RRB NTPC CBT-I Official Paper (Held On: 22 Feb 2021 Shift 1) (Previous Year Paper)

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

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Scan the QR code or click the link to open it.

Q1. There are 6 contestants in a beauty pageant. Model Q is taller than model A but shorter than model E. Model X is not as tall as model E but is taller than model I. Model F is taller than model I but shorter than model Q. Who among the following is the tallest?

(a) Model A
(b) Model F
(c) Model E
(d) Model Q

Q2. Solve the following.

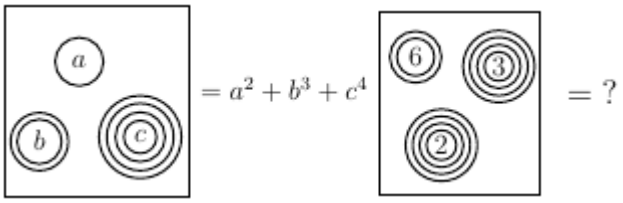
$1 + (1 + \cos\theta)/(\sin\theta) - (\sin^2\theta)/(1 + \cos\theta) - (\sin\theta)/(1 - \cos\theta) = ?$

(a) $\sin\theta$
(b) $-\cos\theta$
(c) $-\sin\theta$
(d) $\cos\theta$

Q3. A dealer marks his goods 10% above the cost price and allows 10% discount. What is his percentage gain or loss?

(a) 10% loss
(b) 1% gain
(c) 1% loss
(d) 10% gain

Q4. Identify the number that will replace the question mark (?) in the second equation based on the relationship represented in the first equation.



(a) 79
(b) 329
(c) 420
(d) 36

Q5. Who among the following has the power to grant pardons under Article 161 of the Constitution of India?

(a) President
(b) Chief Justice of India
(c) Governor
(d) Prime Minister

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Q6. Dandi March, the non-violent protest organised by Mahatma Gandhi against the British salt monopoly, culminated on:

(a) 7^(th) April 1930
(b) 4^(th) April 1930
(c) 5^(th) April 1930
(d) 6^(th) April 1930

Q7. The position of the point (1, 2) with respect to the circle

$x^2 + y^2 - 3x - 4y + 1 = 0$:

(a) lies on the circle
(b) lies inside the circle
(c) cannot be decided
(d) lies outside the circle

Q8. There are six members in a family, named A, B, C, D, E and F. B is the wife of C. A is the son of E, E is the brother of C, D is the sister of A. B is the daughter-in-law of F. How is E related to D?

(a) Father
(b) Sister
(c) Aunt
(d) Daughter

Q9. Who wrote 'Ain-i-Akbari'? It is a 16th-century detailed document recording the administration of the Mughal Empire under Emperor Akbar.

(a) Mulla Shah
(b) Abul Fazl
(c) Abdur Rahim
(d) Haji Ibrahim

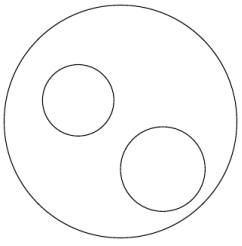
Q10. Which of the following was Asia's first supercomputer?

(a) CRAY-3
(b) EKA
(c) HITAC S-300
(d) PARAM

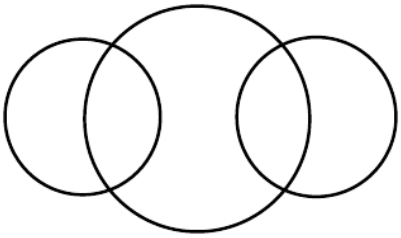
Q11. Which of the Venn diagrams shown below correctly represents the relationship:

Juice, Soft Drinks, Drinks

(a)

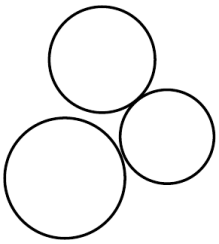


(b)

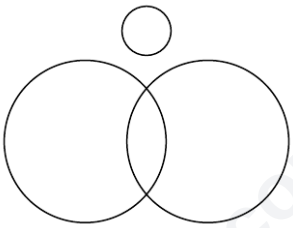


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(c)



(d)



Q12. If the area of a triangle with base 12 cm is equal to the area of a square with side 12 cm, then the altitude of the triangle will be:

(a) 18 cm
(b) 12 cm
(c) 36 cm
(d) 24 cm

Q13. Which of the following is NOT related to Western Ghats?

(a) Mahendragiri Hills
(b) Nilgiri Hills
(c) Anaimalai Hills
(d) Sahyadri Hills

Q14. Identify the series that is different from the rest.

(a) 0.0016, 0.04, 0.2
(b) 1/16, 1/4, 1/2
(c) 2401, 49, 7
(d) 243, 81, 27

Q15. If 24 men can complete a piece of work in 15 days working 8 h per day, then how many men will be required to complete the same work in 10 days working 6 h per day?

(a) 32
(b) 30
(c) 60
(d) 48

Q16. With which of the following instruments is Hariprasad Chaurasia associated?

(a) Tabla
(b) Flute
(c) Drum
(d) Violin

Q17. The Great Victoria Desert is located in:

(a) The United Kingdom
(b) Australia
(c) The United States
(d) South Africa

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Q18. What is the lubricating fluid found between the two bones at a movable joint called?

(a) Cerebrospinal fluid
(b) Amniotic fluid
(c) Interstitial fluid
(d) Synovial fluid

Q19. Power Alcohol is a mixture of _____ and ethyl alcohol.

(a) mustard
(b) petrol
(c) diesel
(d) kerosene

Q20. The 'Bretton Woods Twins' refers to the two multilateral organisations created at the Bretton Woods Conference in 1944. They are ____ and ____.

(a) IMF, World Bank
(b) UN, World Bank
(c) IMF, WTO
(d) IMF, UN

Q21. Find the value of 7500 + (1250 ÷ 50).

(a) 300
(b) 6575
(c) 7525
(d) 175

Q22. Express the decimal number 3.12 bar7 in fraction form.

(a) (365)/(180)
(b) (563)/(180)
(c) (281)/(900)
(d) (180)/(563)

Q23. What is the HCF of n and n + 1 where n is a natural number?

(a) 3
(b) 0
(c) 2
(d) 1

Q24. United Nations was established in:

(a) 1944
(b) 1945
(c) 1947
(d) 1946

Q25. Find the value of x if 52/x = √(169/289)

(a) 58
(b) 62
(c) 52
(d) 68

Q26. Pointing towards a teacher sitting in the teacher's room, Paulo said to his friend, "She is the sister of the father of the sister of my brother". How is that teacher related to Paulo?

(a) Paternal aunt
(b) Maternal aunt
(c) Grandmother
(d) Sister

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Q27. Which of the following is NOT included in UNESCO'S list of World Heritage Sites in India?

(a) Sanchi
(b) Anand Bhavan
(c) Bhimbetka
(d) Khajuraho

Q28. In a class of 40 students the number of girls is three fifths of the number of boys. Then find the number of boys in the class.

(a) 14
(b) 15
(c) 25
(d) 18

Q29. In December 2008, the Government of India launched the INSPIRE Programme. The programme is related to the promotion of:

(a) Cultural activities
(b) Science and technology
(c) Yoga
(d) International relations

Q30. Find the median and the mode of the following data: 2, 3, 5, 7, 2, 3, 3, 5, 7, and 9.

(a) 4, 4
(b) 3, 4
(c) 3, 3
(d) 4, 3

Q31. SENSEX is an index of Bombay Stock Exchange's top _____ companies.

(a) 30
(b) 100
(c) 50
(d) 40

Q32. If the cost price of six items is equal to the selling price of seven items, then what will be the percentage profit or loss?

(a) 14.28% loss
(b) 9.09% loss
(c) 14.28% profit
(d) 7.14% loss

Q33. India's first struggle for independence started on 10^(th) May 1857 at:

(a) Lucknow
(b) Bareilly
(c) Allahabad
(d) Meerut

Q34. If $x = 1/(\sqrt{2} + 1)$, then what will be the value of $x + 1$?

(a) $\sqrt{2} - 1$
(b) $\sqrt{2} + 1$
(c) 2
(d) $\sqrt{2}$

Q35. Girish Karnad who passed away in 2019, was awarded the 'Padma Shri' in the year _____.

(a) 1994
(b) 1974
(c) 1984

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(d) 2014

Q36. What is the full form of AIDS?

(a) Acute Immune Deficiency Syndrome
(b) Acute Immune Deficit Syndrome
(c) Acquired Immune Deficiency Syndrome
(d) Acquired Immune Deficit Syndrome

Q37. Which of the following is the smallest fraction?

(a) 4 / 5
(b) 7 / 9
(c) 7 / 6
(d) 5 / 7

Q38. Four words have been given out of which three are alike in some manner, while the fourth one is different. Select the odd one.

(a) Century
(b) Time
(c) Decade
(d) Year

Q39. What is the mean of the data 2, 5, 4, 1, 8?

(a) 3
(b) 4
(c) 20
(d) 5

Q40. The present worth of Rs. 338 due in 2 years at 4% per annum compound interest is: _____

(a) Rs. 350.50
(b) Rs. 294.00
(c) Rs. 365.58
(d) Rs. 312.50

Q41. Find the least number, which is exactly divisible by 12, 15, and 18.

(a) 240
(b) 160
(c) 180
(d) 120

Q42. The river that is known as Jamuna in Bangladesh is called _____ in India.

(a) Ganga
(b) Brahmaputra
(c) Sindhu
(d) Narmada

Q43. Who among the following is known as the 'father of Indian Supercomputers'?

(a) Nandan Nilkeni
(b) RA Mashelkar
(c) Vijay Bhatkar
(d) Jayant Narlikar

Q44. A school collected Rs. 2,601 as fees from its students. If the fees paid by each student and the number of students in the school were equal, then how many students were there in the school?

(a) 51
(b) 39
(c) 61

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(d) 49

Q45. Three straight lines x + y - 3 = 0, x + y + 2 = 0 and 3x + 3y - 7 = 0 are:

(a) parallel
(b) concurrent
(c) intersecting each other
(d) perpendicular

Q46. If 40% of a number is 800 then the number is:

(a) 2000
(b) 800
(c) 400
(d) 200

Q47. Rahul has a deadline for a project in just two days and he has not yet started working on his project. Based on the following courses of action, select the correct one.

Courses of action:

(i) He must immediately read a book on time management to avoid such problems in the future.

(ii) He must manage his time efficiently and start his project without delay.

(iii) He must plan a layout of his project first and then start following that layout.

(a) Only (i) and (ii) are correct
(b) Only (ii) is correct
(c) Only (i) is correct
(d) Only (ii) and (iii) are correct

Q48. In Brazil, coffee plantations are known as:

(a) Tarzana
(b) Fazenda
(c) Miranda
(d) Torino

Q49. As per the Constitution of India, every person who is arrested and detained in custody shall be produced before the nearest magistrate within a period of _____ hours of such arrest, excluding the time necessary for the journey from the place of arrest to the court of the magistrate.

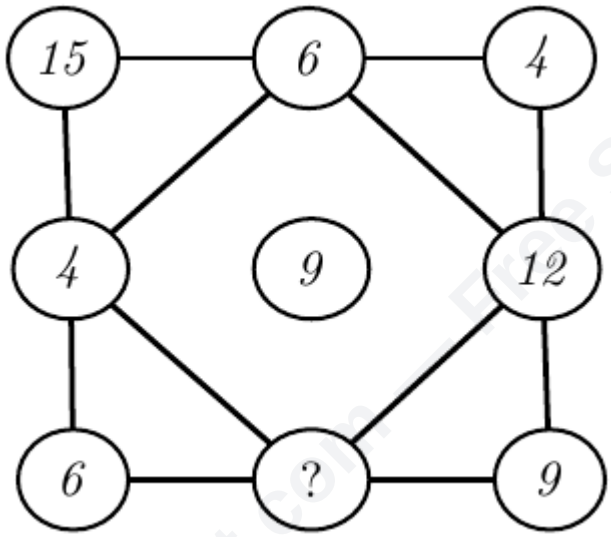
(a) 10
(b) 36
(c) 24
(d) 12

Q50. For which of the following fields did Marie Curie win the Nobel Prize?

(a) Physics and Astronomy
(b) Physics and Meteorology
(c) Chemistry and Biology
(d) Physics and Chemistry

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Q51.



Select the number from among the given options that can replace the question mark (?) in the above figure.

