the Padma Shri in 2014 for his contributions to Indian fashion.

• Goa's Cultural Heritage

• Goa, a state on the western coast of India, has a rich cultural heritage influenced by its history of Portuguese colonization.

• The state's architecture, cuisine, and festivals reflect a blend of Indian and Portuguese cultures.

• Goa is known for its vibrant arts and crafts, including traditional music, dance, and folk theatre.

• The state's unique cultural identity is celebrated through various museums, art galleries, and cultural centers.

Q63. Answer: (b) B

Given: Five chocolate cakes labeled A, B, C, D, and E are made by a baker.

1) A is sweeter than E but not as sweet as D.

D > A > E

2) D is not as sweet as B.

B > D > A > E

3) B is sweeter than C.

C < B > D > A > E

Thus, according to the final arrangement B is the sweetest.

Hence, "Option 2" is the correct answer.

Q64. Answer: (a) Weber

The correct answer is Weber.

Key Points

• The Weber (Wb) is the SI unit of magnetic flux, quantifying the total magnetic field that passes through a specified area.

• One Weber is defined as the magnetic flux that induces an electromotive force (EMF) of one volt when the flux is reduced to zero in one second.

• Magnetic flux (Φ) can be calculated using the formula $\Phi = B \times A \times \cos(\theta)$, where B is the magnetic field strength, A is the area through which the field lines pass, and θ is the angle between the magnetic field lines and the normal to the surface.

• The concept of magnetic flux is essential in electrical engineering, particularly in the functioning of transformers, electric generators, and inductors.

• The unit is named after Wilhelm Eduard Weber, a prominent physicist who made significant contributions to the study of electromagnetism in the 19th century.

Additional Information

• Pascal (Pa):-

• The SI unit of pressure, defined as one newton per square meter. It is not related to magnetic flux but is essential in fluid mechanics and engineering.

• Farad (F):-

• The SI unit of capacitance, measuring a capacitor's ability to store electrical charge. It’s important in circuits but does not measure magnetic phenomena.

• Henry (H):-

• The SI unit of inductance, indicates how effectively a coil can induce voltage when the current changes. While related to magnetic fields, it is distinct from magnetic flux.

• Link to Faraday’s Law:-

• The concept of magnetic flux is integral to Faraday’s Law of Electromagnetic Induction, which states that a change in magnetic flux through a circuit induces an EMF.

Q65. Answer: (b) Education

The correct answer is Education.

Key Points

• Wood's Dispatch, officially known as the "Wood's Dispatch on Education," was issued in 1854 by Sir Charles Wood, the then President of the Board of Control of India.

• It is often considered the foundation of modern education policy in India.

• The dispatch emphasized the need for expanding education in India, particularly in the English language, and recommended the establishment of universities, colleges, and schools.

• It also highlighted the importance of both primary and higher education and aimed to promote women's education.

• The document laid the groundwork for future educational reforms and the development of a structured education system in India.

Additional Information

• Railways:

• The introduction of railways in India was a significant British initiative during the 19th century, aimed at improving transportation and trade.

• The first railway line opened in 1853, connecting Bombay (now Mumbai) to Thane.

• Railways played a crucial role in the economic development of India, facilitating the movement of goods and people, but also served colonial interests.

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• Irrigation:

• Irrigation projects were vital for agriculture in India, particularly in arid and semi-arid regions.

• The British implemented various irrigation schemes to enhance agricultural productivity, which in turn supported the export of cash crops.

• Industry:

• Industrial development in India was limited under British rule, with a focus on raw material extraction for British industries.

• The late 19th and early 20th centuries saw the establishment of some industries, particularly textiles and jute, but Indian entrepreneurship faced significant challenges.

• Post-independence, India shifted towards promoting Indigenous industries and self-reliance through various policies

Q66. Answer: (b) David Ricardo

The correct answer is David Ricardo.

Key Points

• The law of comparative advantage explains that a country should produce and export goods in which it has a lower opportunity cost compared to other countries, enhancing overall economic efficiency.

