RRB NTPC CBT-I Official Paper (Held On: 6 April 2021 Shift 2) (Previous Year Paper)

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

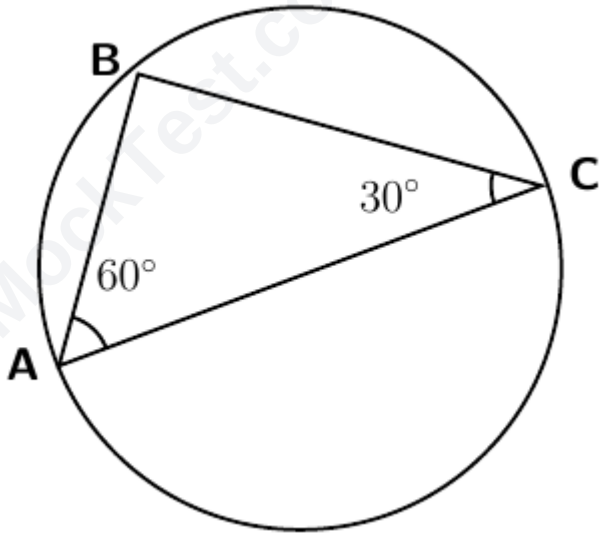
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Q1. In the given figure A, B and C are three points on a circle. If AB = 3 cm and BC = 4 cm, then the measure of the radius of the circle is:



(a) 3 cm
(b) 5 cm
(c) 7over2 cm
(d) 5over2 cm

Q2. On what sum will the compound interest, at the rate of 12 1over2 % per annum for 2 years compounded annually, be Rs. 6,800?

(a) Rs. 27,260
(b) Rs. 25,600
(c) Rs. 27,200
(d) Rs. 54,400

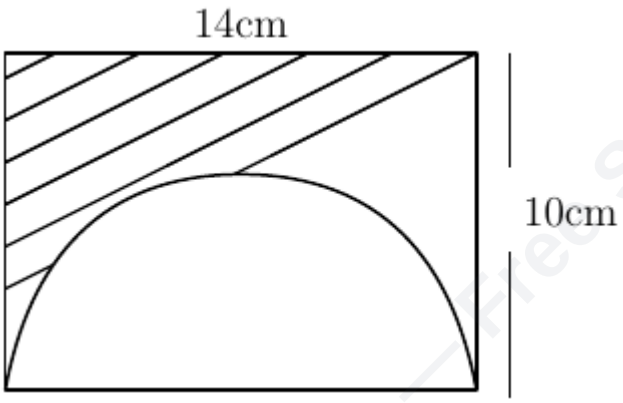
Q3. If a - b = 5 and $a^3 - b^3 = 5$, then what will be the value of ab ?

(a) • 26over3
(b) 8
(c) -8
(d) 26over3

Q4. Swaraj was the goal of India's political efforts. This goal was announced by Dadabhai Naoroji at the:

(a) Calcutta Session 1886
(b) Bombay Session 1889
(c) Calcutta Session 1906
(d) Lahore Session 1885

Q5. A semicircle has been drawn on the length of a rectangle. The area of the shaded region in the figure is:



(a) 77 cm²
(b) 14 cm²
(c) 129 cm²
(d) 63 cm²

Q6. A and B together can finish a task in 24 days. They worked at it for 18 days and then C finished the remaining work in 10 days. In how many days can A, B and C together finish the task

(a) 32 days
(b) 15 days
(c) 34 days
(d) 24 days

Q7. Select the number that can replace the question mark (?) in the following series.

35, 48, 63, 80, ?

(a) 99
(b) 100
(c) 96
(d) 90

Q8. In a certain code language, Book is written as 4662, COAL is written as 3617 and COKE is written as 3625. How will LOCK be written as in that language?

(a) 3236
(b) 2336
(c) 6323
(d) 7632

Q9. The Maasai tribes inhabit:

(a) Antarctica
(b) North America
(c) Africa
(d) Europe

Q10. What is the name of the Automatic Fare Collection Gating System launched by PM Narendra Modi in March 2019 while inaugurating Phase 1 of the Ahmedabad Metro train service?

(a) AYSUSHMAN BHARAT YOJANA
(b) TRAIN
(c) SWAGAT
(d) AUTO

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Q11. Who is called as the architect of Indian planning?

(a) Ghanshyam Das Birla
(b) Jamnalal Bajaj
(c) P.C. Mahalanobis
(d) Jawahar Lal Nehru

Q12. Please read the following information carefully and answer the question that follows.

Richa, Rohini, Roli, Roshen and Rita are five friends. Each one of them has eight balls. Rohini gives three balls to Roshen, who gives five balls to Richa. Richa gives four balls to Roli, who in turn gives three balls to Rita. Rita gives two balls each to Roshen and Rohini.

After the final distribution, how many balls are there in total with all five friends?

(a) 36
(b) 48
(c) 40
(d) 35

Q13. As of December 2020, who is the Prime Minister of Australia?

(a) Jon Sandberg
(b) Scott Morrison
(c) Peter Herald
(d) Bill Shorten

Q14. A bag contains balls numbered 1, 2, 3 ..... 30. One ball is drawn from the bag at random. What is the probability that the number on the ball drawn is divisible by 4 or 6?

(a) 1over15
(b) 3over10
(c) 2over5
(d) 1over3

Q15. If in a coding system 34 - 23 = 17, 74 - 61 = 35 and 82 - 36 = 25, then find the value of 69 - 42.

(a) 62
(b) 48
(c) 21
(d) 60

Q16. When is 'Human Rights Day' annually observed around the world?

(a) 2^(nd) October
(b) 20^(th) December
(c) 10^(th) December
(d) 23^(rd) March

Q17. Who was appointed as India's first Lokpal (anti-corruption ombudsman) in March 2019?

(a) Pinaki Chandra Ghose
(b) Amit Shah
(c) Dalbir Singh
(d) KPS Menon

Q18. A father is twice as old as his son. Twenty years ago, the age of the father was 12 times his son's age at that time. Difference in the present ages (in years) of the father and son is:

(a) 44
(b) 2
(c) 12
(d) 22

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Q19. A man sells a washing machine for Rs. 21,600 gaining thereby 8%. At what price should he sell it to gain 20%?

(a) Rs. 24,000
(b) Rs. 26,000
(c) Rs. 23,200
(d) Rs. 28,000

Q20. Which of the following is an output device?

(a) Printer
(b) MICR(Magnetic Ink Character Recognition)
(c) OCR(Optical Character Readers)
(d) Mouse

Q21. Pointing to a man in a photograph, Laxman said. "He is the only son of my mother's father". How is Laxman related to that man?

(a) Sister's Son
(b) Son
(c) Brother
(d) Brother's Son

Q22. Solve the following.

2 - [(-5) × (-4) - (3 - 5)] = ?

(a) -20
(b) -8
(c) 8
(d) 20

Q23. With which of the following countries did India sign a Memorandum of Understanding (MoU) to cooperate in the field of anti-microbial resistance in year 2009?

(a) USA
(b) Japan
(c) Sweden
(d) Russia

Q24. The number of prime numbers less than 20 is:

(a) 7
(b) 10
(c) 9
(d) 8

Q25. The least multiple of 14 which when divided by 6, 8, 12 leaves remainder 4, 6 and 10 respectively, is:

(a) 70
(b) 40
(c) 46
(d) 336

Q26. _____ are not shifted to others and are levied on the income or profits of the person who pays them.

(a) Sales tax
(b) Indirect taxes
(c) Goods and services tax
(d) Direct taxes

Q27. Ages of Keshav and Vipul are in the ratio 9 : 10. Twelve years hence their ages will be in the ratio 13 : 14. Keshav's present age is:

(a) 39 years
(b) 30 years

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(c) 42 years
(d) 27 years

Q28. For a given fraction, how many equivalent fractions can be formed?
(a) Infinite
(b) Only 1
(c) Only 3
(d) Only 2

Q29. Select the number that can replace the question mark(?) in the following series.
1728, 2744, 4096, ?, 8000
(a) 4913
(b) 4464
(c) 6859
(d) 5832

Q30. What is the balcony-shaped structure on stupa known as?
(a) Yashti
(b) Anda
(c) Harmika
(d) Chhatri

Q31. Kurt Waldheim, the fourth UN secretary General was the former president of _____.
(a) Austria
(b) Mexico
(c) Argentina
(d) Spain

Q32. J, K, L, M, N, O, P and Q are sitting in a circle, facing the centre. O is sitting to the immediate right of M and second to the left of J. P is sitting second to the left of M, who is not sitting next to N. K is sitting next to P and L is not sitting next to either M or J. N is sitting third to the right of K.
Who is sitting to the immediate right of J?
(a) O
(b) Q
(c) N
(d) K

Q33. The HCF of 15, 25 and 42 is:
(a) 1
(b) 27
(c) 1050
(d) 82

Q34. If × means subtraction, - means addition, + means division and ÷ means multiplication, then find the value of
91 + 13 - 11 ÷ 3 × 15.
(a) 55
(b) 65
(c) 11
(d) 25

Q35. Identify the incorrect statement about mammals.
(a) Normally mammals have hair.
(b) Some mammals lay eggs
(c) Heart is three chambered.
(d) Mammary gland is present to feed young ones

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Q36. Which of the following rights does the MGNREGA Scheme guarantee?

(a) Right to freedom
(b) Right to work
(c) Right to speech
(d) Right to information

Q37. Mirabai was a Rajput princess from:

(a) Satara
(b) Bijapur
(c) Mewar
(d) Merta

Q38. Gunjan, Sameer, Jack, Madhur and Shweta are teachers in a school. Sameer teaches English, Computers and Science. Madhur teaches English, Mathematics and Science. Music and Mathematics are taught by Gunjan and Jack. Shweta does not teach Mathematics, Science and Music. Gunjan and Shweta teach Computers and English also. Shweta is the only teacher for Social Studies in the school.

How many subjects are taught by the teachers in total?

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

Q39. Who is the first batsman to score double Century in his 100^(th) International Test?

(a) Brian Lara
(b) Joe Root
(c) Sachin Tendulkar
(d) Ricky Ponting

Q40. A can finish a task in 18 days and B can finish the same task in 15 days. They started working together but B left 7 days before the task finished. For how many days did A and B work together?

(a) 8
(b) 12
(c) 7
(d) 5

Q41. Which of the following schemes is subsumed in the Ayushman Bharat - National Health Protection Mission?

(a) Senior Citizen Health Insurance scheme (SCHIS)
(b) Aam Aadmi Bima Yojana (AABY)
(c) Universal Health Insurance scheme(UHIS)
(d) Janashree Bima Yojana (JBY)

Q42. Which section of the Constitution of India discusses about the responsibility of states towards international peace and security?

(a) Directive Principles of state Policy
(b) Fundamental Duties
(c) Preamble
(d) Fundamental Rights

Q43. Who wrote the epic 'Buddhacharitam'?

(a) Gautama Buddha
(b) Ashvaghosha
(c) Nagarjuna
(d) Hemchandra

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Q44. Which judgment laid the Doctrine of Basic structure of the constitution?

(a) Golaknath case
(b) Kesavananda Bharati case
(c) Indra Sawhney case
(d) Shankari Prasad case

Q45. If the sum of the squares of roots of the polynomial $x^2 + 8x + 15k$ is 34, then what will be the value of k?

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

Q46. In a certain code language, COMPUTER is written as EQORWVGT. How will ENGLISH be written as in that language?

(a) GPINKUJ
(b) GUKNIPL
(c) ULKINGP
(d) JUKNIPG

Q47. In which of the following years were Regional Rural Banks established?