(a) 15
(b) 20
(c) 33
(d) 10

Q52. A nurse dressing the wound of a boy in a clinic is asked by her colleague how that boy is related to her. She replies, "My maternal uncle and the maternal uncle of his maternal uncle are the same." How is that boy related to the nurse?

(a) Brother
(b) Brother's Son
(c) Son
(d) Paternal Aunt

Q53. If B and C are brothers, A is the sister of C, O is the daughter of D, D is wife of B, E is the mother of A and the wife of F, then how is O related to F?

(a) Daughter's daughter
(b) Mother's father
(c) Mother's brother
(d) Son's daughter

Q54. Two numbers are in the ratio 9 : 5. If 9 is added to the greater number and 5 is subtracted from the smaller number, the greater number becomes thrice the smaller one. Find the numbers.

(a) 36, 10
(b) 36, 20
(c) 72, 40
(d) 18, 10

Q55. If y = 5, then what will be the value of $10y\sqrt{(y^3 - y^2)}$?

(a) $200\sqrt{5}$
(b) 100
(c) $50\sqrt{2}$
(d) 500

Q56. The _____ sector is the largest sector of India, contributing to a Gross Value Added (GVA) of Rs. 92.26 lakh crore in 2018-19.

(a) Agriculture
(b) Construction
(c) Manufacturing

(d) Service

Q57. _____ has three active forms: retinal, retinol and retinoic acid.

(a) Vitamin A
(b) Vitamin D
(c) Vitamin C
(d) Vitamin B

Q58. India's first national academy for music, dance and drama was:

(a) The Academy for Arts and Dance
(b) Sangeet Natak Akademi
(c) Sangeet Kala Manch
(d) Bharat Kala Kendra

Q59. The _____ Five-Year Plan of India completed its term in March 2017.

(a) 12^(th)
(b) 11^(th)
(c) 13^(th)
(d) 10^(th)

Q60. Who has taken over as the new CEO of the Railway Board on 1^(st) Jan 2021?

(a) Piyush Goyal
(b) Ashutosh Gangal
(c) V K Yadav
(d) Suneet Sharma

Q61. A man walking at the speed of 5km/h crosses a bridge in 15 min. The length of the bridge in meters is:

(a) 1000
(b) 750
(c) 600
(d) 1250

Q62. Pipe 1 can empty a tank in 6 h while pipe 2 can do so in 18 h. If both are working together, in how much time will they empty the full tank?

(a) 9 h
(b) 4.5 h
(c) 10 h
(d) 5 h

Q63. The perimeter of the floor of a room is 18 m. What is the area of the walls of the room, if the height of the room is 3 m?

(a) 54 m2
(b) 108 m2
(c) 42 m2
(d) 21 m2

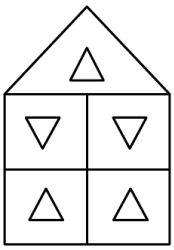
Q64. During which of the following movements did Mahatma Gandhi give the slogan 'Do or Die'?

(a) The Non-Cooperation Movement
(b) Quit India Movement
(c) Ghadar Movement
(d) The Home Rule Movement

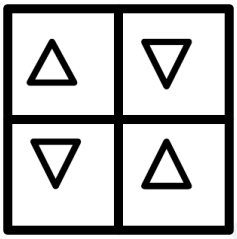
Q65. Three of the following figures are alike in a certain way and one is different. Which one is different?

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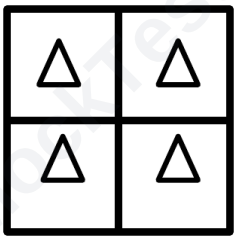
(a)



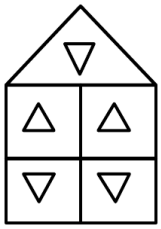
(b)



(c)



(d)



Q66. What is the full form of BARC?

(a) Bhabha Aerospace Research Center
(b) Bhabha Atomic Research Center
(c) Bhabha Aromatic Research Center
(d) Bhabha Atomic Rehabilitation Center

Q67. If the first term of a geometric progression is 2 and the common ratio is 3, then what will be the fifth term of the geometric progression?

(a) 324
(b) 81
(c) 243
(d) 162

Q68. Which of the following statement is correct?

(a) The Council of Ministers of a State is collectively responsible to the Legislative Assembly of the State.
(b) The Council of Ministers of a State is collectively responsible to the Vice-President.
(c) The Council of Ministers of a State is collectively responsible to the Legislative Council of the State.
(d) The Council of Ministers of a State is collectively responsible to the Council of States.

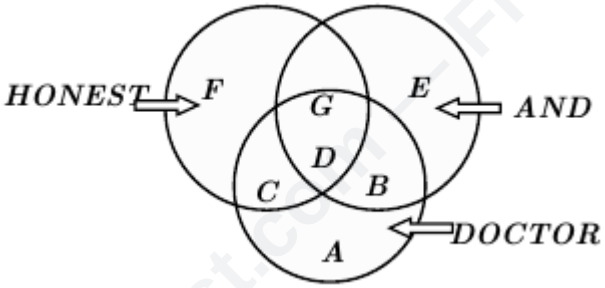
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Q69. In 2005, ASHA was instituted by the Government of India's Ministry of Health and Family Welfare as a part of the National Rural Health Mission. What is the full form of 'ASHA'?

(a) Accredited Social Health Activist
(b) Accredited School Health Activist
(c) Active School Health Activist
(d) Active Social Health Activist

Q70. Study the following diagram and select the region that best represents the below statement

A doctor who is kind as well as honest



(a) F
(b) C
(c) D
(d) B

Q71. Who among the following won the 'Player of the Match' award at the final of the ICC Cricket World Cup 2019?

(a) Mitchell Starc
(b) Eoin Morgan
(c) Ben Stokes
(d) James Neesham

Q72. The equation whose roots are -2 and 3 is:

(a) $x^2 - x - 6 = 0$
(b) x2 - 5x + 6 = 0
(c) x2 - x + 6 = 0
(d) x2 + 3x - 6 = 0

Q73. The □ represents a set of calculations that are common across all the given equations. Identify the calculations involved and solve the third equation on the same basis:

25 □ 36 = 5; 6; 11

100 □ 64 = 10; 8; 18

36 □ 81 = ?; ?; ?

(a) 4; 11; 18
(b) 6; 9; 15
(c) 9; 9; 117
(d) 10; 6; 4

Q74. Since July 2016, World Trade Organisation (WTO) has _____ members.

(a) 161
(b) 163
(c) 162
(d) 164

Q75. The image of the point (7, 8) when reflected along the x-axis is:

(a) (-7, -8)
(b) (7, -8)
(c) (-7, 8)
(d) (8, 7)

Q76. Bleaching powder is NOT used for:

(a) disinfecting water
(b) bleaching cotton
(c) oxidising chemicals
(d) preparing bread

Q77. What will be the simple interest earned on an amount of Rs. 16,800 in 9 months at the rate of 6 1over 4 % per annum?

(a) Rs. 860
(b) Rs. 158
(c) Rs. 787.50
(d) Rs. 812.50

Q78. According to 2011 Census, the urban-rural population ratio in India was about:

(a) 32 : 68
(b) 28 : 72
(c) 31 : 69
(d) 35 : 65

Q79. Which of the following is NOT an allotrope of Carbon?

(a) Diamond
(b) Carbon dioxide
(c) Fullerenes
(d) Graphite

Q80. In which of the following cities is the Indian National Centre for Ocean Information Services (INCOIS) located?

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

Q81. As of October 2020, the highest number of French Open tennis tournaments have been won by:

(a) Roger Federer
(b) Novak Djokovic
(c) Dominic Thiem
(d) Rafael Nadal

Q82. What number must be subtracted from both the numerator and denominator of the fraction (15)/(19) so as to make it (3)/(4)?

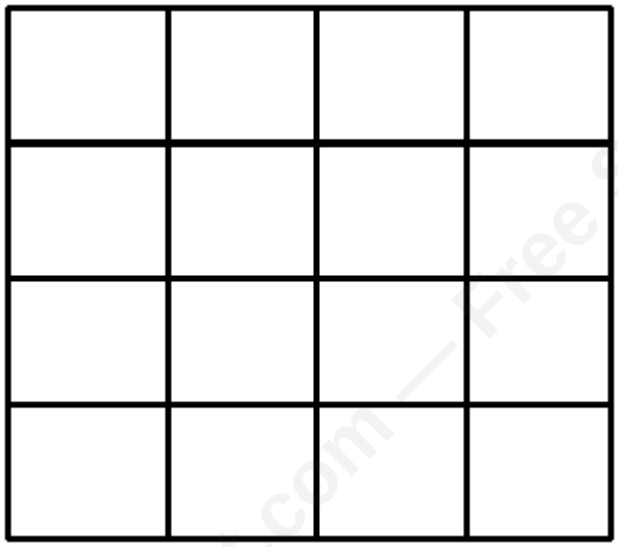
(a) 3
(b) 9
(c) 6
(d) 5

Q83. Which of the following is NOT a computer programming language?

(a) Java
(b) Swift
(c) Python
(d) C^(++++)

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Q84. How many of squares are there in a given illustration?



(a) 30
(b) 23
(c) 20
(d) 17

Q85. The Satyagraha Sabha was founded in February 1919 by:
(a) Abdul Ghaffar Khan
(b) Mohandas Karamchand Gandhi
(c) Subhash Chandra Bose
(d) Motilal Nehru

Q86. The following table shows the marks obtained by two students Raj and Ramesh in different subjects.

Subjects	Raj	Max-marks	Ramesh	Max-marks
Mathematics	18	20	85	100
Physics	17	20	70	100
Chemistry	16	20	60	100
Biology	15	20	75	100

What is the difference between Raj and Ramesh's percentage of aggregate marks?
(a) 5%
(b) 2.5%
(c) 2%
(d) 10%

Q87. Given below are roll numbers of the candidates who have been shortlisted in an entrance examination. The first two digits represent the city, the second two digits represents the centre and the last three digits represent the candidate. Study the data and answer the question that follows.

2367812	2852118	2453705	2946172
2578912	2452009	2345214	2850504
2687124	2371419	2731899	2578362
2834718	2182617	2431891	2718007
2463891	2486126	2275915	2363321

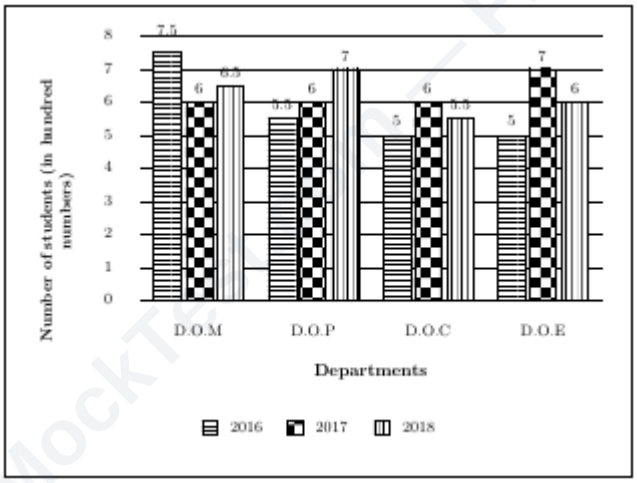
The maximum number of candidates have been selected from the city with which code?

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(a) 23
(b) 24
(c) 28
(d) 27

Q88. The bar graph given below shows the number of students (in hundred numbers) graduated from 4 different departments of a university, Mathematics (DOM), Physics (DOP), Chemistry (DOC) and English (DOE) during 3 consecutive years.

What is the average number of students that graduated from all the departments (in hundred numbers) for the year 2017?



(a) 2500
(b) 200
(c) 550
(d) 625

Q89. The following pie chart shows the monthly expenditure incurred by Raj's family over different items.



What is the percentage of expenditure incurred on food with respect to expenditure on cloth?

(a) 46%
(b) 360%
(c) 240%
(d) 26%

Q90. Read the given statements and conclusions carefully and decide which of the conclusions logically follow(s) from the statements.

Statement:

A friend in need is a friend indeed.

Conclusion:

(i) A person who helps you in difficult situations is your friend.

(ii) Your enemies can also sometimes have a change of heart and help you in times of need

(a) None of the conclusion follows
(b) Both conclusions (i) and (ii) follow
(c) Only conclusion (i) follows

(d) Only conclusion (ii) follows

Q91. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

1. All Venus are Mercury.
2. Some Jupiter are Venus.
3. All Pluto are Jupiter.

Conclusions:

I. All Pluto are Mercury.

II. Some Pluto are Mercury.

III. Some Mercury are Jupiter.

IV. All Jupiter are Mercury.

(a) Only conclusion III follows.
(b) Only conclusion II follows.
(c) Only conclusions I and II follow.
(d) Only conclusion I follows.