• David Ricardo introduced this concept in his 1817 work, "Principles of Political Economy and Taxation," highlighting the benefits of trade even when one country is more efficient in producing all goods.

• The principle emphasizes the importance of opportunity costs in production decisions, arguing that trade can be beneficial if countries specialize in goods for which they have the greatest relative efficiency.

• The law is often depicted through production possibility frontiers (PPFs), showing how specialization and trade can lead to better resource allocation and economic gains.

Additional Information

• Adam Smith:

• Known for the concept of absolute advantage, where a country can produce more efficiently than others, Smith laid the groundwork for economic theory but did not articulate comparative advantage.

• Bertil Ohlin:

• Ohlin contributed to international trade theory, particularly regarding factor proportions, but did not develop the comparative advantage concept.

• Eli Heckscher:

• Heckscher, along with Ohlin, created the Heckscher-Ohlin model, which explores trade based on a country's resource endowments, expanding on Ricardo's ideas.

Q67. Answer: (a) Only conclusion II follows.

The least possible Venn diagram for the given statements is as shown below :

Conclusions:

I. Some girls are lazy → Does not follow (As some girls are boys and no boys are lazy. As no direct relation is given between girls and lazy, therefore it is false)

II. Some girls are not lazy → Follow (As some girls are boys and no boys are lazy. As gilrs has some part common with boys which cannot be lazy, therefore it is true.)

Therefore Here, Only conclusion II follows.

Hence, the correct answer is "Option 1"

Q68. Answer: (d) Maharashtra

The correct answer is Maharashtra.

Key Points

• Black soil, also known as Regur soil, is rich in clay and has a high moisture-retaining capacity, making it suitable for certain types of agriculture.

• This type of soil is predominantly found in the Deccan Plateau region of India, particularly in states like Maharashtra, Gujarat, Madhya Pradesh, and parts of Karnataka.

• Black soil is particularly favorable for growing cotton, which is why it is often referred to as "cotton soil." It also supports the cultivation of crops like sorghum (jowar), millet, and various pulses.

• Black soil is formed from volcanic rocks and is rich in minerals like iron, calcium, and magnesium, contributing to its fertility.

• The regions with black soil generally experience a semi-arid climate, which influences the types of crops that can be cultivated.

Additional Information

• Karnataka:

• While black soil is found in parts of Karnataka, it is not as predominant as in Maharashtra, where it covers a larger area.

• Jharkhand:

• The state has a mix of soil types, including red and alluvial soils, but black soil is not a major feature.

• Odisha:

• Odisha primarily has laterite and alluvial soils, with black soil being less common.

• Soil Management:

• Farmers in black soil regions often employ specific agricultural practices to maximize crop yields, including the use of organic matter and crop rotation.

• Economic Importance:

• The cotton grown in black soil regions plays a significant role in the textile industry, contributing to the economy of states like Maharashtra.

Q69. Answer: (b) NIOTUCDNSATR

The logic followed here is:

"MOLECULES' is written as 'SLEUECLMO"

Similarly,

'TRANSDUCTION' will be written as

Hence, "Option 2" is the correct answer.

Q70. Answer: (d) 13

Given:

10 - 2 1/5 + 5 1/5

Calculation:

10 - 2 1/5 + 5 1/5

=> 10 - 11/5 + 26/5

=> (50 - 11 + 26)/5 = 65/5 = 13

Therefore The correct answer is 13.

Q71. Answer: (c) 42 days

Given:

A and B together can do a piece of work in 21 days.

A, B, and C together can finish it in 14 days.

Formula Used:

Work rate of A and B together = 1/21

Work rate of A, B, and C together = 1/14

Work rate of C alone = Work rate of A, B, and C together - Work rate of A and B together

Calculation:

Work rate of A and B together = 1/21

Work rate of A, B, and C together = 1/14

Work rate of C alone => 1/14 - 1/21

=> (21 - 14) / (14 × 21)

=> 7 / 294

=> 1 / 42

Time taken by C alone to finish the work = 42 days

The correct answer is option 3.