(a) 1980
(b) 1972
(c) 1960
(d) 1975

Q48. One third of one fourth of two seventh of 12 is:

(a) 2over7
(b) 14
(c) 7over2
(d) 32over7

Q49. A bag contains balls numbered 1, 2, 3, ... 20. One ball is drawn from the bag at randon. What is the probability that the number on the ball drawn is divisible by 3 or 5?

(a) 1over2
(b) 2over5
(c) 9over20
(d) 1over10

Q50. Solve the following.

17.6 + 1.76 + 0.176 + 0.0176 + 0.00176 = ?

(a) 19.55556
(b) 19.55336
(c) 19.55356
(d) 19.55536

Q51. Patients suffering from which of the following diseases can donate eyes?

(a) Rabies
(b) Cholera
(c) Diabetes
(d) Tetanus

Q52. Which of the following is an example of the binary number system?

(a) 009
(b) 89056
(c) 100101

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(d) ABCDE

Q53. Select the option that is related to the third term in the same way as the second term is related to the first term.

Gas : Cylinder :: Water : ?

(a) Tank
(b) Pipe
(c) Well
(d) Drink

Q54. Medicines that stop the growth of disease causing microorganisms are called:

(a) antibodies
(b) antibiotics
(c) anaesthetics
(d) analgesic

Q55. The process of conversion of sugar into alcohol is known as :

(a) condensation
(b) decantation
(c) fermentation
(d) sedimentation

Q56. Solve the following.

(70 + 5 ×2 ÷ 10+15-10)/(25 × 6+2) = ?

(a) 5over 18
(b) 1over2
(c) 19over50
(d) 53over 114

Q57. Who died while playing chaugan?

(a) Iltutmish
(b) Qutubuddin Aibak
(c) Alauddin Khilji
(d) Firoz Tughluq

Q58. In March 2019, Indian Space Research Organization (ISRO) and France space agency CNES signed an agreement in Bengaluru to develop which of the following systems?

(a) Reusable launch vehicle
(b) Space-based Maritime Surveillance System
(c) National Remote Sensing System
(d) ISRO Inertial System

Q59. Which of the following monuments is NOT situated in Delhi?

(a) Panch Mahal
(b) Red Fort
(c) Agrasen Ki Baoli
(d) Qutub Minar

Q60. Read the given statement and conclusions carefully and decide which of the conclusions logically follow(s) from the statement.

Statement:

People of Kerala cook many dishes in coconut oil.

Conclusions:

1. Coconut oil is the main cooking oil of the country.
2. Kerala is a big consumer of coconut oil.

(a) Either conclusion 1 or 2 follow.

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(b) Only conclusion 1 follows.
(c) Both conclusions 1 and 2 follow.
(d) Only conclusion 2 follows.

Q61. Where does River Pindar join Alaknanda?
(a) Devprayag
(b) Rudraprayag
(c) Vishnuprayag
(d) Karnaprayag

Q62. The Ural Mountains separate _____ and _____.
(a) Africa, India
(b) North America, South America
(c) Africa, Europe
(d) Asia, Europe

Q63. A train travelling at a speed of 84 Km/h passes a post in 9 seconds and a platform in 30 seconds. What is the length of the platform?
(a) 500 m
(b) 540 m
(c) 480 m
(d) 490 m

Q64. The first web browser developed by the National Center for Supercomputing Application was:
(a) Opera
(b) Mosaic
(c) Mozilla Firefox
(d) Netscape

Q65. A fruit seller sells 16 oranges for Rs. 42 thereby gaining 25%. How many oranges did he buy for Rs. 42?
(a) 20
(b) 18
(c) 22
(d) 21

Q66. Select the option that is related to the third term in the same way as the second term is related to the first term.
BOW : CPX :: EQY : ?
(a) FPX
(b) FIZ
(c) FRZ
(d) FIX

Q67. 65% of the first number is 130 and 40% of the second number is 100. The ratio of the first number to the second number is :
(a) 1 : 2
(b) 4 : 5
(c) 5 : 8
(d) 8 : 5

Q68. What is the LCM of 1/6, 1/4 and 1over2 ?
(a) 1over 2
(b) 1
(c) 1over6
(d) 1over12

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Q69. Who is appointed as the Deputy Election commissioner in the Election commission of India in January, 2021?

(a) Rajiv Kumar
(b) Sunil Arora
(c) Umesh Sinha
(d) Sushil Chandra

Q70. Abdul earned Rs. 12,600 as simple interest on Rs. 70,000 at the rate of 12% per annum in a certain period. Find the period.

(a) 2over 3 years
(b) 15 years
(c) 3over2 years
(d) 3 years

Q71. John and Joseph have Rs. 19,000 and Rs. 26,000 respectively with them. If Joseph gives Rs. 1,000 to john, then the ratio of the amount with john and that with Joseph is:

(a) 19 : 26
(b) 2 : 3
(c) 4 : 5
(d) 20 : 27

Q72. Solve the following.

√144/6 × √121/8×132/√484=?

(a) 3over 4
(b) 4
(c) 33over2
(d) 155over36

Q73. Select the option that is related to the third term in the same way as the second term is related to the first term.

Second : Minute :: Day : ?

(a) Week
(b) Night
(c) Hour
(d) Season

Q74. Leech belongs to the phylum:

(a) annelida
(b) platyhelminthes
(c) mollusca
(d) protochordata

Q75. In which of the following years did the Constitution of India, through the 86^(th) amendment, introduce Article 21-A to provide free and compulsory education to all children in the age group of 6 to 14 years as a Fundamental Right?

(a) 2010
(b) 2002
(c) 2004
(d) 2008

Q76. Solve the following.

$2 \sin^2 30^\circ + \cos^2 60^\circ - 3/4 \cot^2 30^\circ = ?$

(a) -1
(b) 1over2
(c) -3over2
(d) 0

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Q77. To which of the following countries does the present Secretary General of UN belong?

(a) USA
(b) Portugal
(c) India
(d) South Korea

Q78. Who established 'Satya Sodhak Samaj'?

(a) BR Ambedkar
(b) Mahatma Gandhi
(c) Shantaram Tambhakhu
(d) Jyotiba Phule

Q79. The area of four side walls of a cubical box is 36 cm^(2.)Its edge is:

(a) √6 cm
(b) 3 cm
(c) 9 cm
(d) 6 cm

Q80. Four words have been given, out of which three are alike in some manner and one is different. Select the odd one.

(a) Phosphorus
(b) Nitrogen
(c) Potassium
(d) Manure

Q81. Who among the following is the chairman of the National Development Council (NDC)?

(a) President of India
(b) Finance Minister of India
(c) Prime Minister of India
(d) Vice President of India

Q82. Given data is arranged in an ascending order. If the median is 10, then find the vale of p.

3, 5, 6, 2p + 3, 3p + 2, 15, 25, 51.

(a) 2
(b) 3
(c) 38
(d) 27.5

Q83. Which is the only non-metal present in liquid state at room temperature?

(a) Iodine
(b) Bromine
(c) Fluorine
(d) Chlorine

Q84. One can find _____ in South India having its peak named Doddabetta.

(a) Anamalai Hills
(b) Jaintia Hills
(c) Nilgiri Hills
(d) Cardamom Hills

Q85. Dibru-Saikhowa bio-reserve is situated in:

(a) Sikkim
(b) Nagaland
(c) West Bengal
(d) Assam

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Q86. Observe the table below and answer the question that follows

The table show marks in percentage obtained by seven students in six different subjects. Maximum Marks for each subject is shown in brackets.

student	Maths (150)	Chemistry (130)	Physics (120)	Geography (100)	History (60)	Computer Sc. (40)
A	90	50	90	60	70	80
B	100	80	80	40	80	70
C	90	60	70	70	90	70
D	80	65	80	80	60	60
E	80	65	85	95	50	90
F	70	75	65	85	40	60
G	65	35	50	77	80	80

How many students have obtained 60% or above marks in all the subjects?

(a) 2
(b) 1
(c) 4
(d) 3

Q87. Observe the table below and answer the question that follows

The table show marks in percentage obtained by seven students in six different subjects. Maximum Marks for each subject is shown in brackets.

student	Maths (150)	Chemistry (130)	Physics (120)	Geography (100)	History (60)	Computer Sc. (40)
A	90	50	90	60	70	80
B	100	80	80	40	80	70
C	90	60	70	70	90	70
D	80	65	80	80	60	60
E	80	65	85	95	50	90
F	70	75	65	85	40	60
G	65	35	50	77	80	80

What was the aggregate of marks obtained by student C in all the subjects?

(a) 448
(b) 449
(c) 425
(d) 419

Q88. Observe the table below and answer the question that follows

The table show marks in percentage obtained by seven students in six different subjects. Maximum Marks for each subject is shown in brackets.

student	Maths (150)	Chemistry (130)	Physics (120)	Geography (100)	History (60)	Computer Sc. (40)
A	90	50	90	60	70	80
B	100	80	80	40	80	70
C	90	60	70	70	90	70

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D	80	65	80	80	60	60
E	80	65	85	95	50	90
F	70	75	65	85	40	60
G	65	35	50	77	80	80

What is the overall percentage of student G?

(a) 90.50%
(b) 62%
(c) 60%
(d) 49%

Q89. Observe the table below and answer the question that follows

The table show marks in percentage obtained by seven students in six different subjects. Maximum Marks for each subject is shown in brackets.

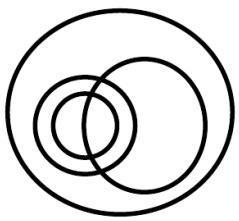
student	Maths (150)	Chemistry (130)	Physics (120)	Geography (100)	History (60)	Computer Sc. (40)
A	90	50	90	60	70	80
B	100	80	80	40	80	70
C	90	60	70	70	90	70
D	80	65	80	80	60	60
E	80	65	85	95	50	90
F	70	75	65	85	40	60
G	65	35	50	77	80	80

What is the approximate average percentage marks obtained by all the seven students in physics?

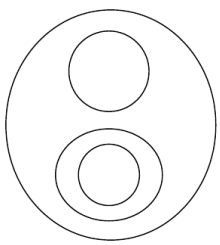
(a) 89%
(b) 70%
(c) 62%
(d) 74%

Q90. At a dinner party some people served themselves only fish and some only meat. Some were vegetarians who did not serve either. The remaining people served both fish and meat. Select the Venn diagram that best represents the above scenario.

(a)

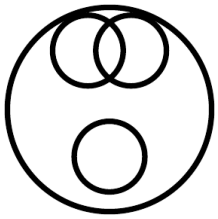


(b)

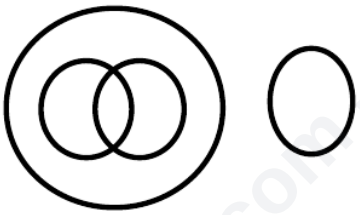


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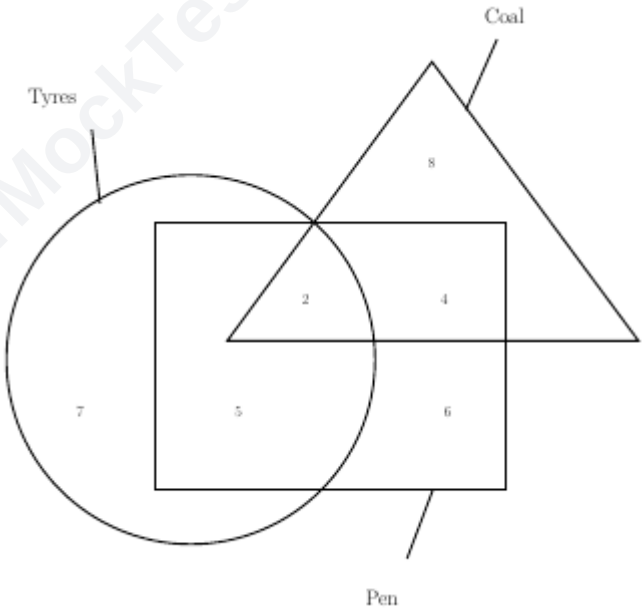
(c)



(d)



Q91. How many pens are coal?