Q92. In a code language if QUESTION is coded as PRTVDFRTSUHJNPMO, then how will ANSWER be coded?

(a) ZABABCNMONOPQRSSTUWSQ
(b) REWSNA
(c) OMMJHUSTRFDVTRP
(d) ZBMORTVXDFQS

Q93. In a certain code language, COMPUTER is written as 31191267218 and PHONE is written as 12511142. How will MOTHER be written in the same code language?

(a) 91175218
(b) 91121875
(c) 91171852
(d) 91172518

Q94. Select the number from among the given alternatives that can replace the question mark (?) in the last figure.



(a) 4
(b) 6
(c) 5
(d) 2

Q95. There are two numbers with the difference of 14 between them and difference of their squares is 56. What are those numbers?

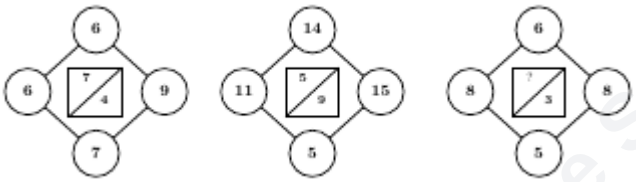
(a) 9, -5
(b) 3, 17
(c) 2, 16
(d) 23, -9

Q96. Out of the four words listed, three are alike in some manner and one is different. Select the odd one.

(a) Pencil
(b) Chalk
(c) Paper

(d) Pen

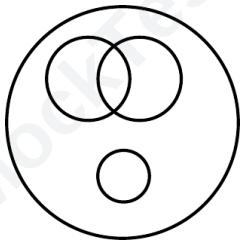
Q97. Select the number from among the given alternatives that can replace the question mark (?) in the last figure.



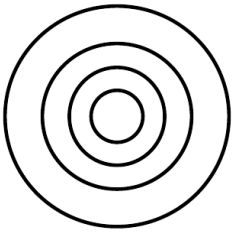
(a) 2
(b) 3
(c) 7
(d) 9

Q98. In a certain language institute, English and Spanish language courses were available. Some students enrolled for only English and some students for only Spanish. A group of students of this institute were not interested in either so they didn't enrol. The rest enrolled for both English and Spanish. Which one of the following logic diagrams correctly reflects the above situation.

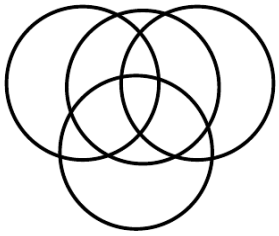
(a)



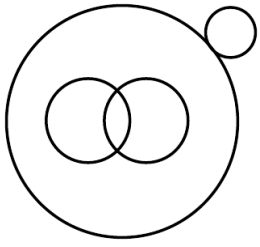
(b)



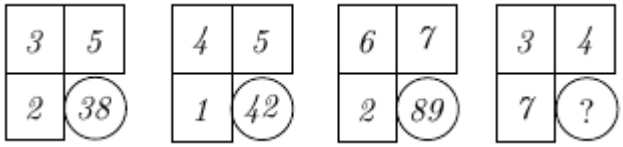
(c)



(d)

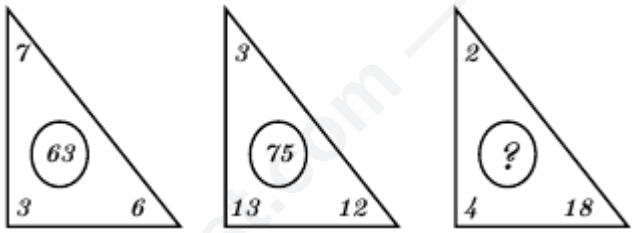


Q99. Select the number from among the given alternatives that can replace the question mark (?) in the last figure.



(a) 14
(b) 74
(c) 84
(d) 31

Q100. Select the number from among the given alternatives that can replace the question mark (?) in the last figure.



(a) 44
(b) 87
(c) 22
(d) 144

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) Model E

Given: There are 6 contestants in a beauty pageant.
1) Q is taller than model A but shorter than model E.
E > Q > A
2) Model X is not as tall as model E but is taller than model I.
E > X > I
3) Model F is taller than model I but shorter than model Q.
Q > F > I
So, combining all we get:
Case 1) X < E > Q > A /F > I
Case 2) E > Q > A /F > I < X
In both cases, E is the tallest among all.

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Hence, "Option 3" is the correct answer.

Q2. Answer: (d) cos θ

Given:

$1 + (1 + \cos\theta)/(\sin\theta) - (\sin^2\theta)/(1 + \cos\theta) - (\sin\theta)/(1 - \cos\theta) = ?$

Formula used:

$1 - \cos^2\theta = \sin^2\theta$

Calculation:

$1 + (1 + \cos\theta)/(\sin\theta) - (\sin^2\theta)/(1 + \cos\theta) - (\sin\theta)/(1 - \cos\theta)$

$\Rightarrow 1 - (1-\cos^2\theta)/(1 + \cos\theta) + ((1 + \cos\theta)(1 - \cos\theta) - \sin^2\theta)/(\sin\theta(1 - \cos\theta))$

$\Rightarrow 1 - (1-\cos\theta)(1 + \cos\theta)/(1 + \cos\theta) + ((1 - \cos^2\theta) - \sin^2\theta)/(\sin\theta(1 - \cos\theta))$

$\Rightarrow 1 -(1-\cos\theta) + (\sin^2\theta - \sin^2\theta)/(\sin\theta(1 - \cos\theta))$

$\Rightarrow 1 - 1 + \cos\theta + 0$

$\Rightarrow \cos\theta$

Therefore The correct answer is $\cos\theta$.

Q3. Answer: (c) 1% loss

Given:

A dealer marks his goods 10% above the cost price and allows 10% discount.

Formula Used:

Selling Price (SP) = Marked Price (MP) - Discount

Marked Price (MP) = Cost Price (CP) × (1 + Markup Percentage)

Discount = MP × Discount Percentage

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

Calculation:

Let Cost Price (CP) = 100

Marked Price (MP) = CP × (1 + 10%)

$\Rightarrow$ MP = 100 × 1.1

$\Rightarrow$ MP = 110

Discount = MP × 10%

$\Rightarrow$ Discount = 110 × 0.1

$\Rightarrow$ Discount = 11

Selling Price (SP) = MP - Discount

$\Rightarrow$ SP = 110 - 11

$\Rightarrow$ SP = 99

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

$\Rightarrow$ Gain or Loss Percentage = ((99 - 100) / 100) × 100

$\Rightarrow$ Gain or Loss Percentage = (-1 / 100) × 100

$\Rightarrow$ Gain or Loss Percentage = -1%

The dealer has a 1% loss.

Q4. Answer: (b) 329

The logic followed here is: Power → (Number of circles + 1)

a → (1 circle + 1) => a2

b → (2 circles + 1) => b3

c → (2 circles + 1) => c4

=> a2 + b3 + c4

Similarly,

6 → (2 circles + 1) => 6^3

3 → (3 circles + 1) => 3^4

2 → (4 circles + 1) => 2^5

=> 63 + 34 + 25

=> 216 + 81 + 32

=>329

Hence, "Option 2" is the correct answer.

Q5. Answer: (c) Governor

The correct answer is Governor

Key Points

• Under Article 161 of the Constitution of India, the Governor of a state has the power to grant pardons, reprieves, respites, or remissions of punishment or to suspend, remit, or commute the sentence of any person convicted of any offense against any law relating to a matter to which the executive power of the state extends.

• This power is similar to the power of the President under Article 72, but it is specific to the state level.

• The Governor can exercise this power independently of the President.

• The scope of this power covers offenses under state laws, whereas the President's power covers offenses under central laws.

Additional Information

• The Constitution of India was adopted by the Constituent Assembly on 26th November 1949 and came into effect on 26th January 1950.

• It lays down the framework defining fundamental political principles, establishes the structure, procedures, powers, and duties of government institutions, and sets out fundamental rights, directive principles, and the duties of citizens.

• The Constitution of India is the longest written constitution of any country in the world.

• It declares India a sovereign, socialist, secular, and democratic republic, assuring its citizens justice, equality, and liberty, and endeavors to promote fraternity.

• The Seventh Schedule of the Constitution contains three lists which delineate the subjects under the Union, State, and Concurrent lists.

• Amendments to the Constitution can be made through a process outlined in Article 368.

• The Union List has been amended several times to meet the evolving needs of the nation.

Q6. Answer: (d) 6^(th) April 1930

The correct answer is 6th April 1930

Key Points

• The Dandi March, also known as the Salt March, was a major non-violent protest action in India led by Mahatma Gandhi.

• It was a direct action campaign of tax resistance and nonviolent protest against the British salt monopoly.

• The march began on 12th March 1930 and ended on 6th April 1930, covering a distance of approximately 240 miles from Sabarmati Ashram to the coastal village of Dandi.

• On 6th April 1930, Gandhi reached the coastal village of Dandi and ceremonially violated the law by making salt from seawater.

• This act of defiance was a significant event in the Indian independence movement and sparked widespread acts of civil disobedience against British rule.

Additional Information

• The Salt March was one of the most important events in the Indian independence movement and had a significant impact on the global struggle for freedom and civil rights.

• Mahatma Gandhi's philosophy of nonviolent resistance, or Satyagraha, inspired movements for civil rights and freedom across the world.

• The march demonstrated the power of mass mobilization and nonviolent protest in challenging oppressive laws and authorities.

• The Dandi March is commemorated every year in India as a symbol of the country's struggle for independence and the enduring legacy of Mahatma Gandhi's leadership.

Q7. Answer: (b) lies inside the circle

Given:

Point = (1, 2)

Equation of the circle: $x^2 + y^2 - 3x - 4y + 1 = 0$

Formula used:

The general form of a circle is $(x - h)^2 + (y - k)^2 = r^2$, where (h, k) is the center and r is the radius.

We can rewrite the given equation in the standard form of a circle to find the center and radius:

Calculation:

Starting with $x^2 + y^2 - 3x - 4y + 1 = 0$

Group the x and y terms:

$(x^2 - 3x) + (y^2 - 4y) = -1$

Complete the square:

$(x^2 - 3x + 9/4) + (y^2 - 4y + 4) = -1 + 9/4 + 4$

$\Rightarrow (x - 3/2)^2 + (y - 2)^2 = 25/4$

Center = (3/2, 2), Radius = $\sqrt{(25/4)} = 5/2$

Now, calculate the distance of the point (1, 2) from the center (3/2, 2):

Distance = $\sqrt{[(1 - 3/2)^2 + (2 - 2)^2]}$

$\Rightarrow$ Distance = $\sqrt{[(-1/2)^2]} = 1/2$

The radius of the circle is 5/2, and the distance from the center to the point is 1/2.

Since the distance is less than the radius, the point lies inside the circle.

Therefore The point (1, 2) lies inside the circle.

Q8. Answer: (a) Father

Given: There are six members in a family, named A, B, C, D, E and F.

1) B is the wife of C.

2) B is the daughter-in-law of F.

3) A is the son of E, E is the brother of C, D is the sister of A.

Thus, E is the father of E.

Hence, the correct answer is "Option 1.

Q9. Answer: (b) Abul Fazl

The correct answer is Abul Fazl

Key Points

• Abul Fazl was the author of 'Ain-i-Akbari'.

• 'Ain-i-Akbari' is a 16th-century detailed document recording the administration of the Mughal Empire under Emperor Akbar.

• It is part of the larger work called the Akbarnama, which chronicles the life and times of Akbar.

• Abul Fazl was a court historian and close confidant of Emperor Akbar.

• The document provides a comprehensive account of the empire's administration, including its revenue system, culture, and military organization.

Additional Information

• Abul Fazl was one of the Nine Jewels (Navaratnas) in Akbar's court.

• The Akbarnama and Ain-i-Akbari are considered important sources for the study of the Mughal Empire and its administration.

• Abul Fazl's works are known for their detailed and systematic approach to documenting history.

• He was also a philosopher and thinker, contributing to the cultural and intellectual life of the Mughal court.

Q10. Answer: (d) PARAM

The correct answer is PARAM

Key Points

• PARAM was developed by the Centre for Development of Advanced Computing (C-DAC) in India.

• It was launched in the year 1991 and marked India's entry into the field of supercomputing.

• PARAM is an acronym for Parallel Machine, reflecting its architecture and processing capabilities.