Q72. Answer: (c) Charles Wilkins

The correct answer is Charles Wilkins.

Key Points

• Charles Wilkins translated the Bhagavad Gita into English in 1785, making it the first complete translation of this significant Hindu scripture.

• Wilkins's translation helped introduce key concepts of Hindu philosophy, such as dharma (duty) and yoga (the path to realization), to a Western audience, influencing the study of Indian philosophy in Europe.

• His translation was completed during the British colonial period, a time marked by growing interest in Oriental studies.

• Wilkins utilized a literal translation approach, aiming to stay true to the original Sanskrit text while making it comprehensible to English readers.

• The translation influenced notable figures such as Ralph Waldo Emerson and Henry David Thoreau, who were inspired by the Gita's teachings.

Additional Information

• Colebrook:

• Henry Thomas Colebrook, while an important figure in Indian studies, is known for his work on Sanskrit grammar and for translating parts of the Arthashastra but did not translate the Bhagavad Gita.

• William Jones:

• An influential figure in the early 19th century, Jones founded the Asiatic Society in 1784. He is known for his studies on Sanskrit and its relation to European languages but did not complete a translation of the Bhagavad Gita.

• Max Mueller:

• Although a prominent scholar of Indian philosophy and linguistics, Max Mueller’s contributions included translations of the Rigveda and other texts, but he was not involved in translating the Bhagavad Gita.

• Legacy of Wilkins:

• The impac t of Wilkins’s translation extended beyond academia; it played a role in the Bengal Renaissance, influencing thinkers like Swami Vivekananda and contributing to the rise of Indian nationalism.

Q73. Answer: (c) Kamal

Given: Six friends Priti, Kamal, Rohit, Sweety, Meenu and Umesh, are sitting in a circle. Their faces are towards the centre.

1) Meenu is sitting second to the left of Rohit.

2) Umesh is sitting between Rohit and Priti.

3) Sweety is sitting to the immediate right of Priti.

After positioning Sweety only one position is left which will be occupied by the only person left i.e. Kamal.

Thus, Kamal is sitting between Rohit and Meenu.

Hence, "Option 3" is the correct answer.

Q74. Answer: (b) 10

Given:

We need to find the mean of the first ten odd natural numbers.

Formula Used:

Mean = Sum of all numbers / Total count of numbers

Calculation:

First ten odd natural numbers: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19

Sum of these numbers = 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19

Sum = 100

Total count of numbers = 10

Mean = Sum / Total count

=> Mean = 100 / 10

=> Mean = 10

The correct answer is option 2.

Q75. Answer: (c) 45º

Given:

Height of the observer = 1.5 m

Distance from the observer to the tower = 24.5 m

Height of the tower = 26 m

Formula Used:

tan(θ) = Opposite / Adjacent

Calculation:

Height difference between the top of the tower and the observer's eye level:

Height difference = Height of the tower - Height of the observer

Height difference = 26 m - 1.5 m

Height difference = 24.5 m

Using the tan(θ) formula:

tan(θ) = Opposite / Adjacent

tan(θ) = 24.5 / 24.5

tan(θ) = 1

To find θ, we take the arctan (inverse of tan):

θ = arctan(1)

θ = 45º

The angle of elevation of the top of the tower from the eye of the observer is 45º.

Q76. Answer: (a) IOCL

The correct answer is IOCL.

Key Points

• Maharatna is a status granted by the Government of India to certain public sector enterprises, enabling them greater operational and financial autonomy.

• Criteria for Maharatna: To qualify as a Maharatna, a company must have:

• An average annual turnover of over Rs. 25,000 crore in the last three years.

• An average annual net worth of over Rs. 15,000 crore.

• An average annual net profit of over Rs. 5,000 crore.

• Indian Oil Corporation Limited (IOCL):

• IOCL is the largest commercial oil company in India and was granted Maharatna status in 2010.