(a) 8
(b) 9
(c) 6
(d) 7

Q92. Select the option that is related to the third term in the same way as the second term is related to the first term.
Gold : Mine :: Petroleum : ?

(a) Station
(b) Tank
(c) Well
(d) Pump

Q93. Select the option that is related to the third term in the same way as the second term is related to the first term.
GHST : IJUV :: CDTU : ?

(a) EFUW
(b) BCST
(c) DEWX
(d) EFVW

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Q94. 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 blue are black.
2. Some black are crows.
3. No crow is brown.

Conclusions:

1. No blue is a crow.
2. All crows are black.
3. No brown is a crow.

(a) Only conclusion 3 follows.
(b) Only conclusion 1 follows.
(c) Both conclusions 2 and 3 follow.
(d) Both conclusions 1 and 2 follow.

Q95. On the basis of the information given, answer the question that follows.

Sahil and Manish play Ludo and Cricket. Manish and Shalini play Cricket and Badminton. Raja, Tarun and Shalini play Badminton and Kabaddi. Shalini and Sahil play Badminton and Kabaddi.

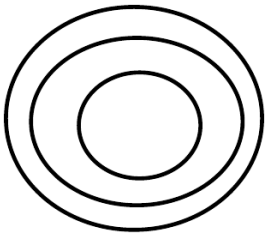
Who plays Badminton, Cricket and Kabaddi but NOT Ludo?

(a) Sahil
(b) Manish
(c) Tarun
(d) Shalini

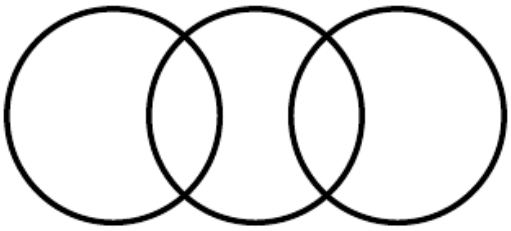
Q96. Select the Venn diagram that best represents the relationship between the given set of classes.

school, classroom, blackboard.

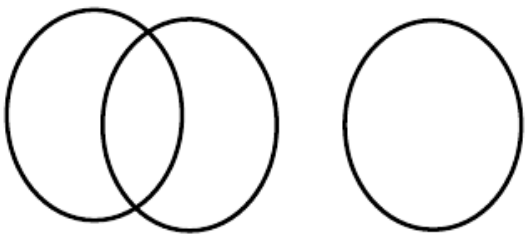
(a)



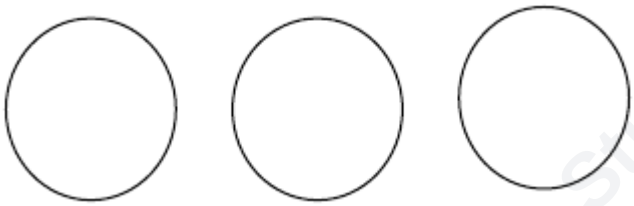
(b)



(c)



(d)



Q97. Please read the following information carefully and answer the question that follows.

In a group of 140 people, 75 love to watch cricket and 60 love to watch football. There are 35 people who love to watch both the sports.

How many people love to watch at least one sport?

(a) 110
(b) 95
(c) 100
(d) 90

Q98. How will you write 3.42 hours in hours, minutes and seconds?

(a) 3 hours, 40 minutes, 20 seconds
(b) 3 hours, 25 minutes, 12 Seconds
(c) 3 hours, 40 minutes, 2 seconds
(d) 3 hours, 42 minutes

Q99. Four words have been given, out of which three are alike in some manner and one is different. Select the odd one.

(a) Green
(b) Black
(c) Yellow
(d) Red

Q100. In a certain code language, ARITHEMATIC is written as MATICEHTIRA. How will ALGEBRA be written as in that language?

(a) ARBEGLA
(b) GLAEBRA
(c) ALGEARB
(d) BRAEGLA

ANSWER KEY

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

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SOLUTIONS

Q1. Answer: (d) 5over2 cm

Given:

AB = 3 cm

BC = 4 cm

Formula used:

In a right-angled triangle, the hypotenuse (AC) can be calculated using Pythagoras' theorem:

AC = √(AB² + BC²)

The diameter of the circle is equal to the hypotenuse AC.

Radius (r) = AC ÷ 2

Calculation:

AC = √(3² + 4²)

AC = √(9 + 16)

AC = √25

AC = 5 cm

Radius (r) = AC ÷ 2 = 5 ÷ 2 = 2.5 or 5/2

Final Answer:

Radius of the circle is 5/2 cm.

Q2. Answer: (b) Rs. 25,600

Given:

Compound Interest (CI) = Rs. 6,800

Rate (r) = 12½% per annum

Time (t) = 2 years

Formula used:

CI = P (1+r/100)^t - 1

Calculation:

6800 = P (1+25/(2 × 100))² - 1

=> 6800 = P (1+25/200)² - 1

=> 6800 = P (1+0.125)² - 1

=> 6800 = P (1.125)² - 1

=> 6800 = P 1.265625 - 1

=> 6800 = P 0.265625

=> P = 6800/0.265625

=> P = Rs. 25,600

Therefore The correct answer is option 2.

Q3. Answer: (c) -8

Given:

If a - b = 5 and a³ - b³ = 5

Formula used:

a³ - b³ = (a - b)(a² + ab + b²)

Calculations:

a³ - b³ = 5

=> (a - b)(a² + ab + b²) = 5

=> 5(a² + ab + b²) = 5

=> a² + ab + b² = 1

Now, (a - b)² = a² - 2ab + b²

=> 25 = a² - 2ab + b²

We have two equations:

1) a² + ab + b² = 1

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2) $a^2 - 2ab + b^2 = 25$

Subtracting the second equation from the first:

=> $(a^2 + ab + b^2) - (a^2 - 2ab + b^2) = 1 - 25$

=> $3ab = -24$

=> $ab = -8$

Therefore The correct answer is option (3).

Q4. Answer: (c) Calcutta Session 1906

The correct answer is Calcutta Session 1906

Key Points

• Dadabhai Naoroji, one of the key leaders in the Indian freedom struggle and a prominent member of the Indian National Congress (INC),

• first explicitly announced "Swaraj" (self-rule) as the goal of India's political efforts at the Calcutta Session 1906.

• Swaraj was envisioned as a movement to achieve self-governance and political autonomy for India under British rule, and Dadabhai Naoroji argued that it was a legitimate goal for the Indian people.

• He highlighted the economic exploitation of India by the British and called for Indian participation in governance and the eventual self-rule of the country.

• Although the term "Swaraj" gained more prominence later, particularly with Bal Gangadhar Tilak and

• other leaders like Gopal Krishna Gokhale and Lala Lajpat Rai, Naoroji's advocacy for Swaraj at the 1889 session laid an early foundation for the broader independence movement.

Additional Information

• Calcutta Session 1886

• The main focus of the Calcutta Session of 1886 was to address the growing political concerns about India's governance under British rule.

• It marked the first session where the Indian National Congress (INC) officially presented the demand for self-government (though not the full concept of Swaraj).

• The Congress passed a resolution calling for constitutional reforms that would allow for Indian representation in governance.

• This session was presided over by Womesh Chunder Bonnerjee, who was the first president of the INC.

• Lahore Session 1885

• The Lahore Session of 1885 was the first-ever session of the Indian National Congress (INC),

• and it is significant because it marked the official founding of the INC.

• The session was presided over by Womesh Chunder Bonnerjee and was attended by many prominent leaders of the time.

• The INC's primary goal at this stage was to build a platform for Indian voices to be heard in the British-controlled administration.

Q5. Answer: (d) 63 cm^2

Given:

Length of rectangle = 14 cm

Width of rectangle = 10 cm

Radius of semicircle = 14 ÷ 2 = 7 cm

Formula used:

Area of shaded region = Area of rectangle - Area of semicircle

Area of rectangle = Length × Width

Area of semicircle = (1/2) × π × r^2

Calculation:

Area of rectangle = 14 × 10 = 140 cm^2

Area of semicircle = (1/2) × (22/7) × 7 × 7

=> Area of semicircle = 77 cm^2

Area of shaded region = 140 - 77

=> Area of shaded region = 63 cm^2

Result:

The area of the shaded region is 63 cm^2.

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Q6. Answer: (b) 15 days

Given:

A and B together can finish a task in 24 days. They worked at it for 18 days and then C finished the remaining work in 10 days.

Formula used:

Work = Rate × Time

Calculation:

Let's assume the total work is 1 unit.

Work done by A and B together in 1 day = 1/24

Work done by A and B together in 18 days = 18 × (1/24) = 3/4

Remaining work = 1 - 3/4 = 1/4

Work done by C in 10 days = 1/4

Work done by C in 1 day = (1/4)/10 = 1/40

Work done by A, B, and C together in 1 day = (1/24) + (1/40)

To combine these fractions, we find the common denominator:

1/24 + 1/40 = (5 + 3) / 120 = 8/120 = 1/15

=> A, B, and C together can finish the task in 15 days

Therefore The correct answer is option 2.

Q7. Answer: (a) 99

The logic followed here is:

Hence, "Option 1" is the correct answer.

Q8. Answer: (d) 7632

The logic followed here is:

Book is written as 4662

COAL is written as 3617

COKE is written as 3625

So, it can be clearly seen that each letter is assigned specific numbers at the same position as position of the letter within the word, therefore LOCK can be written as:

Thus, LOCK is written as 7632.

Hence, "Option 4" is the correct answer.

Q9. Answer: (c) Africa

The correct answer is Africa

Key Points

• The Maasai are located near the African Great Lakes region and the national game parks of East Africa.

• They originated in the Nile Valley and migrated south around the 15th century.

• The Maasai speak the Maasai language, which is related to Dinka, Kalenjin, and Nuer.

• Most Maasai also speak the official languages of Kenya and Tanzania, which are Swahili and English.

• The Maasai practice a mix of animism, Christianity, and traditional beliefs.

• They have a deep respect for nature and believe in the natural world's connection to their spiritual lives.

Additional Information

• Other Notable Tribes of Africa:

• Zulu

• Location: Primarily in South Africa.

• The Zulu are one of the largest ethnic groups in South Africa.

• Known for their warrior tradition, vibrant dances, music, and crafts, the Zulu played a major role in the country's history, particularly during the reign of King Shaka Zul

• Himba

• Location: Mainly in Namibia and parts of Angola.

• The Himba are a semi-nomadic tribe known for their unique red ochre body paint, elaborate hairstyles, and traditional way of life, which is centred around cattle herding.

• San (Bushmen)

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• Location: Mainly in Botswana, Namibia, and South Africa.

• The San people are some of the earliest inhabitants of Southern Africa.

• They are famous for their hunter-gatherer lifestyle, ancient rock art, and deep knowledge of nature and survival.

Q10. Answer: (c) SWAGAT

The correct answer is SWAGAT

Key Points

• The correct name of the Automatic Fare Collection Gating System launched by PM Narendra Modi in March 2019 during the inauguration of Phase 1 of the Ahmedabad Metro train service is SWAGAT.

• SWAGAT (Smart and Widespread Automated Gate Access Terminal) is designed to provide seamless and efficient fare collection for passengers.

• The SWAGAT system is designed to automate the fare collection process at metro stations, offering a smoother, quicker, and more efficient travel experience for passengers.

• SWAGAT uses contactless smart cards and QR code-based ticketing for quick access through the fare gates.