• It was a significant milestone in India's technological advancement and placed India among the few countries with supercomputing capabilities at that time.

• The development of PARAM was a response to the denial of supercomputing technology to India by other nations, showcasing India's self-reliance in high-performance computing.

Additional Information

• CRAY-3, although a notable supercomputer, was developed by the Cray Research company in the United States.

• EKA is another Indian supercomputer developed by the Computational Research Laboratories, but it was launched in 2007.

• HITAC S-300 is a supercomputer developed by Hitachi, a Japanese company, and does not hold the distinction of being the first in Asia.

• PARAM's successful implementation led to the development of subsequent versions like PARAM 10000 and PARAM Yuva, further advancing India's supercomputing capabilities.

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Q11. Answer: (a) [figure]

The diagram that best represents the relationship between Juice, Soft Drinks, and Drinks is shown below :

Juice and soft drinks are two different types of drinks.

Hence, "Option 1" is the correct answer.

Q12. Answer: (d) 24 cm

Given:

Area of a square with side 12 cm

Base of the triangle = 12 cm

Formula Used:

Area of a square = side²

Area of a triangle = (1/2) × base × height

Calculation:

Area of the square = 12^2 = 144 cm^2

Let the altitude (height) of the triangle be h cm.

Area of the triangle = (1/2) × 12 × h

Given that the area of the triangle is equal to the area of the square:

=> (1/2) × 12 × h = 144

=> 6h = 144

=> h = 144 / 6

=> h = 24 cm

The altitude of the triangle is 24 cm.

Q13. Answer: (a) Mahendragiri Hills

The correct answer is Mahendragiri Hills

Key Points

• Mahendragiri Hills are not part of the Western Ghats.

• The Western Ghats, also known as the Sahyadri Hills, include several important mountain ranges such as the Nilgiri Hills, Anaimalai Hills, and Sahyadri Hills.

• Mahendragiri Hills are located in the Eastern Ghats, which is a different mountain range running parallel to the eastern coast of India.

Additional Information

• The Western Ghats are recognized as one of the world's eight "hottest hotspots" of biological diversity.

• They run parallel to the western coast of India, extending across six states: Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.

• The Eastern Ghats, where the Mahendragiri Hills are located, run parallel to the eastern coast of India and are less continuous compared to the Western Ghats.

• The Western Ghats are known for their rich flora and fauna, many of which are endemic to the region.

Q14. Answer: (d) 243, 81, 27

The logic followed here is:

Option 1) 0.0016, 0.04, 0.2

→ $(0.2)^2$ = 0.04

→ (0.04)2 = 0.0016

Option 2) 1/16, 1/4, 1/2

→ (1/2)2 = 1/4

→ (1/4)2 = 1/16

Option 3) 2401, 49, 7

→ (7)2 = 49

→ (49)2 = 2401

Option 4) 243, 81, 27

→ (27)2 = 729 ≠ 81

→ (81)2 = 6561 ≠ 243

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Thus, out of all the options '243, 81, 27' is the odd one out.

Hence, "Option 4" is the correct answer.

Q15. Answer: (d) 48

Given:

Number of men = 24

Number of days = 15

Working hours per day = 8

Number of days to complete the work = 10

Working hours per day = 6

Formula Used:

Work done = Number of men × Number of days × Working hours per day

Number of men required = Work done / (Number of days × Working hours per day)

Calculation:

Work done by 24 men in 15 days working 8 hours per day:

Work = 24 × 15 × 8

Work = 2880

Number of men required to complete the same work in 10 days working 6 hours per day:

Let the number of men required be M

Work = M × 10 × 6

2880 = M × 10 × 6

=> 2880 = 60M

=> M = 2880 / 60

=> M = 48

The number of men required is 48.

Q16. Answer: (b) Flute

The correct answer is Flute

Key Points

• Hariprasad Chaurasia is a renowned Indian classical flutist.

• He is known for his exceptional mastery over the bansuri (bamboo flute).

• Hariprasad Chaurasia has been honored with several prestigious awards, including the Padma Vibhushan and the Padma Bhushan.

• He has collaborated with various international artists and has significantly contributed to popularizing Indian classical music worldwide.

• His playing style is characterized by its soulful and meditative quality, which has captivated audiences globally.

Additional Information

• Hariprasad Chaurasia was born on 1st July 1938 in Allahabad, India.

• He initially trained as a vocalist before switching to the flute under the guidance of Pt. Bholanath Prasanna.

• He has served as a director of the Indian music department at the Rotterdam Music Conservatory in the Netherlands.

• Besides his solo performances, he has composed music for several Indian films, further showcasing his versatility as a musician.

• He continues to inspire and mentor young musicians through his academy, the Vrindavan Gurukul.

Q17. Answer: (b) Australia

The correct answer is Australia

Key Points

• The Great Victoria Desert is located in Australia.

• It is the largest desert in Australia, spanning over 348,750 square kilometers.

• The desert is characterized by sand dunes, dry lakes, and sparse vegetation.

• It is named after the British monarch, Queen Victoria.

• The Great Victoria Desert is a part of the larger desert region in the central and western parts of Australia.

Additional Information

• Australia is known for its vast and diverse landscapes, including deserts, rainforests, and mountain ranges.

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• The country is home to several other significant deserts, such as the Simpson Desert, the Gibson Desert, and the Great Sandy Desert.

• Deserts in Australia are important for their unique ecosystems and indigenous cultures.

• Despite the harsh conditions, these deserts support a variety of wildlife, including reptiles, birds, and mammals adapted to the arid environment.

Q18. Answer: (d) Synovial fluid

The correct answer is Synovial fluid

Key Points

• Synovial fluid is the lubricating fluid found between the two bones at a movable joint.

• This fluid is secreted by the synovial membrane, which lines the joint capsule.

• The primary function of synovial fluid is to reduce friction between the articular cartilages of synovial joints during movement.

• In addition to lubrication, synovial fluid also supplies nutrients and removes metabolic waste from the joint tissues.

• It plays a crucial role in maintaining the health and functionality of joints.

Additional Information

• Synovial joints are the most common and movable type of joints in the human body, including the shoulder, hip, elbow, and knee joints.

• Conditions such as arthritis can affect the production and quality of synovial fluid, leading to joint pain and stiffness.

• Maintaining a healthy lifestyle, including regular exercise and a balanced diet, can help support joint health and proper synovial fluid function.

Q19. Answer: (b) petrol

The correct answer is petrol

Key Points

• Power Alcohol is a blend of petrol and ethyl alcohol.

• It is used as an alternative fuel for internal combustion engines.

• The addition of ethyl alcohol to petrol helps in reducing the emission of pollutants.

• Power Alcohol is also known as gasohol.

• The typical mixture ratio is around 10% ethyl alcohol to 90% petrol.

Additional Information

• Ethyl alcohol, also known as ethanol, is a renewable fuel made from various plant materials collectively known as biomass.

• It is commonly used as a biofuel additive for petrol.

• Using ethanol as a fuel can reduce greenhouse gas emissions.

• Power Alcohol is considered an eco-friendly alternative to fossil fuels.

• It helps in reducing the dependency on petroleum imports.

Q20. Answer: (a) IMF, World Bank

The correct answer is IMF, World Bank

Key Points

• The 'Bretton Woods Twins' refers to the International Monetary Fund (IMF) and the World Bank.

• Both institutions were established in 1944 during the United Nations Monetary and Financial Conference, commonly known as the Bretton Woods Conference.

• The IMF aims to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty.

• The World Bank provides financial and technical assistance to developing countries for development projects (e.g., bridges, roads, schools, etc.) that are expected to improve the economic prospects and quality of life for people in those countries.

• The creation of these two institutions marked the beginning of a new era in international economic cooperation.

Additional Information

• The Bretton Woods Conference was held in Bretton Woods, New Hampshire, USA, from July 1 to July 22, 1944.

• Delegates from 44 Allied nations attended the conference to regulate the international monetary and financial order after the conclusion of World War II.

• The conference led to the establishment of a system of fixed exchange rates and the creation of the Bretton Woods institutions to oversee the international monetary system.

• The IMF and World Bank have since played a crucial role in the global economy, providing financial assistance and policy advice

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to countries around the world.

Q21. Answer: (c) 7525

Given:

7500 + (1250 ÷ 50)

Formula Used:

Basic arithmetic operations: Addition and Division

Calculation:

First, solve the division inside the parentheses:

1250 ÷ 50

=> 25

Then, add the result to 7500:

7500 + 25

=> 7525

The value of 7500 + (1250 ÷ 50) is 7525.

Q22. Answer: (b) (563)/(180)

Given:

Decimal number = 3.12 bar7

Formula Used:

Converting repeating decimals to fractions.

Calculation:

Let x = 3.127777...

Multiply both sides by 10:

=> 10x = 31.27777...

Multiply both sides by 100 to shift the repeating part:

=> 1000x = 3127.777...

Subtract the first equation from the second:

=> 1000x - 10x = 3127.777... - 31.27777...

=> 990x = 3096

=> x = 3096 / 990

Reduce the fraction to its simplest form:

=> x = 516 / 165

=> x = 563 / 180

The fraction form of the decimal number is 563/180.

Q23. Answer: (d) 1

Given:

n is a natural number.

Formula Used:

HCF (Highest Common Factor) of two consecutive numbers, n and n + 1, is always 1.

Calculation:

Let n be any natural number.

=> n and n + 1 are consecutive numbers.

Consecutive numbers have no common factors other than 1.

Hence, HCF (n, n + 1) = 1

The correct answer is option 4.

Q24. Answer: (b) 1945

The correct answer is 1945

Key Points

• The United Nations (UN) was established on 24th October 1945, following the end of World War II.

• The UN was created to promote international cooperation and to prevent future conflicts.

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• It replaced the League of Nations, which had failed to prevent the outbreak of the Second World War.

• The UN's founding members included 51 countries committed to maintaining international peace and security, developing friendly relations among nations, and promoting social progress, better living standards, and human rights.

• The organization is headquartered in New York City, USA.

Additional Information

• The Charter of the United Nations was signed on 26th June 1945, in San Francisco, at the conclusion of the United Nations Conference on International Organization, and came into force on 24th October 1945.

• The UN has six principal organs: the General Assembly, the Security Council, the International Court of Justice, the Secretariat, the Economic and Social Council, and the Trusteeship Council.

• The UN's work covers a broad range of fundamental issues, from sustainable development, environment and refugees protection, disaster relief, counter-terrorism, disarmament and non-proliferation, to promoting democracy, human rights, governance, economic and social development, and international health.

• The UN also provides a forum for its members to express their views in the General Assembly, the Security Council, the Economic and Social Council, and other bodies and committees.

Q25. Answer: (d) 68

Given:

52/x = √(169/289)

Concept used:

Learn squares till the numbers 40.

Calculation:

52/x = √(169/289)

=> 52 / x = 13 / 17

=> 4 / x =1 / 17

=> x = 68.

Therefore The correct answer is 68.

Q26. Answer: (a) Paternal aunt

Given statement: Pointing towards a teacher sitting in the teacher's room, Paulo said to his friend, "She is the sister of the father of the sister of my brother".

Thus, the teacher is Paulo's paternal aunt.

Hence, the correct answer is "Option 1.

Q27. Answer: (b) Anand Bhavan

The correct answer is Anand Bhavan

Key Points

• Anand Bhavan is not included in UNESCO's list of World Heritage Sites in India.

• UNESCO's World Heritage Sites in India include Sanchi, Bhimbetka, and Khajuraho among others.

• The World Heritage Sites are places of importance to cultural or natural heritage as described in the UNESCO World Heritage Convention.

• Anand Bhavan is a historic house museum in Allahabad, India, which was the ancestral home of the Nehru family.

• It is not recognized as a World Heritage Site by UNESCO but holds significant historical importance within India.

Additional Information

• UNESCO World Heritage Sites in India are selected based on their cultural, historical, and natural significance.

• India has a rich heritage with many sites being recognized globally for their importance and preservation.

• Some prominent World Heritage Sites in India include the Taj Mahal, Qutub Minar, and the Red Fort Complex.

• These sites not only reflect India's historical and cultural wealth but also attract numerous tourists from around the world.

Q28. Answer: (c) 25

Given:

Total number of students = 40

Number of girls = 3 / 5 of the number of boys

Formula Used:

Let the number of boys be x

Number of girls = (3 / 5) x

Total number of students = Number of boys + Number of girls

Calculation:

Given total number of students is 40

=> x + (3 / 5) x = 40

=> (5x + 3x)/5 = 40

=> 8x/5 = 40

=> 8x = 40 × 5

=> 8x = 200

=> x = 200/8

=> x = 25

The number of boys in the class is 25.