• It plays a crucial role in the oil and gas sector, including refining, pipeline transportation, and marketing.

Additional Information

• BSNL (Bharat Sanchar Nigam Limited):

• Although a significant public sector enterprise in telecommunications, it does not have Maharatna status.

• MTNL (Mahanagar Telephone Nigam Limited):

• Similar to BSNL, MTNL operates in the telecom sector but does not meet the criteria for Maharatna status.

• HAL (Hindustan Aeronautics Limited):

• HAL is a major player in the aerospace and defense sectors but has not been granted Maharatna status.

• Significance of Maharatna Status:

• This status allows companies to make investment decisions up to Rs. 1,000 crore without prior government approval, enhancing their ability to expand and innovate.

Important Points

• India's central public sector enterprises (CPSEs) play a crucial role in driving the nation's economic growth and development.

• These CPSEs are categorised into three distinct groups based on their performance, operational autonomy, and strategic importance –

• Miniratna:- can invest up to 500 crore

• Navratna:- can invest up to 1,000 crore

• Maharatna:- can invest up to 5,000 crore

• As of 2024, there are 13 Maharatna companies in India, including:

• Bharat Heavy Electricals Limited (BHEL)

• Bharat Petroleum Corporation Limited (BPCL)

• Coal India Limited (CIL)

• GAIL India Limited (GAIL)

• Hindustan Petroleum Corporation Limited (HPCL)

• Indian Oil Corporation Limited (IOCL)

• National Thermal Power Corporation (NTPC)

• Oil & Natural Gas Corporation Limited (ONGC)

• Power Grid Corporation of India Limited (POWERGRID)

• Steel Authority of India Limited (SAIL)

• Rural Electrification Corporation Limited (REC)

• Power Finance Corporation (PFC)

• Oil India Limited (OIL)

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Q77. Answer: (b) Rs. 55,000

Given:

Average salary of husband and wife = Rs. 65,000

Ratio of their salaries = 15 : 11

Formula Used:

Let the salary of the husband be 15x and the salary of the wife be 11x.

Average salary = (Salary of husband + Salary of wife) / 2

Calculation:

Average salary = Rs. 65,000

=> (15x + 11x) / 2 = 65,000

=> 26x / 2 = 65,000

=> 13x = 65,000

=> x = 65,000 / 13

=> x = 5,000

Salary of the wife = 11x

=> 11 × 5,000

=> Rs. 55,000

The salary of the wife is Rs. 55,000.

Q78. Answer: (b) B20U

The logic followed here is:

Option 1) K23L

Option 2) B20U

Option 3) B12J

Option 4) C18O

Thus, out of all the options 'B20U' is the odd one out.

Hence, "Option 2" is the correct answer.

Q79. Answer: (a) 5/26

Given:

Total letters in the English alphabet = 26

Number of vowels (A, E, I, O, U) = 5

Formula Used:

Probability = (Number of favorable outcomes) / (Total number of outcomes)

Calculation:

Number of favorable outcomes = 5

Total number of outcomes = 26

Probability = 5 / 26

=> Probability = 5 / 26

The probability of getting a vowel is 5/26.

Q80. Answer: (c) Pisum sativum

The correct answer is Pisum sativum.

Key Points

• The scientific name "Pisum sativum" is used to classify the green pea, which belongs to the family Fabaceae (legumes).

• Green peas are widely consumed as a vegetable and are known for their nutritional benefits, including being a good source of vitamins, minerals, and protein.

• Pisum sativum is cultivated in temperate regions around the world and is typically planted in the spring.

• There are several varieties of Pisum sativum, including garden peas, snap peas, and snow peas, each with different uses in cooking and food preparation.

Additional Information

• Zea mays (Corn/Maize):

• Zea mays is a cereal grain first domesticated by indigenous peoples in southern Mexico about 10,000 years ago.

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• The United States is the largest producer of maize, followed by China and Brazil.

• Triticum aestivum (Common Wheat):

• Triticum aestivum is one of the most widely cultivated species of wheat and is a key staple food worldwide.