Additional Information

• Ayushman Bharat Yojana

• This is a national health insurance scheme launched by the Government of India, aimed at providing affordable healthcare to the underprivileged.

• Ayushman Bharat provides health coverage of up to Rs. 5 lakh per family per year for secondary and tertiary care hospitalization.

Q11. Answer: (c) P.C. Mahalanobis

The correct answer is P.C. Mahalanobis.

Key Points

• P.C. Mahalanobis:

• He is considered the father of modern statistics in India.

• He founded the Indian Statistical Institute.

• He is also known as the Architect of Indian Planning.

• Mahalanobis's model of the second five-year plan focused on Rapid industrialization and strengthening the public sector.

Additional Information

• Ghanshyam Das Birla

• Founder of the Birla Group, one of India’s largest industrial conglomerates, with interests in textiles, cement, chemicals, and more.

• Made significant contributions to education, healthcare, and social causes.

• Played a major role in building educational institutions such as Birla Institute of Technology and Science (BITS Pilani).

• Jamnalal Bajaj

• Founder of the Bajaj Group, a prominent industrial conglomerate.

• Made significant contributions to Indian manufacturing, especially in the automotive and electrical sectors.

• A close associate of Mahatma Gandhi and a supporter of the Indian independence movement.

• Jawaharlal Nehru

• The first Prime Minister of independent India (1947–1964), overseeing its transition from a colony to a republic.

• Promoted the establishment of educational institutions, such as the Indian Institutes of Technology (IITs).

• Played a key role in shaping India’s foreign policy and establishing the Non-Aligned Movement

Q12. Answer: (c) 40

Given: Richa, Rohini, Roli, Roshen and Rita are five friends.

1) Each one of them has eight balls.

Friends	Richa	Rohini	Roli	Roshen	Rita
Balls	8	8	8	8	8

2) Rohini gives three balls to Roshen, who gives five balls to Richa.

Friends	Richa	Rohini	Roli	Roshen	Rita
Balls	8	8	8	8	8

Rohini gives three balls to Roshen		(-3)		(+3)	
Balls after operation	8	5	8	11	8
Roshen, who gives five balls to Richa	(+5)			(-5)	
Balls after operation	13	5	8	6	8

3) Richa gives four balls to Roli, who in turn gives three balls to Rita.

Friends	Richa	Rohini	Roli	Roshen	Rita
Balls	8	8	8	8	8
Rohini gives three balls to Roshen		(-3)		(+3)	
Balls after operation	8	5	8	11	8
Roshen, who gives five balls to Richa	(+5)			(-5)	
Balls after operation	13	5	8	6	8
Richa gives four balls to Roli	(-4)		(+4)		
Balls after operation	9	5	12	6	8
Roli, who in turn gives three balls to Rita			(-3)		(+3)
Balls after operation	9	5	9	6	11

4) Rita gives two balls each to Roshen and Rohini.

Friends	Richa	Rohini	Roli	Roshen	Rita
Balls	8	8	8	8	8
Rohini gives three balls to Roshen		(-3)		(+3)	
Balls after operation	8	5	8	11	8
Roshen, who gives five balls to Richa	(+5)			(-5)	
Balls after operation	13	5	8	6	8
Richa gives four balls to Roli	(-4)		(+4)		
Balls after operation	9	5	12	6	8
Roli, who in turn gives three balls to Rita			(-3)		(+3)
Balls after operation	9	5	9	6	11
Rita gives two balls each to Roshen and Rohini		(+2)		(+2)	(-4)
Final number of balls left	9	7	9	8	7

Thus, After the final distribution (9 + 7 + 9 + 8 + 7) = 40 balls are there in total with all five friends.

Hence, "Option 3" is the correct answer.

Alternate MethodInitial Distribution: Each friend starts with 8 balls.

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Total initial number of balls: 8 × 5 = 40

Final Distribution: The redistribution of balls involves friends exchanging balls, but no balls are added or removed from the group. Therefore, the total number of balls remains unchanged.

Therefore, the total number of balls with all five friends after the final distribution is still 40.

Q13. Answer: (b) Scott Morrison

The correct answer is Scott Morrison

Key Points

• Scott Morrison served as the Prime Minister of Australia from August 24, 2018, to May 23, 2022.

• As of December 2020, he was still holding this position. He is a member of the Liberal Party of Australia.

• Scott Morrison became the 30th Prime Minister of Australia after winning a leadership spill within the Liberal Party in August 2018, succeeding Malcolm Turnbull.

• He led the Liberal-National Coalition government during his tenure.

Additional Information

• Bill Shorten

• Leader of the Australian Labor Party (2013–2019).

• Served as a Member of Parliament for the division of Maribyrnong since 2007.

• Former Minister for the National Disability Insurance Scheme and Government Services.

Q14. Answer: (d) 1over3

Given:

Numbers on the balls: 1, 2, 3, ..., 30

We need to find the probability that the number is divisible by 4 or 6.

Formula used:

Probability = (Favorable outcomes) / (Total outcomes)

Calculation:

Total outcomes = 30 (numbers from 1 to 30)

Numbers divisible by 4: 4, 8, 12, 16, 20, 24, 28

Total = 7

Numbers divisible by 6: 6, 12, 18, 24, 30

Total = 5

Common numbers divisible by both 4 and 6 (LCM = 12): 12, 24

Total = 2

Favorable outcomes = Numbers divisible by 4 + Numbers divisible by 6 - Common numbers

= 7 + 5 - 2 = 10

Probability = 10 / 30 = 1 / 3

Result:

The probability is 1/3 (Option 4).

Q15. Answer: (d) 60

The logic followed here is:

34 - 23 = 17

(3 × 4) + (2 + 3) = 17

12 + 5 = 17

17 = 17 (LHS = RHS)

74 - 61 = 35

(7 × 4) + (6 + 1) = 35

28 + 7 = 35

35 = 35 (LHS = RHS)

And,

82 - 36 = 25

(8 × 2) + (3 + 6) = 25

16 + 9 = 25

25 = 25 (LHS = RHS)

Similarly,

69 - 42

(6 × 9) + (4 + 2) = ?

54 + 6 = ?

60 = ?

Hence, "Option 4" is the correct answer.

Q16. Answer: (c) 10^(th) December

The correct answer is 10th December.

Key Points

Every year on December 10th, Human Rights Day commemorates the adoption of the Universal Declaration of Human Rights by the United Nations General Assembly in 1948 (UDHR).

• The Universal Declaration of Human Rights (UDHR) is a landmark declaration that declares that everyone has intrinsic rights as a human being, regardless of race, colour, religion, sex, language, political or other opinions, national or social origin, property, birth, or other position.

• It is the most translated document in the world, having been translated into over 500 languages.

• This year's Human Rights Day theme relates to "Equality" and article 1 of the UDHR – "All human beings are born free and equal in dignity and rights".

• The principles of equality and non-discrimination are at the heart of human rights.

Q17. Answer: (a) Pinaki Chandra Ghose

The correct answer is Pinaki Chandra Ghose.

Key Points

• Pinaki Chandra Ghose became the first Lokpal of India.

• Pinaki Chandra Ghose was the first Lokpal of India since 23rd March 2019 to 2023

• He is a retired judge of the Supreme Court of India.

Additional Information

• A Lokpal is an anti-corruption authority or body of ombudsman who represents the public interest in the Republic of India.

• The Lokpal has jurisdiction over the central government to inquire into allegations of corruption against its public functionaries and for matters connected to corruption.

• The Lokpal is responsible for enquiring into corruption charges at the national level while the Lokayukta performs the same function at the state level.

• The Lokpal consists of a Chairperson and eight members. Four of the judicial members have been former Chief Justices of different High Courts and the four non-judicial members have been from All India Services/Central Services.

Q18. Answer: (d) 22

Given:

A father is twice as old as his son. Twenty years ago, the age of the father was 12 times his son's age at that time.

Formula used:

Let the present age of the son be x years.

Then, the present age of the father will be 2x years.

Twenty years ago, the age of the son was (x - 20) years and the age of the father was (2x - 20) years.

According to the given condition:

2x - 20 = 12(x - 20)

Calculation:

2x - 20 = 12(x - 20)

=> 2x - 20 = 12x - 240

=> 240 - 20 = 12x - 2x

=> 220 = 10x

=> x = 22

The present age of the son is 22 years.

The present age of the father is 2x = 2 × 22 = 44 years.

Difference in the present ages = 44 - 22 = 22 years.

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Therefore The correct answer is option (4).

Q19. Answer: (a) Rs. 24,000

Given:

Selling Price (SP) = Rs. 21,600

Gain Percentage = 8%

Formula used:

Cost Price (CP) = SP/(1 + (Gain %)/100)

New Selling Price (SP_(new)) = CP × (1 + (New Gain %)/100)

Calculation:

CP = 21600/(1 + 8/100)

=> CP = 21600/1.08

=> CP = Rs. 20,000

SP_(new) = 20000 × (1 + 20/100)

=> SP_(new) = 20000 × 1.20

=> SP_(new) = Rs. 24,000

Therefore The correct answer is option (1).

Q20. Answer: (a) Printer

The correct answer is Printer.

Key Points

• An output device is a piece of computer hardware that receives data from a computer and then translates that data into another form. That form may be audio, visual, textual, or hard copy such as a printed document.

• The key distinction between an input device and an output device is that an input device sends data to the computer, whereas an output device receives data from the computer.

• Computer speakers are hardware devices that transform the signal from the computer's sound card into audio. Speakers create sound using internal amplifiers that vibrate at different frequencies according to data from the computer. This produces sound.

Additional Information

• Input devices take input from the users or from surroundings and convert them into a form a computer can understand.

• A camera takes images and converts them to machine-readable form.

• A microphone detects sounds and converts them to machine-readable form.

• An OCR or Optical Character Reader converts an image of text into a machine-readable text format.

Q21. Answer: (a) Sister's Son

Given: Pointing to a man in a photograph, Laxman said. "He is the only son of my mother's father".

As Laxman's gender is not known yet, therefore Laxman can be either male or a female.

So, Laxman is man's nephew i.e. sister's son or niece i.e. sister's daughter. As out of all the options, 'Sister's son' is given.

Therefore, Laxman is the man's nephew i.e. sister's son.

Hence, the correct answer is "Option 1".

Q22. Answer: (a) -20

Given:

2 - [(-5) × (-4) - (3 - 5)] = ?

Formula used:

Order of operations (BODMAS/BIDMAS): Brackets, Orders (i.e. powers and square roots, etc.), Division and Multiplication, Addition and Subtraction

Calculation:

2 - [(-5) × (-4) - (3 - 5)] = ?

=> 2 - [(20) - (-2)]

=> 2 - [20 + 2]

=> 2 - 22

=> -20

Therefore The correct answer is option (1).

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Q23. Answer: (c) Sweden

The correct answer is Sweden.

Additional Information

• The MoU aimed to enhance cooperation between the two nations in the field of healthcare and public health, with a specific focus on antimicrobial resistance. The agreement aimed to share knowledge, develop innovative preventive measures, and collaborate on joint activities to address this growing global health concern.

• The MoU aimed to strengthen cooperation between the two countries in the field of healthcare and public health, with a specific focus on AMR. This collaboration would involve sharing knowledge and expertise, developing innovative preventive measures, and working together on joint initiatives to address this pressing global health issue.

• By signing this MoU, India and the partner country committed to working together to combat AMR and ensure the continued effectiveness of antimicrobial drugs.

• However, the specific country with which India signed this MoU in 2009 is not provided in the prompt. To get this information, you might need to refer to specific government records or health organization reports from that time.

Q24. Answer: (d) 8

Given:

The number of prime numbers less than 20 is:

Formula used:

Prime numbers are numbers greater than 1 that have no divisors other than 1 and themselves.