Q29. Answer: (b) Science and technology

The correct answer is Science and technology

Key Points

• The INSPIRE Programme, launched by the Government of India in December 2008, is related to the promotion of science and technology.

• INSPIRE stands for "Innovation in Science Pursuit for Inspired Research" and aims to attract talent to the study of science at an early age.

• It provides scholarships and mentorship to young students to foster a passion for scientific research and innovation.

• The programme includes various components such as awards, internships, and research fellowships to nurture scientific talent in the country.

• INSPIRE is an initiative by the Department of Science and Technology, Government of India.

Additional Information

• The INSPIRE Programme is designed to promote a culture of innovation and scientific research among the youth of India.

• It aims to develop a strong foundation for the country's scientific and technological progress by encouraging young minds to pursue careers in science.

• The programme has been successful in identifying and nurturing young talent, contributing to the growth of India's scientific community.

• INSPIRE aligns with India's broader goals of becoming a global leader in science and technology.

Q30. Answer: (d) 4, 3

Given:

Data: 2, 3, 5, 7, 2, 3, 3, 5, 7, 9

Formula Used:

1. Median: The middle value of a data set when it is ordered in ascending order. If the data set has an even number of observations, the median is the average of the two middle numbers.

2. Mode: The value that appears most frequently in a data set.

Calculation:

Ordered Data: 2, 2, 3, 3, 3, 5, 5, 7, 7, 9

Median:

Total number of data points = 10 (even)

Middle values: 3, 5

Median = (3 + 5) / 2

=> Median = 8 / 2

=> Median = 4

Mode:

Frequency of values: 2 (2 times), 3 (3 times), 5 (2 times), 7 (2 times), 9 (1 time)

Mode = 3 (appears most frequently)

The correct answer is option 4.

Q31. Answer: (a) 30

The correct answer is 30 companies

Key Points

• SENSEX is an index that represents the top 30 companies listed on the Bombay Stock Exchange (BSE).

• It is one of the oldest stock market indices in India, introduced in 1986.

• The index is a benchmark indicator of the performance of the Indian stock market and reflects the overall market sentiment.

• The companies included in the SENSEX are chosen based on their market capitalization, liquidity, and industry representation.

Additional Information

• The Bombay Stock Exchange (BSE) is one of the oldest stock exchanges in Asia, established in 1875.

• The SENSEX is also known as the BSE 30 and is widely used by investors and financial professionals to gauge the health of the Indian economy.

• It covers various sectors such as finance, IT, consumer goods, energy, and healthcare, providing a comprehensive snapshot of the market.

• The SENSEX is calculated using the free-float market capitalization method, which considers the number of shares available for trading in the market.

Q32. Answer: (a) 14.28% loss

Given:

Cost price of six items = Selling price of seven items

Formula Used:

Profit or Loss Percentage = ((Selling Price - Cost Price))/(Cost Price) × 100

Calculation:

Let the cost price of one item be C.

Cost price of six items = 6C.

Let the selling price of one item be S.

Selling price of seven items = 7S.

According to the given condition:

6C = 7S

=> S = (6C)/(7)

Profit or Loss = Selling Price - Cost Price

Profit or Loss for one item = S - C

=> Profit or Loss = (6C)/(7) - C

=> Profit or Loss = (6C - 7C)/(7)

=> Profit or Loss = (-C)/(7)

Since the value is negative, it indicates a loss.

Loss Percentage = ((-C/7))/(C) × 100

=> Loss Percentage = (1)/(7) × 100

=> Loss Percentage = 14.28%

The correct answer is option 1: 14.28% loss.

Q33. Answer: (d) Meerut

The correct answer is Meerut

Key Points

• India's first struggle for independence, also known as the Revolt of 1857, started on 10th May 1857 at Meerut.

• This revolt was a major, but ultimately unsuccessful, uprising against the British East India Company's rule in India.

• The revolt began with the mutiny of sepoys of the Company's army in the town of Meerut.

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

• The Revolt of 1857 is also referred to as the First War of Indian Independence, the Sepoy Mutiny, and the Indian Mutiny.

Additional Information

• The revolt was characterized by the discontent of the Indian soldiers in the British army, caused by various factors including the use of animal fat in rifle cartridges, which was against their religious beliefs.

• The revolt led to significant changes in the British administration and their policies in India.

• Post-revolt, the British Crown took direct control of India from the East India Company, leading to the establishment of the British Raj.

• The uprising had profound impacts on Indian society and was a precursor to the later movements for independence.

• The Revolt of 1857 remains a significant event in the history of India, symbolizing the country's resistance against colonial rule.

Q34. Answer: (d) √2

Given:

x = 1/(√ 2 + 1) to find x + 1.

Concept used:

Rationalize the given value of x.

Formula used:

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

Calculation:

$x = 1/(\sqrt{2} + 1)$

$\Rightarrow x = 1/(\sqrt{2} + 1) \times (\sqrt{2} - 1)/(\sqrt{2} - 1)$

$\Rightarrow x = (\sqrt{2} - 1)/((\sqrt{2})^2 - 1^2)$

$\Rightarrow x = \sqrt{2} - 1$

$\Rightarrow x + 1 = \sqrt{2}$

Therefore The correct answer is √2.

Q35. Answer: (b) 1974

The correct answer is 1974

Key Points

• Girish Karnad, a renowned playwright, actor, and director, was awarded the 'Padma Shri' in 1974.

• The Padma Shri is the fourth highest civilian award in India, recognizing distinguished contributions in various fields including arts, education, industry, literature, science, sports, medicine, social service, and public affairs.

• Girish Karnad was celebrated for his significant contributions to Indian theater and cinema, and his works often explored themes of mythology, history, and contemporary socio-political issues.

• He was also a recipient of other prestigious awards such as the Jnanpith Award and the Padma Bhushan.

Additional Information

• Girish Karnad was born on 19 May 1938 and passed away on 10 June 2019.

• He wrote several notable plays including 'Yayati', 'Tughlaq', 'Hayavadana', 'Nagamandala', and 'Taledanda'.

• In addition to his contributions to theater, Karnad also acted in numerous films and television series, earning acclaim for his performances.

• His legacy continues to inspire new generations of playwrights, actors, and filmmakers in India and beyond.

Q36. Answer: (c) Acquired Immune Deficiency Syndrome

The correct answer is Acquired Immune Deficiency Syndrome

Key Points

• Acquired Immune Deficiency Syndrome (AIDS) is a chronic, potentially life-threatening condition caused by the human immunodeficiency virus (HIV).

• By damaging your immune system, HIV interferes with your body's ability to fight infection and disease.

• AIDS is the final stage of HIV infection, and not everyone who has HIV will develop AIDS.

• There is currently no cure for HIV/AIDS, but it can be managed with proper medical care, particularly antiretroviral therapy (ART).

• With early diagnosis and proper medical care, people with HIV can live long, healthy lives.

Additional Information

• HIV is primarily spread through unprotected sex, sharing needles, and from mother to child during childbirth or breastfeeding.

• Prevention methods include practicing safe sex, using clean needles, and taking pre-exposure prophylaxis (PrEP) if at high risk.

• Regular testing and early diagnosis are critical to managing and preventing the spread of HIV.

• Global efforts continue to focus on education, prevention, and treatment to combat the spread of HIV/AIDS.

Q37. Answer: (d) 5 / 7

Given:

Fractions→ 4 / 5, 7 / 9, 7 / 6, and 5 / 7.

Concept used:

Convert all the fractions into decimals.

Calculation:

4 / 5 = 0.8

7 / 9 = 0.777
7 / 6 = 1.1666
5 / 7 = 0.714
Therefore The correct answer is 5 / 7.

Q38. Answer: (b) Time

The logic followed here is:

Century	Time unit
Time	General concept
Decade	Time unit
Year	Time unit

Century, Decade, Year all are specific time units,
Whereas,
Time is a general concept.
Hence, the correct answer is "Time".

Q39. Answer: (b) 4

Given:
Data set: 2, 5, 4, 1, 8
Formula Used:
Mean = (Sum of all data points) / (Number of data points)
Calculation:
Sum of data points = 2 + 5 + 4 + 1 + 8
=> Sum = 20
Number of data points = 5
Mean = Sum / Number of data points
=> Mean = 20 / 5
=> Mean = 4
The mean of the given data set is 4.

Q40. Answer: (d) Rs. 312.50

Given:
Amount = Rs. 338
Time = 2 years
rate = 4%
Formula used:
A = P (1 + r/100)^t
Calculation:
338 = P (1 + 4/100)²
=> 338 = P (26over25)²
=> 338 = P × 26over25 × 26over25
=> P = 338 × 25over26 × 25over26
=> P = 625/2 = Rs. 312.50
Therefore The correct answer is option (4).

Q41. Answer: (c) 180

Given:
Numbers to be divided: 12, 15, and 18.
Formula Used:
To find the least number which is exactly divisible by given numbers, find the Least Common Multiple (LCM) of those numbers.
Calculation:

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Prime factorization:

$12 = 2^2 \times 3$

$15 = 3 \times 5$

$18 = 2 \times 3^2$

LCM is found by taking the highest power of all prime factors:

$LCM = 2^2 \times 3^2 \times 5$

$\Rightarrow LCM = 4 \times 9 \times 5$

$\Rightarrow LCM = 180$

The least number which is exactly divisible by 12, 15, and 18 is 180.

Q42. Answer: (b) Brahmaputra

The correct answer is Brahmaputra

Key Points

• The river known as Jamuna in Bangladesh is called the Brahmaputra in India.

• The Brahmaputra is one of the major rivers of the world, originating from the Angsi Glacier in Tibet, flowing through India and Bangladesh.

• In India, it flows through the states of Arunachal Pradesh and Assam before entering Bangladesh.

• The Brahmaputra is known for its strong currents and is prone to flooding during the monsoon season.

Additional Information

• The Brahmaputra River is approximately 2,900 kilometers (1,800 miles) long.

• It is known as the Yarlung Tsangpo in Tibet, the Dihang or Siang in Arunachal Pradesh, and the Jamuna in Bangladesh.

• The river has significant cultural and economic importance in the regions it flows through, supporting agriculture, transportation, and livelihoods.

• The Brahmaputra basin is rich in biodiversity, home to various species of flora and fauna, including the endangered Gangetic dolphin.

• Major cities along the Brahmaputra include Guwahati in India and Dhaka in Bangladesh.

Q43. Answer: (c) Vijay Bhatkar

The correct answer is Vijay Bhatkar

Key Points

• Vijay Bhatkar is widely known as the 'father of Indian Supercomputers'.

• He led the development of the PARAM series of supercomputers in India.

• The PARAM 8000, developed in 1991, was India's first indigenous supercomputer.

• His work has significantly contributed to India's capabilities in high-performance computing.

Additional Information

• R.A. Mashelkar is a renowned Indian chemical engineer and a former Director General of the Council of Scientific and Industrial Research (CSIR).

• Nandan Nilekani is a co-founder of Infosys and has played a significant role in developing India's digital infrastructure, including the Aadhaar project.

• Jayant Narlikar is an Indian astrophysicist known for his work in cosmology and his collaboration with Fred Hoyle on the Hoyle-Narlikar theory.

• The PARAM series of supercomputers have been used in various applications, including weather forecasting, computational biology, and scientific research.

• India's advancements in supercomputing have placed it among the leading countries in high-performance computing capabilities.

Q44. Answer: (a) 51

Given:

Total fees collected = Rs. 2,601

Fees paid by each student = Number of students in the school

Formula Used:

Let the number of students be x. Therefore, the total fees collected = x × x

Calculation:

Total fees collected = Rs. 2,601

Let the number of students be x.

=> x × x = 2,601

=> x^2 = 2,601

=> x = √(2,601)

=> x = 51

Therefore, the number of students in the school is 51.

Q45. Answer: (a) parallel

Given:

Three straight lines: x + y - 3 = 0, x + y + 2 = 0, and 3x + 3y - 7 = 0

Formula used:

Check if the lines are parallel, coincident, or intersecting by comparing their slopes.

The general equation of a straight line is ax + by + c = 0.

Slope of the line is given by: slope = -a/b.

Calculation:

For line 1: x + y - 3 = 0

Slope = -1/1 = -1

For line 2: x + y + 2 = 0

Slope = -1/1 = -1

For line 3: 3x + 3y - 7 = 0

Divide the entire equation by 3: x + y - 7/3 = 0

Slope = -1/1 = -1

All three lines have the same slope, meaning they are parallel to each other.