• Wheat is grown in diverse climates and is a major crop in countries like China, India, and the United States.

• Pisum sativum (Green Pea):

• Green peas help improve soil fertility through nitrogen fixation, benefiting subsequent crops in rotation.

• The main types include garden peas, which are typically consumed fresh; snow peas, which have edible pods; and snap peas, which are sweet and crunchy.

Q81. Answer: (a) Telangana

The correct answer is Telangana.

Key Points

• Mathuri folk dance is an important traditional dance of Telangana, reflecting the cultural heritage and social practices of the region.

• The dance is typically performed during festivals and celebrations, showcasing the joy and communal spirit of the local people.

• Traditional musical instruments such as drums and flutes accompany the dance, enhancing its energetic and festive atmosphere.

• The other folk dances of Telangana are Gussadi dance, Dhimsa dance, Lambadi dance, Perini Sivatandavam, and Dappu dance.

Additional Information

State	Dance Forms
Himachal Pradesh	Kinnauri, Thoda, Jhora, Jhali, Chharhi, Dhaman, Chhapeli, Mahasu, Dangi, Chamba, Thali, Jhainta, Daf, Stick dance
Uttarakhand	Chappeli, Gadhwali, Kumayuni, Kajari, Jhora, Raslila
Punjab	Bhangra, Giddha, Daff, Dhaman, Bhand, Naqual
Haryana	Jhumar, Phag Dance, Daph, Dhamal, Loor, Gugga, Khor, Gagor
Uttar Pradesh	Nautanki, Raslila, Kajri, Jhora, Chappeli, Jaita
Rajasthan	Ghoomar, Suisini, Kalbeliya, Chakri, Ganagor, Jhulan Leela, Jhuma, Ghapal, Panihari, Ginad
Gujarat	Garba, Dandiya Ras, Bhavai, Tippani Juriun
Maharashtra	Lavani, Nakata, Koli, Lezim, Gafa, Dahikala Dasavtar or Bohada, Tamasha, Mauni, Powara, Gouricha
Madhya Pradesh	Tertali, Maanch, Matki, Aada, Khada Nach, Phulpati, Grida Dance, Selalarki, Selabhadoni, Jawara
Chhattisgarh	Gaur Maria, Panthi, Raut Nacha, Pandwani, Vedamati, Kapalik, Chandaini, Bharthari Charit, Goudi, Karma, Jhumar, Dagla, Pali, Tapali, Navrani, Diwari, Mundari
Jharkhand	Karma Munda, Karma, Agni, Jhumar, Janani Jhumar, Mardana Jhumar, Paika, Phagua, Chhanu, Sarahul, Jat-Jatin, Danga, Bidesia, Sohrai, Hunta Dance, Mundari Dance
Bihar	Jata-Jatin, Bakho-Bakhain, Panwariya, Sama-Chakwa, Bidesia, Jatra
West Bengal	Purulia Chhau, Alkap, Kathi, Gambhira, Dhali, Jatra, Baul, Marasia, Mahal, Keertan, Santhali Dance, Gambhira, Gajan, Chaibari Nritya
Sikkim	Chu Faat, Yak Chaam Sikmari, Singhi Chaam, Denzong Gnenha, Tashi Yangku, Khukuri Naach, Chutkey Naach, Maruni Dance
Meghalaya	Laho, Baala, Ka Shad Suk Mynsiem, Nongkrem
Assam	Bihu, Bichhua, Natpuja, Maharas, Kaligopal, Bagurumba, Naga dance, Khel Gopal, Tabal Chongli, Canoe, Jhumura Hobjanai