Calculation:

Prime numbers less than 20 are: 2, 3, 5, 7, 11, 13, 17, 19

=> Total count = 8

Therefore The correct answer is option (4).

Q25. Answer: (a) 70

Calculation:

Understanding the Problem

We need the least multiple of 14 that satisfies the following conditions:

When divided by 6, remainder = 4.

When divided by 8, remainder = 6.

When divided by 12, remainder = 10.

We observe that remainder + divisor gives us a multiple of the divisor.

Convert Conditions to Equations

For 6: $x \equiv 4 \pmod 6 \rightarrow x = 6k + 4$

For 8: $x \equiv 6 \pmod 8 \rightarrow x = 8m + 6$

For 12: $x \equiv 10 \pmod{12} \rightarrow x = 12n + 10$

Solve the Congruences

From $x \equiv 4 \pmod 6$ and $x \equiv 6 \pmod 8$:

$6k + 4 \equiv 6 \pmod 8$.

Start with $x = 6k + 4$.

Substitute into $x \equiv 6 \pmod 8$:

Simplify: $6k \equiv 2 \pmod 8$.

Divide through by 2: $3k \equiv 1 \pmod 4$.

Solution: $k \equiv 3 \pmod 4 \rightarrow k = 4t + 3$.

Substitute k back into $x = 6k + 4$:

$x = 6(4t + 3) + 4 = 24t + 22$.

Thus, $x \equiv 22 \pmod{24}$.

Combine with $x \equiv 10 \pmod{12}$:

$12n + 10 \equiv 22 \pmod{24}$.

From $x = 12n + 10$, substitute into $x \equiv 22 \pmod{24}$:

Simplify: $12n \equiv 12 \pmod{24}$.

Divide through by 12: $n \equiv 1 \pmod 2 \rightarrow n = 2s + 1$.

Substitute n back into $x = 12n + 10$:

x = 12(2s + 1) + 10 = 24s + 22.

Thus, x ≡ 22 (mod 24).

Ensure x is a Multiple of 14

We test values of x = 24s + 22 for divisibility by 14:

For s = 1: x = 24(1) + 22 = 46 (not divisible by 14).

For s = 2: x = 24(2) + 22 = 70 (divisible by 14).

Final Answer:

The least multiple of 14 that satisfies all conditions is 70.

Q26. Answer: (d) Direct taxes

The correct answer is Direct taxes.

Key Points

Direct Tax:-

• Direct tax is a type of tax where the incidence and impact of taxation fall on the same entity.

• The burden of direct taxation cannot be passed from one person to another.

• These are primarily income or wealth taxes.

• Direct taxes include income tax, corporate tax, property tax, inheritance tax, and gift tax.

Additional Information

• Indirect Taxes

• Indirect taxes are those taxes that are imposed on goods and services rather than on income or profits.

• Examples of indirect taxes include Goods and Services Tax (GST), excise duties, customs duties, and Value Added Tax (VAT).

• These taxes are typically included in the price of goods and services and are paid by the consumer.

• Goods and services tax

• The Goods and Services Tax (GST) was introduced in India on 1st July 2017.

• It is a comprehensive, multi-stage, destination-based tax that is levied on every value addition.

• GST is categorized into three types: CGST (Central Goods and Services Tax), SGST (State Goods and Services Tax), and IGST (Integrated Goods and Services Tax).

• The introduction of GST has replaced many indirect taxes previously levied by the Central and State governments.

• GST aims to create a single, unified Indian market to make the economy stronger and more efficient.

Q27. Answer: (d) 27 years

Given:

Ratio of ages of Keshav and Vipul = 9 : 10

After 12 years, ratio of their ages = 13 : 14

Formula used:

Let Keshav's and Vipul's present ages be 9x and 10x respectively.

After 12 years: (9x + 12) ÷ (10x + 12) = 13 ÷ 14

Calculation:

=> 14(9x + 12) = 13(10x + 12)

=> 126x + 168 = 130x + 156

=> 4x = 12

=> x = 3

Keshav's present age = 9x = 9 × 3 = 27 years

Therefore Keshav's present age is 27 years.

Q28. Answer: (a) Infinite

Given:

For a given fraction

Formula used:

Equivalent fractions are formed by multiplying the numerator and the denominator by the same non-zero integer.

Calculation:

The number of equivalent fractions that can be formed is infinite.

Therefore The correct answer is option 1.

Q29. Answer: (d) 5832

The logic followed here is:

Hence, "Option 4" is the correct answer.

Q30. Answer: (c) Harmika

The correct answer is Harmika.

Key Points

• Harmika:

• The Harmika is a square railing or enclosure situated at the very top of a stupa, symbolizing the domain of the gods and the Buddhist heavens. It often contains a small platform for ritual offerings.

Additional Information

• Yashti:

• The Yashti, or spire, is the mast that rises from the Harmika and is topped with a series of discs or umbrellas called chattras, representing different levels of enlightenment or the tiers of heaven.

• Anda:

• The Anda, also known as the dome, is the main hemispherical mound of the stupa, representing the universe. It typically contains relics of the Buddha or other saints.

• Chhatri:

• The Chhatri is a decorative pavilion or umbrella-like structure placed atop the Yashti, symbolizing protection, royalty, and honor within Buddhist architecture.

Q31. Answer: (a) Austria

The correct answer is Austria.

Key Points

• The United nation organization

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

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

• Due to the powers vested in the Charter and its Unique International character, the United Nations can take action on these issues confronting Humanity in the 21st Century, such as peace and security, climate change, sustainable development, human rights, disarmament, terrorism, humanitarian and health emergencies, gender equality, governance, food production, etc.

• UNO Headquarter is located in New York, United States.

• Antonio Guterres serving as the Ninth Secretary-General of the United Nations. A member of the Portuguese Socialist Party, he served as Prime Minister of Portugal from 1995 to 2002.

• The Main Organs of the UN are the General Assembly, the Security Council, the Economic and Social Council, the Trusteeship Council, the International Court of Justice, and the UN Secretariat.

• The Five Permanent Members of the UN are- China, France, Russian Federation, The United Kingdom, and the United States, and Ten Non-Permanent Members elected for Every two-year terms by the General Assembly.

Q32. Answer: (b) Q

Given: J, K, L, M, N, O, P and Q are sitting in a circle, facing the centre.

1) O is sitting to the immediate right of M and second to the left of J.

2) P is sitting second to the left of M, who is not sitting next to N.

3) K is sitting next to P and L is not sitting next to either M or J.

4) N is sitting third to the right of K.

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

Thus, Q is sitting to the immediate right of J.

Hence, "Option 2" is the correct answer.

Q33. Answer: (a) 1

Given:

The HCF of 15, 25, and 42

Formula used:

HCF is found by determining the highest common factor that divides all numbers.

Calculation:

Factors of 15 = 1, 3, 5, 15

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Factors of 25 = 1, 5, 25

Factors of 42 = 1, 2, 3, 6, 7, 14, 21, 42

Common factors of 15, 25, and 42 = 1

=> HCF = 1

Therefore The correct answer is option (1).

Q34. Answer: (d) 25

Decoding the given information:

SIgn	**×**	**•**	**•**	**÷**
Meaning	•	•	÷	×

Given Equation: 91 + 13 - 11 ÷ 3 × 15.

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

=> 91 ÷ 13 + 11 × 3 - 15

=> 7 + 11 × 3 - 15

=> 7 + 33 - 15

=> 40 - 15

=> 25

Hence, the correct option is "Option 4".

Q35. Answer: (c) Heart is three chambered.

The correct answer is Heart is three chambered.

Key Points

• Mammals are distinguished by several unique characteristics that are not found in other animal classes.

• The most unique mammalian characteristic is the presence of milk-producing glands (mammary glands) by which the young ones are nourished.

• They have two pairs of limbs, adapted for walking, running, climbing, burrowing, swimming or flying.

• The skin of mammals is unique in possessing hair.

• External ears or pinnae are present.

• Different types of teeth are present in the jaw.

Explanation:

• A four-chambered heart: Although mammals have a four-chambered heart, so do birds and crocodilians, so it is not unique to mammals.

• Giving birth to live young (viviparous): Many mammals are viviparous, but some mammals like monotremes (e.g., the platypus and echidna) lay eggs. Additionally, some reptiles and fish also give birth to live young.

• Parental care of offspring: Many animals, including birds, reptiles, and some fish, exhibit parental care, so this trait is not exclusive to mammals.

• Having glands to produce nourishing milk for offspring: This characteristic is unique to mammals. Mammary glands produce milk to feed and nourish their young, which is a defining trait of the class Mammalia.

Q36. Answer: (b) Right to work

The correct answer is Right to work.

Key Points

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA):

• The Indian Parliament passed NREGA in August 2005.

• It came into force on February 2, 2006.

• On 2nd October 2009, the act NREGA was renamed MGNREGA.

Additional Information

Right to Work:

• Unlike earlier employment guarantee schemes, the act aims at addressing the causes of chronic poverty through a rights-based framework.

• At least one-third of beneficiaries have to be women.

• Wages must be paid according to the statutory minimum wages specified for agricultural labourers in the state under the Minimum Wages Act, 1948.

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• The scheme was introduced as a social measure that guarantees “the right to work”.

• The key tenet of this social measure and labour law is that the local government will have to legally provide at least 100 days of wage employment in rural India to enhance their quality of life.

Q37. Answer: (d) Merta

The correct answer is Merta.

Key Points

Mirabai

• Meerabai was a 16th-century Hindu mystic poet and devotee of Krishna.

• She was born in the Kudki village of Pali Distrct.

• She was married to Bhojraj Singh Sisodia (c. 1495–1526).

• He was the eldest son of Rana Sanga, ruler of Mewar.

• She is a celebrated Bhakti saint, particularly in the North Indian Hindu tradition.

• She was widely known and a cherished figure in the Bhakti movement culture by about 1600 CE.

• Many poems attributed to Meera were likely composed later by others who admired Meera.

• One of her most popular compositions remains "Paayoji Maine Ram Ratan dhan paayo".

• There are no surviving manuscripts of her poetry from her time and the earliest records with two poems credited to her are from the early 18th century, more than 150 years after she died.

Q38. Answer: (b) 6

Given: Gunjan, Sameer, Jack, Madhur and Shweta are teachers in a school.

1) Sameer teaches English, Computers and Science.

2) Madhur teaches English, Mathematics and Science.

Subjects => Teachers ?	English	Computer	Science	Mathematics
Gunjan	Yes	Yes	Yes	
Sameer				
Jack				
Madhur	Yes		Yes	Yes
Shweta				

3) Music and Mathematics are taught by Gunjan and Jack.

4) Shweta does not teach Mathematics, Science and Music.

Subjects => Teachers ?	English	Computer	Science	Mathematics	Music
Gunjan	Yes	Yes	Yes		Yes
Sameer					
Jack					Yes
Madhur	Yes		Yes	Yes	
Shweta			×	×	×

5) Gunjan and Shweta teach Computers and English also.

6) Shweta is the only teacher for Social Studies in the school.

Subjects => Teachers ?	English	Computer	Science	Mathematics	Music	Social Studies
Gunjan	Yes	Yes	Yes		Yes	
Sameer						
Jack					Yes	
Madhur	Yes		Yes	Yes		

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Shweta	Yes	Yes	×	×	×	Yes

Thus, according to the final arrangement there are 6 subjects which are taught by the teachers in total.

Hence, "Option 2" is the correct answer.

Q39. Answer: (b) Joe Root

The correct answer is Joe Root.

Key Points

• ICC headquarters is located in Dubai, United Arab Emirates.

• The ICC is the global governing body for cricket.

• Representing 104 members, the ICC governs and administrates the game and works with our members to grow the sport.