Therefore The three lines are parallel.

Q46. Answer: (a) 2000

Given:

40% of a number is 800.

Formula Used:

Let the number be xxxxxxx

.

40% of xxxxxxx

= 800

Calculation:

40% of xxxxxxx

= 800

=> (40/100) × xxxxxxx

= 800

=> 0.4 × xxxx = 800

=> xxxx = 800 / 0.4

=> xxxx = 2000

The number is 2000.

Q47. Answer: (d) Only (ii) and (iii) are correct

Given:

Statement: Rahul has a deadline for a project in just two days and he has not yet started working on his project. Based on the following courses of action, select the correct one.

Course of Action:

I. He must immediately read a book on time management to avoid such problems in the future - False (Because, reading a book on time management will not help him meet the current deadline.)

II. He must manage his time efficiently and start his project without delay - True (Because, this directly addresses the immediate need to start and complete the project within the deadline.)

III. He must plan a layout of his project first and then start following that layout - True (Because, having a plan will help him work more efficiently and meet the deadline.)

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So, Both II and III follow.

Hence, the correct answer is "Option 4".

Q48. Answer: (b) Fazenda

The correct answer is Fazenda

Key Points

• In Brazil, coffee plantations are known as Fazenda.

• A Fazenda is a large plantation or estate found throughout Brazil, typically one that grows coffee, sugarcane, or other crops.

• The term Fazenda is derived from the Portuguese word for "farm" or "estate".

• Brazil is one of the largest producers of coffee in the world, and its Fazendas play a crucial role in this industry.

• These plantations often span large areas and incorporate both traditional and modern farming techniques.

Additional Information

• Coffee cultivation in Brazil began in the 18th century and has since grown to become a significant part of the country's economy.

• The regions of Minas Gerais, São Paulo, and Espírito Santo are known for their extensive coffee plantations.

• Brazilian coffee is renowned for its high quality, and the country exports a substantial portion of its production to various parts of the world.

• The coffee industry in Brazil provides employment to millions of people and contributes significantly to rural development.

• Efforts are being made to promote sustainable farming practices on Fazendas to ensure the long-term viability of coffee production in Brazil.

Q49. Answer: (c) 24

The correct answer is 24 hours

Key Points

• 24 hours is the maximum period within which a person who is arrested and detained in custody must be produced before the nearest magistrate, excluding the time necessary for the journey from the place of arrest to the court of the magistrate.

• This provision is enshrined in Article 22(2) of the Constitution of India.

• It ensures that the arrested person is not detained arbitrarily and has the opportunity to be heard before a judicial authority.

• This safeguard is part of the fundamental rights provided to individuals under the Indian Constitution.

Additional Information

• The Constitution of India provides a comprehensive legal framework for the protection of individual rights and liberties.

• Article 22 provides protection against arbitrary arrest and detention.

• It mandates that no person who is arrested shall be detained in custody without being informed of the grounds of such arrest.

• It also provides the right to consult and be defended by a legal practitioner of their choice.

• Furthermore, it ensures that the person is presented before a magistrate within 24 hours, thus preventing unlawful detention.

Q50. Answer: (d) Physics and Chemistry

The correct answer is Physics and Chemistry

Key Points

• Marie Curie won the Nobel Prize in both Physics and Chemistry.

• She was awarded the Nobel Prize in Physics in 1903 for her research on radiation phenomena.

• She received the Nobel Prize in Chemistry in 1911 for her discovery of the elements radium and polonium.

• Marie Curie was the first woman to win a Nobel Prize and remains the only person to have won Nobel Prizes in two different scientific fields.

• Her pioneering work laid the foundation for future research in both physics and chemistry.

Additional Information

• Marie Curie's research was crucial in the development of X-ray machines.

• She coined the term "radioactivity" and developed techniques for isolating radioactive isotopes.

• Curie founded the Curie Institutes in Paris and Warsaw, which remain major centers of medical research today.

• Despite facing significant obstacles as a woman in science during her time, Marie Curie's contributions have had a lasting impact on the fields of physics and chemistry.

• Her work not only advanced scientific understanding but also had practical applications in medicine, particularly in cancer treatment through radiotherapy.

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Q51. Answer: (d) 10

The logic followed here is: The sum of the numbers either row-wise or column-wise is 25.

1st row)

=> 15 + 6 + 4 = 25

And,

2nd row)

=> 4 + 9 + 12 = 25

Similarly,

3rd row)

=> 6 + ? + 9 = 25 => 15 + ? = 25 => ? = 10

Hence, "Option 4" is the correct answer.

Q52. Answer: (c) Son

Given statement: A nurse dressing the wound of a boy in a clinic is asked by her colleague how that boy is related to her. She replies, "My maternal uncle and the maternal uncle of his maternal uncle are the same."

Thus, the boy is the son of the nurse.

Hence, "Option 3" is the correct answer.

Q53. Answer: (d) Son's daughter

Given:

1) B and C are brothers

2) A is the sister of C

3) D is wife of B

4) O is the daughter of D

5) E is the mother of A and the wife of F

Thus, O is the granddaughter or son's daughter of F.

Hence, the correct answer is "Option 4.

Q54. Answer: (b) 36, 20

Given:

Two numbers are in the ratio 9 : 5.

If 9 is added to the greater number and 5 is subtracted from the smaller number, the greater number becomes thrice the smaller one.

Formula Used:

Let the two numbers be 9x and 5x.

Calculation:

Given:

Greater number = 9x

Smaller number = 5x

According to the problem:

9x + 9 = 3(5x - 5)

=> 9x + 9 = 15x - 15

=> 9 + 15 = 15x - 9x

=> 24 = 6x

=> x = 4

The numbers are:

Greater number = 9x = 9 × 4 = 36

Smaller number = 5x = 5 × 4 = 20

The numbers are 36 and 20.

Q55. Answer: (d) 500

Given:

y = 5 to find $10y\sqrt{(y^3 - y^2)}$.

Concept used:

Simply put the value of y and then simplify.

Calculation:

$10y\sqrt{(y^3 - y^2)}$

$=> 10 \times 5 \times \sqrt{(5^3 - 5^2)}$

$=> 50 \times \sqrt{(125 - 25)}$

$=> 50 \times \sqrt{100}$

=> 500

Therefore The correct answer is 500.

Q56. Answer: (d) Service

The correct answer is Service

Key Points

• The Service sector is the largest sector in India, contributing significantly to the economy.

• In the fiscal year 2018-19, the Service sector contributed a Gross Value Added (GVA) of Rs. 92.26 lakh crore.

• This sector includes industries such as IT, telecommunications, finance, real estate, and hospitality, among others.

• The Service sector has been a major driver of India's economic growth and employment.

Additional Information

• India's economy is divided into three main sectors: Agriculture, Industry, and Services.

• The Agriculture sector includes farming, forestry, and fishing, while the Industry sector comprises manufacturing, mining, and construction.

• The Service sector's growth has been fueled by advancements in technology and increasing globalization.

• Policies and reforms aimed at liberalizing the economy have also played a crucial role in the expansion of the Service sector.

Q57. Answer: (a) Vitamin A

The correct answer is Vitamin A

Key Points

• Vitamin A has three active forms: retinal, retinol, and retinoic acid.

• These forms are crucial for various bodily functions including vision, immune function, and cell growth.

• Retinal is essential for vision, particularly in low-light conditions.

• Retinol is the storage form of Vitamin A and can be converted to retinal when needed.

• Retinoic acid plays a critical role in cell differentiation and embryonic development.

• Deficiency in Vitamin A can lead to severe health issues such as night blindness and an increased risk of infectious diseases.

• Vitamin A can be obtained from dietary sources such as liver, fish oils, green leafy vegetables, and orange-colored fruits and vegetables.

Additional Information

• Vitamin D is important for bone health and is produced in the skin upon exposure to sunlight.

• Vitamin C is an antioxidant and is important for skin health and immune function.

• Vitamin B refers to a group of vitamins that play important roles in cell metabolism and energy production.

• Ensuring a balanced diet with adequate intake of all essential vitamins is crucial for overall health and well-being.

Q58. Answer: (b) Sangeet Natak Akademi

The correct answer is Sangeet Natak Akademi

Key Points

• Sangeet Natak Akademi was established in 1953 as India's first national academy for music, dance, and drama.

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

• The Akademi was set up to promote and preserve the traditional and classical arts of India.

• It organizes various performances, festivals, and workshops to encourage artists and spread awareness of Indian cultural heritage.

• The Sangeet Natak Akademi also confers awards and fellowships to eminent artists in the field of performing arts.

Additional Information

• The Ministry of Culture plays a significant role in the functioning and funding of the Sangeet Natak Akademi.

• The Akademi has regional centers across India to cater to the diverse cultural needs of different regions.

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• In addition to organizing events, the Akademi also undertakes research and documentation projects to preserve the rich cultural traditions of India.

• The Sangeet Natak Akademi has a library and archives that house a vast collection of books, manuscripts, and recordings related to Indian performing arts.

• It also collaborates with international cultural organizations to promote Indian arts globally.

Q59. Answer: (a) 12^(th)

The correct answer is 12th

Key Points

• The 12th Five-Year Plan of India completed its term in March 2017.

• The Five-Year Plans are centralized and integrated national economic programs.

• The 12th Five-Year Plan was the last plan, as the Planning Commission was replaced by the NITI Aayog in 2015.

• The 12th Plan aimed at achieving a growth rate of 8% but only managed to achieve around 7% due to various economic challenges.

Additional Information

• The Five-Year Plans were inspired by the Soviet model and were launched by India's first Prime Minister, Jawaharlal Nehru.

• The First Five-Year Plan was launched in 1951, focusing on the agricultural sector.

• The Planning Commission was an institution in the Government of India, which formulated India's Five-Year Plans, among other functions.

• With the dissolution of the Planning Commission, the NITI Aayog (National Institution for Transforming India) was established to serve as the policy think tank of the Government of India.

• NITI Aayog aims to foster involvement and participation in the economic policy-making process by the State Governments of India.

Q60. Answer: (d) Suneet Sharma

The correct answer is Suneet Sharma

Key Points

• Suneet Sharma has taken over as the new CEO of the Railway Board on 1st January 2021.

• He succeeded V K Yadav in this position.

• The Railway Board is the apex body of the Indian Railways, responsible for the overall management and administration of the railways.

• Suneet Sharma is a seasoned railway officer with extensive experience in various capacities within the Indian Railways.

• His appointment is expected to bring new energy and direction to the Railway Board's operations and initiatives.

Additional Information

• The Indian Railways is one of the largest railway networks in the world, operating over 67,000 kilometers of track and serving millions of passengers daily.

• It plays a crucial role in the transportation sector of India, contributing significantly to the economy.

• The Railway Board works under the Ministry of Railways, Government of India, and is responsible for formulating policies, planning, and development of the railways.

• With the new leadership under Suneet Sharma, the Railway Board aims to enhance efficiency, safety, and customer satisfaction.

Q61. Answer: (d) 1250

Given:

Speed of the man = 5 km/h

Time taken to cross the bridge = 15 min

Formula Used:

Distance = Speed × Time

Calculation:

Convert time from minutes to hours:

Time = 15 min = 15/60 hours = 0.25 hours

Distance covered (length of the bridge) = Speed × Time

=> Distance = 5 km/h × 0.25 hours

=> Distance = 1.25 km

Convert distance from kilometers to meters:

1 km = 1000 meters

=> Distance = 1.25 km × 1000

=> Distance = 1250 meters

The length of the bridge is 1250 meters.

Q62. Answer: (b) 4.5 h

Given:

Pipe 1 can empty a tank in 6 hours.

Pipe 2 can empty a tank in 18 hours.

Formula Used:

Combined rate of two pipes working together = (1 / Time taken by Pipe 1) + (1 / Time taken by Pipe 2)

Time taken to empty the tank together = 1 / Combined rate

Calculation:

Rate of Pipe 1 = 1 / 6

Rate of Pipe 2 = 1 / 18

Combined rate = 1 / 6 + 1 / 18

Combined rate = (3 + 1) / 18

Combined rate = 4 / 18

Combined rate = 2 / 9

Time taken to empty the tank together = 1 / 2/9

=> Time taken to empty the tank together = 9/2

=> Time taken to empty the tank together = 4.5 hours

The correct answer is option 2.