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Arunachal Pradesh	Chham, Mask dance (Mukhauta Nritya), War dance, Buiya, Chalo, Wancho, Pasi Kongki, Ponung, Popir, Bardo
Nagaland	Chong, Khaiva, Lim, Nuralim, Bamboo Dance, Temangnetin, Hetaleulee, Rangma, Zeliang, Nsuirolians, Gethinglim
Manipur	Thang Ta, Lai Haraoba, Pung Cholom, Rakhal, Nat Rash, Maha Rash, Raukhat, Dol Cholam, Khamba Thaibi, Nupa Dance, Raslila, Khubak Ishei, Lhou Sha
Mizoram	Cheraw Dance, Khuallam, Chailam, Sawlakin, Chawnglaizawn, Zangtalam, Par Lam, Sarlamkai, Tlanglam, Khanatm, Pakhupila, Cherokan
Tripura	Hozagiri
Odisha	Ghumara, Ranappa, Savari, Painka, Munari, Chhau, Chadya Dandanata
Andhra Pradesh	Ghantamardala, Ottam Thedal, Mohiniattam, Kummi, Siddhi, Madhuri, Chhadi, Vilasini Natyam, Bhamakalpam, Veeranatyam, Dappu, Tappeta Gullu, Lambadi, Dhimsa, Kolattam, Butta Bommalu
Karnataka	Yakshagana, Huttari, Suggi, Kunitha, Karga, Lambi
Goa	Fugdi, Dhalo, Kunbi, Dhangar, Mandi, Jhagor, Khol, Dakni, Tarangamel, Shigmo, Ghode, Modni, Samayi nrutya, Jagar, Ranmale
Telangana	Perini Shivatandavam, Keisabadi
Kerala	Ottam Thulal, Kaikottikali, Tappatikali, Kali Auttam
Tamil Nadu	Karagam, Kumi, Kolattam, Kavadi

Q82. Answer: (a) 5/2

Given:

(320 ÷ 8 × 8 ÷ 4 × 1/2)/(180 × 5 ÷ 45 - 4)

Calculation:

(320 ÷ 8 × 8 ÷ 4 × 1/2)/(180 × 5 ÷ 45 - 4)

=> (40 × 2 × 1/2)/(4 × 5 - 4)

=> 40/(20 - 4) = 40/16 = 5/2

Therefore The correct answer is 5/2.

Q83. Answer: (d) Six year term or continue till the age of 65, whichever is earlier.

The correct answer is Six year term or continue till the age of 65, whichever is earlier.

Key Points

• The Chief Election Commissioner (CEC) of India is appointed by the President of India.

• The CEC serves for a term of six years but may continue in office until the age of 65 years, whichever comes first.

• They enjoy the same status and receive salary and perks as available to Judges of the Supreme Court of India.

• The Chief Election Commissioner is supported by two Election Commissioners, who are also appointed by the President, and together they form the Election Commission of India.

Additional Information

• The Election Commission of India(ECI) is a permanent constitutional body created in 1950 according to constitutional provisions.

• Part XV of the Indian Constitution deals with ECI.

• It is an all-India body that is common to both Central and state.

• Article 324 of the Indian constitution deals with the ECI.

• It is responsible for the conduction of elections for both the houses of Rajya Sabha and Lok Sabha as well as state legislative assemblies.

• It is also responsible for the elections for president, vice president, and legislative assemblies for union territories.

Important Points

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• As of September 2024:-
• Chief Election Commissioner:- Rajiv Kumar
• Election Commissioners:-
• Gyanesh Kumar
• Sukhbir Singh Sandhu

Q84. Answer: (a) Himadri

The correct answer is Himadri.

Key Points

• Himadri is India's first research station located at the International Arctic Research Base in Ny-Alesund, Svalbard, Norway.
• The station was inaugurated in 2008 and is part of India's efforts to conduct scientific research in the Arctic region.
• Himadri conducts research on various subjects, including climate change, glaciology, and biodiversity in the Arctic environment.
• Research conducted at Himadri is crucial for studying the impacts of climate change, as the Arctic region is significantly affected by rising temperatures and changing ecosystems.