• The ICC is also responsible for the staging of all ICC Events.

• The ICC presides over the ICC Code of Conduct, playing conditions, the Decision Review System, and other ICC regulations.

• Through the Anti-Corruption Unit, it coordinates action against corruption and match-fixing.

• It was established in 1909 by the representatives of England, Australia, and South Africa as Imperial Cricket Conference.

• The current ICC chairman is Greg Barclay and Geoff Allardice is the Chief Executive Officer.

Q40. Answer: (d) 5

Given:

A can finish the task in 18 days.

B can finish the task in 15 days.

B left 7 days before the task was completed.

Calculation:

Calculate the combined work rate of A and B:

A can finish the task in 18 days, so A's work rate is 1/18 of the task per day.

B can finish the task in 15 days, so B's work rate is 1/15 of the task per day.

Combined work rate of A and B = 1/18 + 1/15 = (5 + 6) / 90 = 11/90 of the task per day.

Calculate the remaining work done by A alone:

Since B left 7 days before the task finished, A worked alone for 7 days.

A's work rate per day = 1/18

Work done by A in 7 days = 7 × (1/18) = 7/18 of the task.

Calculate the work done by A and B together:

Total work to be done = 1 task

Work done by A alone = 7/18 of the task

Work done by A and B together = 1 - 7/18 = 11/18 of the task.

Calculate the number of days A and B worked together:

Work done by A and B together per day = 11/90 of the task

Number of days A and B worked together = (Work done by A and B together) / (Combined work rate of A and B)

Number of days A and B worked together = (11/18) / (11/90) = 5 days

Therefore, A and B worked together for 5 days.

Q41. Answer: (a) Senior Citizen Health Insurance scheme (SCHIS)

The correct answer is Senior Citizen Health Insurance scheme (SCHIS).

Key Points

• Ayushman Bharat Yojana is a health scheme of the Government of India, which was implemented across India on September 23, 2018.

• The objective of this scheme is to provide health insurance to economically weaker families (BPL holders).

• Cashless health insurance of up to Rs 5 lakh will be provided to every family covered under this.

• 10 crore BPL holder families (about 50 crore people) will be able to directly benefit from this scheme.

• Apart from this, there is a plan to bring the remaining population also under this scheme.

• Ayushman Bharat scheme is made up of two components:

• Pradhan Mantri Jan Arogya Yojana (PMJAY): This scheme provides cashless health insurance up to Rs 5 lakh to BPL families.

• National Health Protection Scheme (NHPS): This scheme aims to provide health insurance to all Indian citizens.

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Q42. Answer: (a) Directive Principles of state Policy

The correct answer is Directive Principles of state Policy.

Key Points

• Directive Principles of state Policy

• The Directive Principles of State Policy (DPSP), outlined in Part IV of the Indian Constitution (Articles 36-51), are non-justiciable in nature.

• This means that they are not enforceable by any court.

• However, they are fundamental in the governance of the country and it is the duty of the state to apply these principles in making laws.

• The DPSP, though not enforceable, serve as a guide to the legislative and executive branches of the government when they create policies and laws.

• They aim to establish a welfare state where justice and equality are prevalent.

• Despite their non-justiciable nature, the principles hold significant influence on the interpretation of the Constitution and the legislation.

• This is because they reflect the ambitions and values that the Constitution strives to uphold.

• Please note that while these principles are not enforceable by courts, they significantly shape India's governance and legal discourse.

• The Constitution itself declares that it is the responsibility of the State to apply these principles in law-making and policy design.

• This provides them with a considerable indirect impact on legislation and governance.

Additional Information

• Fundamental D uties

• In the Constitution of India, fundamental duties are mentioned in Article 51A.

• There was no list of fundamental duties in the original constitution.

• Fundamental duties were added to the Indian constitution by the 42nd Constitutional Amendment Act 1976 on the recommendation of the Sardar Swarn Singh committee.

• the 42nd constitutional amendment added Part IV A and Article 51A to the Indian constitution.

• Initially, there were only 10 fundamental duties in the constitution.

• The 86th Constitutional Amendment Act 2002 added one more fundamental duty to the constitution.

• Currently, there are 11 fundamental duties in the Indian constitution.

• Preamble

• The Preamble to the Indian Constitution was inspired by the Preamble of the Constitution of the USA.

• The Preamble is a part of the Indian constitution which, gives us fundamental values and highlights of the Constitution.

• Keywords in the PreambleSovereign, Socialist, Secular, Democratic, Republic, Justice, Liberty, Equality, and Fraternity.

• The ideals behind the Preamble were laid down by Jawaharlal Nehru’s Objectives Resolution, adopted by the Constituent Assembly on January 22, 1947.

• Fundamental Rights

• The fundamental rights are enshrined in PART III of the constitution from Articles 12 to 35.

• The fundamental rights are meant to promote the ideal of Political Democracy.

• The Fundamental Rights are guaranteed and protected by the Constitution.

• There are 6 Fundamental Rights

Fundamental Rights	Articles
Right to equality	14-18
Right to freedom	19-22
Right against exploitation	23-24
Right to freedom of religion	25-28
Cultural and educational rights	29-30
Right to constitutional remedies	32

• Judiciary(Supreme Court and High Courts) is the guardian of fundamental rights. The Supreme Court(Under Article 32) and the High Courts(Under Article 226) can issue the writs.

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Q43. Answer: (b) Ashvaghosha

The correct answer is Ashvaghosha.

Key Points

• Buddhacharitam, also spelled Buddhacharita is an epic poem on the life of Buddha from his birth until his entry into Parinirvana is written by Sanskrit poet Ashvagosha.

• It is one of the finest examples of Buddhist literature.

• The author, who lived in northern India in the 1st–2nd century CE, created a loving account of the Buddha's life and teachings.

• His work also reflects a vast knowledge of Indian mythology and of pre-Buddhist philosophies, and a court poet's interest in love, battle, and statecraft.

• The first half of the poem remains intact in Sanskrit, but all 28 chapters are preserved in Chinese (5th century) and Tibetan translations.

Additional Information

• Gautama Buddha

• Siddhartha Gautama was born in 563 BCE in Lumbini, Shakya Republic (present-day Nepal) (according to Buddhist tradition).

• The Buddha was born into an aristocratic family in the Shakya clan but eventually renounced lay life.

• According to Buddhist tradition, after several years of mendicancy, meditation, and asceticism, he awakened to understand the mechanism which keeps people trapped in the cycle of rebirth.

• The Buddha then traveled throughout the Ganges plain teaching and building a religious community.

• He taught a middle way between sensual indulgence and the severe asceticism found in the Indian sramana movement.

• He taught a training of the mind that included ethical training, self-restraint, and meditative practices such as jhana and mindfulness.

• The Buddha also critiqued the practices of Brahmin priests, such as animal sacrifice and the caste system.

• He died in 483 BCE or 400 BCE (aged 80).

• Ashvaghosha

• Ashvaghosha was a poet in the court of King Kanishka.

• Ashvaghosha and other Buddhist scholars from Kanishka's period (around 1900 years ago) began writing in Sanskrit.

• Earlier Buddha's teachings were in the common man's language (Prakrit) but later kings changed the practice gradually to the needs of the time.

• He was a Buddhist writer and was very famous among Buddhist writers.

• He wrote Buddhacharita which is the biography of Buddha.

• It is written in the Sanskrit language.

• He also wrote Sutralankar.

Q44. Answer: (b) Kesavananda Bharati case

The correct answer is Kesavananda Bharati case.

Key Points

• The preamble is an introductory and declarative statement that outlines the document's thing and underpinning gospel.

• It was decided by two important Supreme court judgments popularly known as, the Berubari Union Case(1960) and the Kesavananda Bharati case(1973).

• still, Preamble is the part of the Indian Constitution.

• The Preamble defines the Constitution's abecedarian association.

• In a court of law, the preamble is neither enforceable nor defendable.

Additional Information

• Amendments to the Preamble:

• The Preamble was amended only formerly by the 42nd Amendment of 1976.

• The Amendment added the terms Socialist, temporal, and Integrity in the Preamble.

• Socialist: It's intended to insure profitable justice and the elimination of inequality in income and standard of life.

• Secularism implies equivalency of all persuasions and religious forbearance and doesn't identify any state religion.

• The word integrity ensures one of the major points and objects of the preamble icing the fraternity and concinnity of the state.

• Article 368 emphasizes that because the preamble is a part of the Indian constitution, it can be amended except for the introductory structure.

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Q45. Answer: (a) 1

Given:

If the sum of the squares of roots of the polynomial $x^2 + 8x + 15k$ is 34, find the value of k.

Formula used:

Let the roots be α and β. According to the given polynomial, the sum of the squares of the roots is given by:

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

Calculation:

Given that the sum of the squares of the roots is 34:

$\Rightarrow (\alpha + \beta)^2 - 2\alpha\beta = 34$

From the polynomial $x^2 + 8x + 15k$:

Sum of the roots $(\alpha + \beta) = -8$

Product of the roots $(\alpha\beta) = 15k$

$\Rightarrow (-8)^2 - 2(15k) = 34$

$\Rightarrow 64 - 30k = 34$

$\Rightarrow 64 - 34 = 30k$

$\Rightarrow 30 = 30k$

$\Rightarrow k = 1$

Therefore The correct answer is option 1.

Q46. Answer: (a) GPINKUJ

The logic followed here is:

COMPUTER is written as EQORWVGT

And,

ENGLISH is written as

Hence, "Option 1" is the correct answer.

Q47. Answer: (d) 1975

The correct answer is 1975.

Key Points

Regional Rural Banks(RRBs) are sponsored by Nationalised Commercial Banks.

• RRBs were established with the provisions of the Regional Rural Banks Act 1976.

• RRBs were conceptualized by the Narasimham Working Group in 1975.

• RRBs came into existence with an objective to develop Rural economy by the development of Agriculture, Trade, and Commerce in Rural Areas.

• The target group of the RRBs is

• Small and Marginal Farmers

• Agricultural laborers,

• Artisans, and

• Small Entrepreneurs,

Additional Information

• RRBs are jointly owned by

• Central Government with 50% share

• Concerned State Government with 15% share

• Sponsor Banks with 35% share

• Presently there are 12 Nationalised commercial Banks.

Q48. Answer: (a) 2over7

Given:

We need to calculate: One third of one fourth of two seventh of 12.

Calculation:

Step 1: Express the statement mathematically:

$\Rightarrow (1/3) \times (1/4) \times (2/7) \times 12$

Step 2: Simplify step-by-step:

=> (1 × 1 × 2 × 12) ÷ (3 × 4 × 7)

=> 24 ÷ 84

=> 24 ÷ 84 = 2 ÷ 7

Conclusion:

The final result is 2/7.

Q49. Answer: (c) 9over20

Given:

A bag contains balls numbered 1, 2, 3, ... 20. One ball is drawn from the bag at random. What is the probability that the number on the ball drawn is divisible by 3 or 5?

Formula used:

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

Calculation:

Numbers between 1 and 20 divisible by 3: 3, 6, 9, 12, 15, 18

Numbers between 1 and 20 divisible by 5: 5, 10, 15, 20

Numbers between 1 and 20 divisible by 3 or 5: 3, 5, 6, 9, 10, 12, 15, 18, 20

Count of numbers divisible by 3 or 5: 9

Total numbers: 20

=> P = 9 / 20

Therefore The correct answer is option (3).

Q50. Answer: (d) 19.55536

Given:

17.6 + 1.76 + 0.176 + 0.0176 + 0.00176 = ?

Formula used:

Simple addition of decimal numbers

Calculation:

17.6 + 1.76 + 0.176 + 0.0176 + 0.00176 = ?