Q63. Answer: (a) 54 m2

Given:

Perimeter of the floor = 18 m

Height of the room = 3 m

Formula Used:

Area of the walls = Perimeter of the floor × Height

Calculation:

=> Area of the walls = 18 m × 3 m

=> Area of the walls = 54 m²

The area of the walls of the room is 54 m².

Q64. Answer: (b) Quit India Movement

The correct answer is Quit India Movement

Key Points

• Mahatma Gandhi gave the slogan 'Do or Die' during the Quit India Movement.

• The Quit India Movement was launched on 8th August 1942, during World War II, demanding an end to British rule in India.

• This movement was a significant milestone in the Indian independence struggle, marked by widespread protests and demonstrations.

• Gandhi's call for 'Do or Die' symbolized the determination and urgency of the Indian people to achieve independence.

• The British government responded with mass arrests and repression, but the movement intensified the demand for independence.

Additional Information

• The Non-Cooperation Movement was launched by Gandhi in 1920 to resist British rule through non-violent means.

• The Ghadar Movement was an early 20th-century anti-colonial effort by expatriate Indians to overthrow British rule.

• The Home Rule Movement, led by Bal Gangadhar Tilak and Annie Besant, sought self-governance for India within the British Empire.

• The Quit India Movement is also known as the August Movement due to its launch in August 1942.

• Despite its immediate suppression, the Quit India Movement laid the groundwork for India’s eventual independence in 1947.

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Q65. Answer: (c) [figure]

The logic followed here is:

Option 1)

→ Out of all the triangles, two are flipped vertically.

Option 2)

→ Out of all the triangles, two are flipped vertically.

Option 3)

→ No triangles are flipped vertically.

Option 4)

→ Out of all the triangles, two are flipped vertically.

Thus, out of all the options figure option 3 is the odd one out.

Hence, "Option 3" is the correct answer.

Q66. Answer: (b) Bhabha Atomic Research Center

The correct answer is Bhabha Atomic Research Center

Key Points

• Bhabha Atomic Research Center is the full form of BARC.

• BARC is India's premier nuclear research facility headquartered in Trombay, Mumbai, Maharashtra.

• It is a multi-disciplinary research center with extensive infrastructure for advanced research and development in nuclear science, engineering, and related areas.

• The center is named after Dr. Homi J. Bhabha, who is considered the father of the Indian nuclear program.

Additional Information

• Dr. Homi J. Bhabha established the Tata Institute of Fundamental Research (TIFR) in 1945 and later the Atomic Energy Establishment, Trombay (AEET) in 1954, which was renamed BARC in 1966 after his demise.

• BARC plays a crucial role in India's nuclear power generation, isotope production, and radiation technology applications.

• The center also conducts research in areas such as high-energy physics, plasma physics, material science, and environmental science.

• BARC operates under the Department of Atomic Energy (DAE), Government of India.

Q67. Answer: (d) 162

Given:

First term (a) = 2

Common ratio (r) = 3

Formula used:

The n-th term of a geometric progression: T_n = a × r^(n-1)

Calculation:

T5 = 2 × 3^(5-1)

=> T5 = 2 × 3^4

=> T5 = 2 × 81

=> T5 = 162

Therefore The fifth term of the geometric progression is 162.

Q68. Answer: (a) The Council of Ministers of a State is collectively responsible to the Legislative Assembly of the State.

The correct answer is The Council of Ministers of a State is collectively responsible to the Legislative Assembly of the State.

Key Points

• The Council of Ministers of a State is collectively responsible to the Legislative Assembly of the State.

• This principle of collective responsibility is enshrined in Article 164 of the Constitution of India.

• The Council of Ministers, headed by the Chief Minister, must maintain the confidence of the Legislative Assembly to remain in power.

• They are accountable for their actions and policies and can be removed by a vote of no confidence in the Legislative Assembly.

• This ensures that the executive branch remains answerable to the legislature, maintaining a system of checks and balances.

Additional Information

• The Constitution of India was adopted by the Constituent Assembly on 26th November 1949 and came into effect on 26th January 1950.

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• It lays down the framework defining fundamental political principles, establishes the structure, procedures, powers, and duties of government institutions, and sets out fundamental rights, directive principles, and the duties of citizens.

• The Constitution of India is the longest written constitution of any country in the world.

• It declares India a sovereign, socialist, secular, and democratic republic, assuring its citizens justice, equality, and liberty, and endeavors to promote fraternity.

• The Seventh Schedule of the Constitution contains three lists which delineate the subjects under the Union, State, and Concurrent lists.

• Amendments to the Constitution can be made through a process outlined in Article 368.

• The Union List has been amended several times to meet the evolving needs of the nation.

Q69. Answer: (a) Accredited Social Health Activist

The correct answer is Accredited Social Health Activist

Key Points

• Accredited Social Health Activist (ASHA) was instituted by the Government of India's Ministry of Health and Family Welfare in 2005.

• ASHA is a part of the National Rural Health Mission (NRHM), which aims to provide effective healthcare in rural areas.

• ASHAs are community health workers instituted by the government to act as an interface between the community and the public health system.

• Their primary role includes promoting health education, increasing access to health services, and addressing social determinants of health.

• ASHA workers are trained to work as an intermediary between the health system and the rural population, ensuring that rural inhabitants receive adequate healthcare services.

Additional Information

• The National Rural Health Mission (NRHM) was launched in April 2005 to improve health care delivery across rural India.

• ASHA workers are selected from the village itself and are accountable to it, making them a crucial part of the community's healthcare delivery system.

• They are trained to provide information and help people access the benefits of various health schemes offered by the government.

• ASHA workers also play a vital role in promoting immunization, maternal health, child health, and family planning services.

• They act as a link between the rural population and the health services, ensuring that the benefits of health schemes reach the rural population effectively.

Q70. Answer: (c) D

The region that best represents a doctor who is kind as well as honest is shown below:

Here, the shaded area shows a doctor who is kind as well as honest.

So, the region that best represents a doctor who is kind as well as honest is = D

Hence, "Option 3" is the correct answer.

Q71. Answer: (c) Ben Stokes

The correct answer is Ben Stokes

Key Points

• Ben Stokes won the 'Player of the Match' award at the final of the ICC Cricket World Cup 2019.

• The final match was held on 14th July 2019 at Lord's, London.

• Stokes played a crucial role in England's victory against New Zealand, scoring 84 not out in the regular play and contributing significantly in the Super Over.

• This was England's first-ever ICC Cricket World Cup win.

• The match was highly dramatic and ended in a tie, leading to a Super Over, which also ended in a tie. England won based on the boundary count rule.

Additional Information

• The ICC Cricket World Cup is an international cricket championship organized by the International Cricket Council (ICC) every four years.

• The 2019 World Cup was the 12th edition of the tournament.

• England's win in 2019 was historic as it was their first World Cup victory despite being the host country multiple times.

• The Player of the Match award is given to the player who has the most impact in a particular match, often contributing significantly to their team's performance.

Q72. Answer: (a) $x^2 - x - 6 = 0$

Given:

The roots are -2 and 3.

Formula used:

The general form of a quadratic equation with roots α and β is:

$x^2 - (\alpha + \beta)x + \alpha\beta = 0$

Where α and β are the roots of the equation.

Calculation:

Given roots: α = -2 and β = 3

Sum of the roots (α + β) = -2 + 3 = 1

Product of the roots (αβ) = -2 × 3 = -6

Therefore, the equation is:

$x^2 - (\alpha + \beta)x + \alpha\beta = 0$

$\Rightarrow x^2 - 1x - 6 = 0$

Therefore The required equation is $x^2 - x - 6 = 0$.

Q73. Answer: (b) 6; 9; 15

The logic followed here is:

25 □ 36 = 5; 6; 11

√25 = 5; √36 = 6; (5 + 6) = 11 => 5; 6; 11

And,

100 □ 64 = 10; 8; 18

√100 = 10; √64 = 8; (10 + 8) = 18 => 10; 8; 18

Similarly,

36 □ 81 = ?; ?; ?

√36 = 6; √81 = 9; (6 + 9) = 15 => 6; 9; 15

Hence, "Option 2" is the correct answer.

Q74. Answer: (d) 164

The correct answer is 164

Key Points

• Since July 2016, the World Trade Organisation (WTO) has had 164 members.

• The WTO is an international organization that regulates trade between nations to ensure smooth and fair trade practices.

• It was established on 1 January 1995, replacing the General Agreement on Tariffs and Trade (GATT), which started in 1948.

• The WTO agreements cover goods, services, and intellectual property, laying down the legal ground rules for international commerce.

• Membership in the WTO allows countries to participate in the formulation of international trade rules and resolve trade disputes with other member countries.

Additional Information

• The WTO has a unique system of trade dispute resolution, which is one of its most significant achievements.

• It operates a system of trade rules and provides a forum for negotiating trade agreements and settling disputes among members.

• The WTO's headquarters are in Geneva, Switzerland, and it operates as a forum for governments to negotiate trade agreements and settle trade disputes.

• Membership in the WTO is open to any state or customs territory having full autonomy in the conduct of its trade policies.

• The WTO also cooperates closely with other international organizations, including the International Monetary Fund (IMF) and the World Bank.

Q75. Answer: (b) (7, -8)

Given:

Point (7, 8) is to be reflected along the x-axis.

Formula used:

When a point (x, y) is reflected along the x-axis, its coordinates become (x, -y).

Calculation:

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Original point = (7, 8)

After reflection along the x-axis, the new point is (7, -8).

Therefore The image of the point (7, 8) when reflected along the x-axis is (7, -8).

Q76. Answer: (d) preparing bread

The correct answer is preparing bread

Key Points

• Bleaching powder is commonly used for disinfecting water, bleaching cotton, and as an oxidizing chemical.

• It is not used for preparing bread.

• Bleaching powder, also known as calcium hypochlorite, is an inorganic compound with the formula Ca(OCl)2.

• Its primary application is in the sanitation and textile industries due to its strong oxidizing properties.

Additional Information

• Bleaching powder is also used in the paper and pulp industry for bleaching wood pulp.

• In the chemical industry, it is used for the manufacture of chloroform (CHCl3).

• Handling bleaching powder requires caution as it can cause skin irritation and is harmful if inhaled.

• It should be stored in a dry place to prevent it from reacting with moisture in the air and losing its effectiveness.

Q77. Answer: (c) Rs. 787.50

Given:

Principal (P) = Rs. 16,800

Time (T) = 9 months = 9/12 years = 3/4 years

Rate of Interest (R) = 6 1over 4 % per annum = 6.25% per annum

Formula Used:

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

Calculation:

SI = (16,800 × 3/4 × 6.25) / 100

=> SI = (16,800 × 0.75 × 6.25) / 100

=> SI = (12,600 × 6.25) / 100

=> SI = 78,750 / 100

=> SI = Rs. 787.50

The simple interest earned is Rs. 787.50.

Q78. Answer: (c) 31 : 69

The correct answer is 31 : 69

Key Points

• According to the 2011 Census, the urban-rural population ratio in India was about 31 : 69.

• This ratio indicates that approximately 31% of India's population lived in urban areas while 69% resided in rural areas.

• The data reflects the distribution of population across different regions, highlighting the predominance of rural habitation in India.

• Urbanization trends have been gradually increasing, but a significant portion of the population still remains in rural areas.

Additional Information

• The 2011 Census was the 15th Census of India since 1871 and was conducted in two phases: house listing and population enumeration.

• During the Census, various demographic parameters such as population size, density, growth, and urban-rural distribution were collected.

• The information collected helps in planning and formulation of policies for economic and social development.

• Census data is crucial for the allocation of resources and representation in legislative bodies.

• India's Census is one of the largest administrative exercises in the world, involving millions of enumerators and extensive fieldwork.

• The next Census in India is scheduled to be conducted in 2021, which will provide updated demographic data.

Q79. Answer: (b) Carbon dioxide

The correct answer is Carbon dioxide

Key Points

• Diamond, Fullerenes, and Graphite are all allotropes of carbon.

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• An allotrope is a different structural form of the same element, where the atoms are bonded together in different ways.

• Carbon dioxide is a compound consisting of carbon and oxygen atoms and is not an allotrope of carbon.

• Allotropes of carbon exhibit different physical and chemical properties despite being composed of the same element.

Additional Information

• Diamond is a hard, transparent crystal where each carbon atom is bonded to four other carbon atoms in a tetrahedral structure.

• Graphite is a soft, opaque allotrope where each carbon atom is bonded to three other carbon atoms in layers of hexagonal structures, which can slide over each other.

• Fullerenes are molecules composed entirely of carbon, taking the form of hollow spheres, ellipsoids, or tubes.