Additional Information

• Maitri:-
• This is India's second research station, located in Antarctica, established in 1989. It focuses on various scientific studies, including glaciology and meteorology.
• Bharathi:-
• Another Antarctic research station established in 2012, Bharathi serves as a base for scientific research in the region.
• Dakshin Gangotri:-
• This was India's first research station in Antarctica, established in 1983, but it has been decommissioned and is no longer operational.
• India's Polar Research Program:-
• India has been actively involved in polar research since the early 1980s, contributing to global scientific efforts to understand climate change and its effects on the environment.

Q85. Answer: (b) 1024 PB

The correct answer is 1024 PB.

Key Points

• EB stands for Exabyte, which is a unit of digital information storage.
• 1 Exabyte (EB) is equal to 1024 Petabytes (PB).
• Petabyte (PB) is a unit of digital information storage equal to 1024 Terabytes (TB).
• Exabyte is often used to measure data storage capacity for large-scale data centers and cloud storage services.

Additional Information

• Exabyte (EB)
• An Exabyte (EB) is a unit of digital information storage equal to 10^18 bytes (1,000,000,000,000,000,000 bytes) or 1024 Petabytes (PB).
• EB is used to describe large data sets and is often utilized in the context of big data, data warehouses, and cloud storage.
• For example, it is estimated that all the words ever spoken by humans would take up about 5 Exabytes of storage.
• Petabyte (PB)
• A Petabyte (PB) is a unit of digital information storage equal to 10^15 bytes (1,000,000,000,000,000 bytes) or 1024 Terabytes (TB).
• PB is commonly used to measure the amount of data in large databases and data warehouses.
• For example, the Large Hadron Collider (LHC) generates about 15 Petabytes of data annually.
• Terabyte (TB)
• A Terabyte (TB) is a unit of digital information storage equal to 10^12 bytes (1,000,000,000,000 bytes) or 1024 Gigabytes (GB).
• TB is commonly used to measure the storage capacity of hard drives and other storage devices.
• For example, a modern laptop may have a storage capacity of 1 to 2 Terabytes.
• Gigabyte (GB)
• A Gigabyte (GB) is a unit of digital information storage equal to 10^9 bytes (1,000,000,000 bytes) or 1024 Megabytes (MB).
• GB is commonly used to measure the size of files, such as videos, photos, and software applications.
• For example, a high-definition movie may take up about 4 to 5 Gigabytes of storage.

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Q86. Answer: (b) 7T

The logic followed here is:

Hence, "Option 2" is the correct answer.

Q87. Answer: (a) R

Given: A jeweler has five gold articles 'P', 'Q', 'R', 'S' and 'T', each of which weighs differently.

1) 'R' weighs half as much as 'Q'. → Q = 2R

2) 'Q' weighs half as much as P. → P = 2Q

3) 'T' weighs thrice as much as 'S'. → T = 3S

4) 'S' weighs four times as much as 'R'. → S = 4R

5) 'P' weighs less than 'T' but more than 'R'. → T > P > R

From point 1 and 2 we get,

P = 2Q = 2(2R)

P = 2Q = 4R ---- (1)

From point 3 and 4 we get,

T = 3S = 3(4R)

T = 3S = 12R ---- (2)

5) 'P' weighs less than 'T' but more than 'R'. → T > P > R

From equation 1 and 2 and point 5 we can get,

T > S > P > Q > R

Thus, from the final arrangement R gold article is the lightest in weight.

Hence, "Option 1" is the correct answer.

Alternate Method

From point 1 and 2 we get,

P = 2Q = 2(2R)

P = 2Q = 4R ---- (1)

From point 3 and 4 we get,

T = 3S = 3(4R)

T = 3S = 12R ---- (2)

From equation 1 and 2 we get,

3(P) = 3(2Q) = 3(4R) = 3S = T

3P = 6Q = 12R = 3S = T

Now, considering the weight relative to R:

12R = 3P 4R = P	**12R = 6Q 2R = Q**	**12R = 3S 4R = S**	**12R = T 12R = T**

Since, all the weights are expressed in terms of multiples of R, therefore R is the lightest in weight.