=> 17.6 + 1.76 = 19.36

=> 19.36 + 0.176 = 19.536

=> 19.536 + 0.0176 = 19.5536

=> 19.5536 + 0.00176 = 19.55536

Therefore The correct answer is option (4).

Q51. Answer: (c) Diabetes

The correct answer is Diabetes.

Key Points

• Diabetes Mellitus

• Glucose is an essential energy source for the cells that make up the muscles and tissues.

• It's also the brain's main source of fuel.

• DM is due to the incapability of beta cells (β cells) in the pancreas to produce adequate insulin or ineffective insulin utilization by cells in the body.

• Symptoms

• Excessive thirst

• Excessive Hungry

• Excessive Urination

• Unexplained weight loss

• Fatigue

• Irritability

• Lethargy

• Blur vision

• Low wound healing

• Presence of ketones in the urine.

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• Type
• Type 1 Diabetes Mellitus
• Type 2 Diabetes Mellitus
• | Description | Type 1 | Type2 |

Onset	Sudden	Gradual
Age at onset	Any age mostly young	Adults
Body habitues	Thin or normal	Often obes
Ketoacidosis	Common	Rare
Autoantibodies	Present	Absent
Endogenous insulin	Low or absent	Normal decreased or increased
Prevalence	Less	More
Insulin therapy	Required	May or may not be required Can manage on oral medication & lifestyle modification

Investigation

Investigation	Finding
HBA1C	6.5% or Higher indicates- diabetes 5.7% to 6.4% - Preedibetes Below 5.7% - Normal
Random Blood sugar	200 milligrams or more - Diabetes
Fasting blood sugar	Less than 100 mg/dL- Normal 100 to 125 mg/dL - Prediabetes 126 mg/dL - Diabetes
Glucose tolerance test	Less than 140mg/dL- Normal 140 to 199 mg/dL- Prediabetes More than 200mg/dL- Diabetes
Urine Analysis	Ketone present

Management
• Lifestyle modification
• Healthy diet - includes protein, high fiber
• Avoid sweeteners and artificial sweeteners
• Exercise for at least 30 mins
• Insulin therapy
• Surgical management
• Bariatric Surgery
• Pancreas Transplantation
• Insulin Types
• Short-acting or regular insulin
• Rapid-acting insulin
• Long-acting insulin
• Complication
• Cardiomyopathy
• Neuropathy
• Nephropathy
• Retinopathy
• Fungal or bacterial infection
• Diabetic Ketoacidosis

Q52. Answer: (c) 100101

The correct answer is 100101.

Key Points
• binary number system

• The base of each number system is also called the radix. The radix of a decimal number is ten, and the radix of binary is two.

• The radix determines how many different symbols are required in order to flesh out a number system. In our decimal number system, we've got 10 numeral representations for values between nothing and ten somethings: 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.

• Each of those symbols represents a very specific, standardized value.

• In binary we're only allowed two symbols: 0 and 1. But using those two symbols we can create any number that a decimal system can.

Q53. Answer: (a) Tank

The logic followed here is:

Logic: Storage containers for substances.

Here,

Gas : Cylinder → Gas is stored in a Cylinder.

Similarly,

Water : Tank → Water is stored in a Tank.

Hence, the correct answer is "Option 1".

Q54. Answer: (b) antibiotics

The correct answer is antibiotics.

Key Points

• Microorganisms are small organisms and are not seen by the naked eye.

• It is visible only under a microscope.

• It is unicellular and can inhabit a variety of habitats, such as air, water, and soil.

• The microorganism is classified into algae, bacteria, fungi, and protozoa.

Algae:

• It is unicellular.

• It is thallus-like in appearance and green.

• It is the major producer and can form its food.

• It lives in freshwater, marine water, and brackish water.

Bacteria:

• It is unicellular.

• It is simple but performs many complex functions.

• It can survive in unfavorable conditions such as hot springs.

• It is aerobic, anaerobic, autotrophic, and chemoheterotrophic.

Fungi:

• It is unicellular, like yeast.

• It inhabits the soil and also grows as epiphytes on plants.

• It can cause diseases in humans as well as plants.

• It is saprophytic and feeds on dead and decaying matter.

Protozoa:

• It is water-living.

• It is heterotrophic and parasitic.

• It has cilia and flagella for locomotion.

Additional Information

Classification of microbes

Q55. Answer: (c) fermentation

The correct answer is fermentation.

Key Points

• Fermentation

• Alcoholic fermentation is a biological process in which sugars like glucose are converted into ethanol and carbon dioxide in the absence of oxygen.

• During this process, triose phosphate (glyceraldehyde-3-phosphate) acts as the electron donor.

• The electrons are eventually transferred to acetaldehyde, which acts as the electron acceptor, resulting in the formation of

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ethanol.

• Oxygen is not involved in alcoholic fermentation, and pyruvic acid is not the final electron acceptor in this process.

• Explanation:

• 1) there is no electron donor: This is incorrect because triose phosphate acts as the electron donor.

• 2) oxygen is the electron acceptor: This is incorrect because oxygen is not involved in anaerobic processes like alcoholic fermentation.

• 3) triose phosphate is the electron donor, while acetaldehyde is the electron acceptor: This is correct. In alcoholic fermentation, electrons are transferred from triose phosphate to acetaldehyde, forming ethanol.

• 4) triose phosphate is the electron donor, while pyruvic acid is the electron acceptor: This is incorrect. Pyruvic acid is converted into acetaldehyde, which then acts as the electron acceptor.

-

Q56. Answer: (b) 1over2

Given:

(70 + 5 × 2 ÷ 10 + 15 - 10)/(25 × 6 + 2) = ?

Formula used:

Order of operations (PEMDAS/BODMAS)

Calculation:

(70 + 5 × 2 ÷ 10 + 15 - 10)/(25 × 6 + 2) = ?

=> (70 + 1 + 15 - 10)/(150 + 2)

=> 76/152

=> 1/2

Therefore The correct answer is option (2).

Q57. Answer: (b) Qutubuddin Aibak

The correct answer is Qutubuddin Aibak.

Key Points

• Qutubuddin Aibak

• Qutubuddin Aibak was the founder of the Slave dynasty.

• He won Kalinjar Fort from Parimaldev in 1202 AD.

• Illtutmish was Son in law and slave of Qutubuddin Aibak.

• Illtutmish was the most powerful king of the Slave dynasty.

• Slave dynasty last from 1206 – 1290 AD.

Additional Information

• Iltutmish

• Shamsuddin Iltutmish (1211-36 AD) was the first Ilbari ruler.

• Iltutmish is considered the real founder of the Delhi Sultanate.

• At the time of Qutbuddin Aibak's death, he was the governor of Badaun.

• Aibuq had made Iltutmish the Iqtedar (Subedar) of Badaun.

• The nobles of Delhi, especially Shah Ismail, invited Iltutmish, the governor of Badaun, to sit on the throne of Delhi, which he immediately accepted.

• In June 1211, Iltutmish became the Sultan by defeating Aramshah and the rebels in the field of Jud (Bagh-i-Jud).

• First of all, Dr. Arnold expressed the opinion that 'Iltutmish was the usurper of the throne of Delhi.

• Ala-ud-din Khilji (1296-1316 A.D.)

• In 1296 A.D. Ala-ud-din Khilji succeeded Jalal-ud-din Firoz Khilji and ascended the throne.

• Ala-ud-din Khilji Invasions in the North- captured Ranthambore and killed Hamir Deva its ruler and also captured Malwa, Chittor, Dhar, Mandu, Ujjain, Marwar, Chanderi and Jalor.

• Ala-ud-din Khilji Invasions in the South - was the first Sultan who attacked South India and sent general Malik Kafur against the rulers of the south. Prataprudra-II of Warangal, Ramachandra Deva, the Yadava king of Devagiri, and Vira Ballala-III the Hoysala king were defeated.

• The domestic Policies of Alauddin Khilji Ala-ud-din followed -the Divine Right Theory of Kingship, introduced four ordinances to prevent repeated revolts; impounded pious grants and free grants of lands; restructured the spy system; banned social parties and wine; introduced a permanent standing army; started the system of branding of horses and a descriptive roster of individual soldiers to inhibit corruption; fixed the prices of necessary commodities which were below the normal market rates; strictly

prohibited black marketing. Revenue was collected in cash and not in kind; followed discriminatory policies towards the Hindus and imposed the Jizya, a grazing tax and a house tax on the Hindu community.

• He was the first to bring the standing army system.

• He constructed Alai Darwaza, the Palace of a thousand pillars and the Fort of Siri.

• Firoz Tughluq

• Firoz Tughluq, who ruled the Delhi Sultanate in the 14th century, implemented several measures to improve agriculture in his kingdom.

• Let's examine each option to understand why 4) is the correct answer.

• He caused the estimate of the annual income from land revenue of the territory directly under the state:

• The wording of this option suggests that Firoz Tughluq caused an estimate of the annual income from land revenue to be made.

• While it doesn't explicitly state the purpose or outcome of this estimate, it implies a focus on revenue generation rather than directly improving agriculture.

• This measure doesn't involve implementing agricultural reforms or initiatives but instead pertains to financial assessment.

• As a result, this measure is not directly related to improving agriculture, making it the correct answer choice.

Q58. Answer: (b) Space-based Maritime Surveillance System

The correct answer is Space-based Maritime Surveillance System.

Key Points

• The Indian Space Research Organization (ISRO) was established in 1969. Its primary aim is to harness space technology for national development, while pursuing space science research and planetary exploration.

• ISRO has made significant contributions to space technology, including the development of indigenous satellites, launching vehicles, and contributing to global space science and exploration.

Additional Information

• Vikram Sarabhai:

• Considered the father of the Indian space program, Vikram Sarabhai was instrumental in establishing ISRO.

• Chandrayaan and Mangalyaan Missions:

• ISRO's notable missions include Chandrayaan-1, India's first lunar probe, and Mangalyaan (Mars Orbiter Mission), making India the first Asian nation to reach Martian orbit and the first nation in the world to do so in its first attempt.

• Gaganyaan Mission:

• ISRO is working on Gaganyaan, its first manned space mission, aiming to demonstrate human spaceflight capability.

Q59. Answer: (a) Panch Mahal

The correct answer is Panch Mahal.

Key Points

• Panch Mahal:

• The Panch Mahal in Fatehpur Sikri, Uttar Pradesh, was built by Mughal Emperor Akbar in the late 16th century, around 1571-1585.

• This five-story palace, with its diminishing tiers and open-pillared design, was intended for the royal family and was used as a venue for leisure and court meetings.

Additional Information

• Red Fort:

• The Red Fort, or Lal Qila, in Delhi was commissioned by Mughal Emperor Shah Jahan in 1638 and completed in 1648.

• This massive red sandstone fort served as the main residence of the Mughal emperors for around 200 years and is renowned for its intricate architecture, with features such as the Diwan-i-Aam and Diwan-i-Khas.

• Agrasen Ki Baoli:

• Agrasen Ki Baoli, also known as Agrasen's Stepwell, is an ancient stepwell located in the heart of New Delhi.

• Its origins are traditionally attributed to King Agrasen and believed to have been rebuilt in the 14th century by the Agrawal community during the Tughlaq period, showcasing intricate stone carvings on its 108 steps.

• Qutub Minar:

• The Qutub Minar in Delhi is a UNESCO World Heritage Site that was commissioned by Qutb-ud-din Aibak, the founder of the Mamluk Dynasty, in 1192 and completed by his successor Iltutmish in 1220.

• Standing at 73 meters, it is the tallest brick minaret in the world and features remarkable Indo-Islamic architecture with detailed carvings and inscriptions.

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Q60. Answer: (d) Only conclusion 2 follows.

Given,

Statement:

People of Kerala cook many dishes in coconut oil.