• Carbon can also form other allotropes, such as graphene, which is a single layer of carbon atoms arranged in a hexagonal lattice.

Q80. Answer: (b) Hyderabad

The correct answer is Hyderabad

Key Points

• The Indian National Centre for Ocean Information Services (INCOIS) is located in Hyderabad.

• INCOIS is an autonomous organization under the Ministry of Earth Sciences, Government of India.

• It provides ocean information and advisory services to various stakeholders including maritime communities, industries, and government agencies.

• The center plays a crucial role in monitoring and forecasting oceanic conditions, which is vital for disaster management, marine navigation, and resource management.

Additional Information

• INCOIS was established in 1999 and is headquartered in Hyderabad, Telangana.

• The center provides services such as Tsunami Early Warning, Ocean State Forecast, and Potential Fishing Zone advisories.

• INCOIS collaborates with various national and international organizations to enhance its oceanographic services.

• It uses advanced technologies like satellite remote sensing, numerical modeling, and data buoy systems to collect and analyze oceanographic data.

Q81. Answer: (d) Rafael Nadal

The correct answer is Rafael Nadal

Key Points

• Rafael Nadal has won the highest number of French Open tennis tournaments as of October 2020.

• The French Open, also known as Roland Garros, is one of the four Grand Slam tennis tournaments.

• Nadal is known for his exceptional performance on clay courts, which is the surface used at the French Open.

• His dominance at Roland Garros is unmatched, making him the most successful player in the history of the tournament.

Additional Information

• Roger Federer and Novak Djokovic are also top tennis players with multiple Grand Slam titles, but their success at the French Open is not as prominent as Nadal's.

• Dominic Thiem has also shown strong performances on clay but has not won as many titles as Nadal.

• The French Open is held annually in Paris, France, and is the premier clay court tennis championship event in the world.

• Nadal's first French Open title came in 2005, and he has continued to secure numerous titles over the years, establishing his legacy at Roland Garros.

Q82. Answer: (a) 3

Given:

Fraction: 15/19

Target fraction: 3/4

Formula Used:

Let the number to be subtracted be xxxx.

The equation will be:

(15 - x)/(19 - x) = 3/4

Calculation:

Cross-multiply to solve for xxxx :

4(15 - x) = 3(19 - x)

=> 60 - 4x = 57 - 3x

Move like terms to one side:

=> 60 - 57 = 4x - 3x

=> 3 = x

Therefore, the number to be subtracted is 3.

Q83. Answer: (d) C^(++++)

The correct answer is C++++

Key Points

• Java, Swift, and Python are recognized computer programming languages.

• C++++ is not a valid computer programming language.

• The correct notation for the programming language similar to "C++++" is C++.

• The given options include a typo or incorrect format, making C++++ the invalid choice.

Q84. Answer: (a) 30

There are 4 rows and 4 columns in the above figure. So let n = 4.

Here, we using formulas for finding number of squares in an n × n grid as follows.

Formula :-

n2 + (n - 1)2 + (n - 2)2 + - - - - - - - - - - + (n - n)2

The number of squares in a 4 × 4 matrix is

= $4^2 + 3^2 + 2^2 + 1^2$

=> 16 + 9 + 4 + 1 = 30

Theoretical Method:

To count the square, we will assign a number to each block of the square as shown below:

Sqaures involving only one block = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16} = 16 squares

Squares involving four blocks = {(1, 2, 5, 6), (2, 6, 3, 7), (3, 7, 4, 8), (5, 6, 9, 10), (6, 7, 10, 11), (7, 8, 11, 12), (9, 10, 13, 14), (10, 11, 14, 15), (11, 12, 15, 16)} = 9 squares

Squares involving 9 blocks = {(1, 2, 3, 5, 6, 7, 9, 10, 11), (2, 3, 4, 6, 7, 8, 10, 11, 12), (5, 6, 7, 9, 10, 11, 13, 14, 15), (6, 7, 8, 10, 11, 12, 14, 15, 16)} = 4 squares

Squares involving 16 blocks = 1

Total number of squares = 16 + 9 + 4 + 1 = 30 squares.

So, there are 30 squares in the given figure.

Hence, the correct answer is "30".

Q85. Answer: (b) Mohandas Karamchand Gandhi

The correct answer is Mohandas Karamchand Gandhi

Key Points

• Mohandas Karamchand Gandhi founded the Satyagraha Sabha in February 1919.

• The Satyagraha Sabha was established in response to the Rowlatt Act, which allowed the British colonial government to imprison any person suspected of terrorism without trial.

• Gandhi initiated the Satyagraha movement as a form of non-violent resistance against the oppressive policies of the British government.

• The Sabha aimed to mobilize Indians to engage in non-violent protests and civil disobedience to demand the repeal of the Rowlatt Act.

• This movement marked an important phase in India's struggle for independence, emphasizing the power of non-violent protest.

Additional Information

• Mohandas Karamchand Gandhi, also known as Mahatma Gandhi, is regarded as the leader of the Indian independence movement against British rule.

• He is known for his philosophy of non-violence (Ahimsa) and his strategy of Satyagraha, which means "truth force" or "soul force".

• Gandhi's leadership and methods of peaceful protest inspired many other movements for civil rights and freedom across the world.

• He played a crucial role in various other significant movements in India such as the Non-Cooperation Movement, the Civil Disobedience Movement, and the Quit India Movement.

• Gandhi's birthday, October 2nd, is commemorated as Gandhi Jayanti in India and is also observed as the International Day of

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Non-Violence.

Q86. Answer: (d) 10%

Given:

A table showing the marks obtained by two students Raj and Ramesh in different subjects.

Formula used:

Percentage of aggregate marks = total aggregate marks / total max. marks × 100

Calculation:

Total max marks for Raj = 20 + 20 + 20 + 20 = 80

Total aggregate marks of Raj = 18 + 17 + 16 +15 = 66

Total max marks for Ramesh = 100 + 100 + 100 + 100 = 400

Total aggregate marks of Ramesh = 85 + 70 + 60 +75 = 290

Percentage of marks of Raj = 66 / 80 × 100 = 82.5%

Percentage of marks of Ramesh = 290 / 400 × 100 = 72.5%

Difference in percentage of marks of Raj and Ramesh = 82.5 - 72.5 = 10%

Therefore The correct answer is 10%.

Q87. Answer: (b) 24

Given:

Roll numbers of the candidates who have been shortlisted in an entrance examination. The first two digits represent the city, the second two digits represents the centre and the last three digits represent the candidate.

Concept:

Count the candidate from each city code as first two digit shows city code.

Calculation:

City code 24 has the maximum candidate 5 on counting.

Therefore The correct answer is 24.

Q88. Answer: (d) 625

Given:

A bar graph showing the number of students (in hundred numbers) graduated from 4 different departments of a university, Mathematics (DOM), Physics (DOP), Chemistry (DOC) and English (DOE) during 3 consecutive years.

Formula Used:

Average = Total number of students / Number of departments

Calculation:

Number of departments = 4

Total number of students in 2017 = 600 + 600 + 600 + 700 = 2500

Average = 2500 / 4 = 625.

Therefore The correct answer is 625.

Q89. Answer: (b) 360%

Given:

A pie chart showing the monthly expenditure incurred by Raj's family over different items.

Formula used:

Percentage of 'A' with respect to 'B' = A / B × 100

Calculation:

Expenditure on food = 36%

Expenditure on Cloth = 10%

Percentage of expenditure on food with respect to cloth = 36 / 10 × 100

=> 360%

Therefore The correct answer is 360%.

Q90. Answer: (c) Only conclusion (i) follows

Given,

Statement:

A friend in need is a friend indeed.

Conclusions:

I. A person who helps you in difficult situations is your friend - True (Because, the statement implies that a true friend is someone who supports you when you are in need).

II. Your enemies can also sometimes have a change of heart and help you in times of need - False (Because, the statement does not provide any information about enemies having a change of heart and helping you).

So, Only conclusion I follows.

Hence, the correct answer is "Option 3".

Q91. Answer: (a) Only conclusion III follows.

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

Conclusions:

I. All Pluto are Mercury → Does not follow (As all Venus are Mercury, some Jupiter are Venus and all Pluto are Jupiter. So it is possible but not definite.)

II. Some Pluto are Mercury → Does not follow (As all Venus are Mercury, some Jupiter are Venus and all Pluto are Jupiter. So it is possible but not definite.)

III. Some Mercury are Jupiter → Follow (As all Venus are Mercury and some Jupiter are Venus. As some part of Jupiter is common with Venue which whole comes in Mercury, therefore, some Mercury is Jupiter is true.)

IV. All Jupiter are Mercury → Does not follow (As all Venus are Mercury and some Jupiter are Venus. So it is possible but not definite.)

Therefore Here, Only conclusion III follows.

Hence, the correct answer is "Option 1"

Q92. Answer: (d) ZBMORTVXDFQS

The logic followed here is:

QUESTION is coded as PRTVDFRTSUHJNPMO

Similarly,

‘ANSWER will be coded as

Hence, "Option 4" is the correct answer.

Q93. Answer: (a) 91175218

The logic followed here is:

COMPUTER is written as 31191267218

Letters	C	O	M	P	U	T	E	R
Codes	3	11	9	12	6	7	2	18

And,

PHONE is written as 12511142

Letters	P	H	O	N	E
Codes	12	5	11	14	2

Therefore,

MOTHER will be written as

M → 9

O → 11

T → 7

H → 5

E → 2

R → 18

So, MOTHER → 91175218

Hence, "Option 1" is the correct answer.

Q94. Answer: (a) 4

The logic followed here is:

=> 9 × 4 = 36

And,

=> 8 × 7 = 56

Similarly,

=> 6 × 8 = 48

=> ? = 4

Hence, "Option 1" is the correct answer.

Q95. Answer: (a) 9, -5

Given:

There are two numbers with the difference of 14 between them and the difference of their squares is 56.

Formula used:

$x^2 - y^2 = (x + y)(x - y)$.

Calculation:

Let the two numbers be x and y.

So, x - y = 14 and x2 - y2 = 56.

Using the formula:

$x^2 - y^2 = (x + y)(x - y)$

=> 56 = (x + y) × 14

=> x + y = 56 / 14 => x + y = 4 ... (1)

=> x - y = 14.... (2)

Adding both equations:

(x - y) + (x + y) = 14 + 4

=> 2x = 18

=> x = 9

Substituting x = 9 in Equation (1): x + y = 4 => y = -5

The two numbers are 9 and -5.

Shortcut Trick

Given: There are two numbers with the difference of 14. Let the two numbers be x and y. So, x - y = 14.

By, putting the option we can also check the value which fit in the given equation.

Option 1, i.e. x = 9 and y = -5,

=> x - y = 9 - (-5) = 14.

Hence Option (1) is the correct answer.

Q96. Answer: (c) Paper

The logic followed here is:

Pencil	Writing instrument
Chalk	Writing instrument
Paper	Writing surface
Pen	Writing instrument

Pencil, Chalk, Pen all are Writing instruments,

Whereas,

Paper is a Writing surface.

Hence, the correct answer is "Paper".

Q97. Answer: (d) 9

The logic followed here is:

(6 + 6 + 7 + 9) = (7 × 4)

28 = 28 (LHS = RHS)

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And,

(14 + 11 + 5 + 15) = (5 × 9)

45 = 45 (LHS = RHS)

Similarly,

(6 + 8 + 5 + 8) = (? × 3)

27 ÷ 3 = ?

9 = ?

Hence, "Option 4" is the correct answer.

Q98. Answer: (a) [figure]

The diagram that best represents the given situation is shown below :

A → Represents some students who enrolled for only English.

C → Represents some students who enrolled for only Spanish.

B → Represents students who enrolled for both English and Spanish.

D → Represents some students who were not interested in either English or Spanish, so they didn't enroll.

Hence, "Option 1" is the correct answer.

Q99. Answer: (b) 74

The logic followed here is:

=>$3^2 + 5^2 + 2^2 = 9 + 25 + 4$ → 38

=>42 + 52 + 12 = 16 + 25 + 1 → 42

=>62 + 72 + 22 = 36 + 49 + 4 → 89

Similarly,

=>32 + 42 + 72 = 9 + 16 + 49 → 74

Hence, "Option 2" is the correct answer.

Q100. Answer: (a) 44

The logic followed here is:

=> (3 + 6) × 7 = 9 × 7 → 63

And,

=> (13 + 12) × 3 = 25 × 3 → 75

Similarly,

=> (4 + 18) × 2 = 22 × 2 → 44

Hence, "Option 1" is the correct answer.

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