Q88. Answer: (b) 259

The logic followed here is:

Logic: 1st number × 37 = 2nd number.

Now,

For, 3 : 111

=> 3 × 37 = 111.

Similarly, for 7 : ?

=> 7 × 37 = 259.

Hence, the correct answer is "Option 2".

Q89. Answer: (d) 38534

The logic followed here is:

RAIN is written as 4678

Letter	**R**	**A**	**I**	**N**
Code	4	6	7	8

And,
WET is written as 135

Letter	W	E	T
Code	1	3	5

Similarly,
ENTER will be written as

Letter	E	N	T	E	R
Code	3	8	5	3	4

Thus, ENTER is written as 38534.
Hence, "Option 4" is the correct answer.

Q90. Answer: (d) Metal

The logic followed here is:

Aluminum	Metal
Platinum	Metal
Silver	Metal
Metal	Category

Aluminum, Platinum, Silver are all types of metals,
Whereas,
Metal is a category name.
Hence, the correct answer is "Metal".

Q91. Answer: (d) JQ

The logic followed here is:

Hence, "Option 4" is the correct answer.

Q92. Answer: (a) LTO

The logic followed here is:
'CEA' is related to 'EHC'
Similarly,
'JQM' is related to
Hence, "Option 1" is the correct answer.

Q93. Answer: (d) Tractor

The logic followed here is:
Logic: Tools or equipment used by professionals.
Here,
Soldier : Battle Tank → Battle Tank is a tool or equipment used by a Soldier.
Similarly,
Farmer : Tractor → Tractor is a tool or equipment used by a Farmer.
Hence, the correct answer is "Option 4".

Q94. Answer: (a) YMGFL

The logic followed here is:
'CUMIN' is written as 'AVKJL'
And,
'GUEST' is written as 'EVCTR'
Similarly,
'ALIEN' will be written as

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Hence, "Option 1" is the correct answer.

Q95. Answer: (a) Mother

Given:

1) Jean and Catherine are the maternal aunts of Cinderella.

2) Charles is the husband of Cinderella.

3) Isabella is the mother of mother-in-law of Charles.

Thus, Isabella is Jean's mother.

Hence, the correct answer is "Option 1

Q96. Answer: (c) I

Given: Each of the six friends A, B, C, D, E and F is reading one book among the books G, H, I, J, K and L in a reading program.

1) F is reading book H.

Friend	Books
A	
B	
C	
D	
E	
F	H

2) A and B are not reading books G, J and L.

Friend	Books
A	I / K
B	I / K
C	
D	
E	
F	H

3) B, C and D are not reading the books I and L.

Friend	Books
A	I
B	K
C	J / G
D	J / G
E	L
F	H

Thus, according to the final arrangement I is being read by A.

Hence, "Option 3" is the correct answer.

Q97. Answer: (a) Salary

The logic followed here is:

Logic: Financial Relationships.

Here,

Expenditure : EMI → EMI is a type of Expenditure.

Similarly,

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Income : Salary → Salary is a type of Income.

Hence, the correct answer is "Option 1".

Q98. Answer: (a) U18I

The logic followed here is:

Hence, "Option 1" is the correct answer.

Q99. Answer: (d) Only assumption I is implicit.

Given Statement: "In the latest edition of your book, we misspelled your name on the book cover. We are very sorry ma'am"-A novel editor told his client.

Now,

Assumptions:

1. It is crucial to print the correct name of the author on the book cover - Implicit (The apology and mention of the misspelling imply that it is important to have the correct name on the cover.)

2. It is not very important to print the correct name of the author on the book cover - Not Implicit (The editor's apology and the context indicate that the correct name is indeed important.)

Here, Only assumption I is implicit.

Hence, the correct answer is "Option 4".

Q100. Answer: (d) Ore

The logic followed here is:

Logic: Relationship based on origin.

Here,

Omelette : Egg → Omelette is made from Egg.

Similarly,

Metal : Ore → Metal is extracted from Ore.

Hence, the correct answer is "Option 4".

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