Conclusions:

I. Coconut oil is the main cooking oil of the country - False (Because, the statement only mentions the people of Kerala, not the entire country).

II. Kerala is a big consumer of coconut oil - True (Because, the statement indicates that people of Kerala cook many dishes in coconut oil, suggesting significant consumption).

So, Only conclusion II follows.

Hence, the correct answer is "Option 4".

Q61. Answer: (d) Karnaprayag

The correct answer is Karnaprayag.

Key Points

• Karnaprayag:

• Karnaprayag is a town in the Chamoli district of Uttarakhand, India, where the Alaknanda River meets the Pindar River.

• This confluence is one of the Panch Prayag (five sacred confluences) of the Alaknanda River.

• No specific year of establishment is noted, as it is a natural confluence with immense religious significance in Hindu mythology, particularly associated with Karna from the Mahabharata.

Additional Information

• Devprayag:

• Devprayag is a town in the Tehri Garhwal district of Uttarakhand, India, where the Alaknanda River meets the Bhagirathi River to form the Ganges River.

• This confluence is a deeply revered site and marks the beginning of the holy Ganges.

• The town and its confluence have been significant since ancient times, with numerous references in religious texts without a specific year of establishment.

• Rudraprayag:

• Rudraprayag is located in the Rudraprayag district of Uttarakhand, India, where the Alaknanda River merges with the Mandakini River.

• This is also one of the Panch Prayag and holds significant religious importance, with no specific year of establishment being documented, as it has been a site of pilgrimage and devotion for centuries.

• Vishnuprayag:

• Vishnuprayag is found in the Chamoli district of Uttarakhand, India, where the Alaknanda River meets the Dhauliganga River.

• This confluence is the first of the Panch Prayag encountered as the rivers flow downstream and holds great spiritual significance in Hinduism, associated with the deity Vishnu.

• As with other prayags, it is a natural confluence without a specific year of establishment, significant since ancient times.

Q62. Answer: (d) Asia, Europe

The correct answer is Asia, Europe.

Key Points

• The Ural Mountains are also known as the Urals or Russian Uralskie Gory.

• Ural Mountain range is spread over north to south through Russia, from the coast of the Arctic Ocean to the river Ural and northwestern Kazakhstan.

• The eastern part of this mountain is considered as the boundary between Europe and Asia.

• The mountain range stretched over 2,500 kilometers (1,550 miles).

• It passes through the Arctic tundra to the north and through forested and semi-desert landscapes to the south.

• Mount Narodnaya (6,217 feet [1,895 meters]) is the highest peak of this mountain range.

• The Urals are divided into five parts: Southern, Middle, Northern, Pre-Polar (the highest), and Polar.

Additional Information

Asia is the largest continent in the world.

• The highest place on earth is Mount Everest and the lowest place on earth is Dead Seashore both are part of the Asia Continent.

• Asia is divided into 49 countries.

• Caspian lake is the world's largest lake is located in Asia.

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• The Yangtze Kiang is the longest river in Asia.
• The largest island of Asia is Borneo.
• The largest desert in Asia is the Gobi.
• Japan is the most industrialized nation in Asia.
Europe is the sixth-largest continent in the world.
• It includes 50 countries and parts of the peninsula of Eurasia.
• Greenland is the world's largest island belong to Denmark, is located in Europe.

Q63. Answer: (d) 490 m

Given:
A train travelling at a speed of 84 Km/h passes a post in 9 seconds and a platform in 30 seconds.
Formula used:
Speed = Distance / Time
Calculation:
Speed of train = 84 Km/h = 84 × (1000/3600) m/s = 23.33 m/s
Length of the train (L_t) = Speed × Time to pass the post
=> L_t = 23.33 × 9 = 210 m
Total distance covered when passing the platform = Speed × Total time
=> Distance = 23.33 × 30 = 700 m
Length of the platform (L_p) = Total distance - Length of the train
=> L_p = 700 - 210 = 490 m
Therefore The correct answer is option (4).

Q64. Answer: (b) Mosaic

The correct answer is Mosaic.
Key Points
• Mosaic was the first web browser to display images inline with text, making it a revolutionary tool for the web.
• It was developed at the National Center for Supercomputing Applications (NCSA) at the University of Illinois Urbana-Champaign.
• Mosaic was released in 1993 and played a significant role in popularizing the World Wide Web.
• Its user-friendly interface and ability to integrate multimedia elements were pioneering features at the time.
Additional Information
• Opera
• Opera is a web browser developed by the Norwegian company Opera Software.
• It was first released in 1995 and is known for its speed and security features.
• Opera includes a built-in ad blocker, VPN, and other privacy features.
• Mozilla Firefox
• Mozilla Firefox is an open-source web browser developed by the Mozilla Foundation.
• It was first released in 2002 and is known for its customization options and support for a wide range of extensions.
• Firefox is committed to user privacy and security.
• Netscape
• Netscape Navigator was a popular web browser in the 1990s developed by Netscape Communications Corporation.
• It was the first commercial web browser and played a major role in the early growth of the internet.
• Netscape was eventually overtaken by Internet Explorer and other browsers.

Q65. Answer: (a) 20

Given:
A fruit seller sells 16 oranges for Rs. 42 thereby gaining 25%.
Formula used:
Selling Price (SP) = Rs. 42
Gain = 25%
Number of oranges sold = 16
Cost Price (CP) = SP / (1 + Gain%)
CP of 16 oranges = CP

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CP of 1 orange = CP / 16
Number of oranges bought for Rs. 42 = Rs. 42 / CP of 1 orange
Calculation:
SP = Rs. 42
Gain% = 25%
=> CP = SP / (1 + 25%)
=> CP = 42 / 1.25
=> CP = Rs. 33.6
CP of 16 oranges = Rs. 33.6
CP of 1 orange = Rs. 33.6 / 16
=> CP of 1 orange = Rs. 2.1
Number of oranges bought for Rs. 42 = 42 / 2.1
=> Number of oranges bought for Rs. 42 = 20
Therefore The correct answer is option (1).

Q66. Answer: (c) FRZ

The logic followed here is:
BOW : CPX
And,
EQY : ?
Hence, "Option 3" is the correct answer.

Q67. Answer: (b) 4 : 5

Given:
65% of the first number = 130
40% of the second number = 100
Calculation:
Find the first number
65% of the first number = 130
=> (65/100) × First Number = 130
=> First Number = (130 × 100) / 65
=> First Number = 200
Find the second number
40% of the second number = 100
=> (40/100) × Second Number = 100
=> Second Number = (100 × 100) / 40
=> Second Number = 250
Find the ratio of the first number to the second number
Ratio = First Number : Second Number
=> Ratio = 200 : 250
=> Simplify by dividing both terms by 50:
=> Ratio = 4 : 5
Final Answer:
The ratio of the first number to the second number is 4 : 5.

Q68. Answer: (a) 1over 2

Given:
LCM of 1/6, 1/4, and 1/2
Formula used:
LCM of fractions = LCM of numerators / HCF of denominators
Calculation:
Numerators: 1, 1, 1
Denominators: 6, 4, 2

LCM of numerators = 1

HCF of denominators:

HCF(6, 4, 2)

Prime factors of 6 = 2 × 3

Prime factors of 4 = 2 × 2

Prime factors of 2 = 2

Common factors = 2

HCF = 2

=> LCM of fractions = 1 / 2

Therefore The correct answer is option 1.

Q69. Answer: (c) Umesh Sinha

The correct answer is Umesh Sinha.

Key Points

• Umesh Sinha was appointed as the Deputy Election Commissioner in the Election Commission of India in January 2021.

• He is a senior officer in the Indian Administrative Services (IAS).

• Umesh Sinha has previously served in various capacities within the Election Commission, contributing to the electoral process in India.

• His appointment was part of the regular bureaucratic process to ensure the smooth functioning of the Election Commission.

Additional Information

• Election Commission of India

• The Election Commission of India is an autonomous constitutional authority responsible for administering election processes in India at both the national and state levels.

• It administers elections to the Lok Sabha, Rajya Sabha, and State Legislative Assemblies, as well as the offices of the President and Vice President in the country.

• The body was established on January 25, 1950, and operates under the authority of the Constitution per Article 324.

• It ensures the conduct of free and fair elections in India, a fundamental aspect of the democratic process.

• Deputy Election Commissioner

• The Deputy Election Commissioner is a senior position within the Election Commission of India.

• The role includes assisting the Chief Election Commissioner and other Election Commissioners in the discharge of their duties.

• The Deputy Election Commissioners are usually appointed from the Indian Administrative Service (IAS) or equivalent services.

• They play a crucial role in managing the logistical and administrative aspects of elections in the country.

• Indian Administrative Service (IAS)

• The IAS is one of the premier civil services in India.

• It is part of the executive branch of the Government of India and provides administrative functions in various capacities across the country.

• IAS officers hold key positions in the Union government, state governments, and public-sector undertakings.

• The recruitment to IAS is done through the highly competitive Civil Services Examination conducted by the Union Public Service Commission (UPSC).

Q70. Answer: (c) 3over2 years

Given:

Principal (P) = Rs. 70,000

Simple Interest (SI) = Rs. 12,600

Rate (R) = 12% per annum

Formula used:

SI = P × R × T / 100

Where, T = time in years

Calculation:

12,600 = 70,000 × 12 × T / 100

=> 12,600 = 8,400 × T

=> T = 12,600 / 8,400

=> T = 1.5 years or 3over2 years

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Therefore The correct answer is option (3).

Q71. Answer: (c) 4 : 5

Given:

John's initial amount = Rs. 19,000

Joseph's initial amount = Rs. 26,000

Joseph gives John = Rs. 1,000

Formula used:

New Amount with John = John's initial amount + Amount given by Joseph

New Amount with Joseph = Joseph's initial amount - Amount given to John

Ratio = New Amount with John : New Amount with Joseph

Calculation:

New Amount with John = 19,000 + 1,000

New Amount with John = 20,000

New Amount with Joseph = 26,000 - 1,000

New Amount with Joseph = 25,000

=> Ratio = 20,000 : 25,000

=> Ratio = 20 : 25

=> Ratio = 4 : 5

Therefore The correct answer is option (3).

Q72. Answer: (c) 33over2

Given:

(√144 ÷ 6) × (√121 ÷ 8) × (132 ÷ √484)

Calculation:

Simplify the square roots:

• √144 = 12

• √121 = 11

• √484 = 22

Substitute the values:

(12 ÷ 6) × (11 ÷ 8) × (132 ÷ 22)

Simplify each term:

• 12 ÷ 6 = 2

• 11 ÷ 8 = 11/8

• 132 ÷ 22 = 6

Multiply the terms:

2 × (11 ÷ 8) × 6

Combine step-by-step:

2 × 6 = 12

Now multiply 12 with (11 ÷ 8):

12 × (11 ÷ 8) = 132 ÷ 8 = 33 ÷ 2

Conclusion:

The final answer is Option 3: 33/2.

Q73. Answer: (a) Week

The logic followed here is:

Logic: Units of Time.

Here,

Second : Minute → Second is a smaller unit of time within a Minute.

Similarly,

Day : Week → Day is a smaller unit of time within a Week.

Hence, the correct answer is "Option 1".

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Q74. Answer: (a) annelida

The correct answer is annelida.

Key Points

• Leeches are segmented worms and belong to the phylum Annelida.

• They are characterized by their elongated, cylindrical bodies divided into segments.

• Leeches have a coelom, a body cavity lined with mesoderm, which is a distinguishing feature of annelids.

• They possess setae (small bristle-like structures) and parapodia which aid in locomotion, though these are reduced in leeches.

Additional Information

• Phylum Annelida:

• Annelids are commonly known as segmented worms due to their segmented body structure.

• They include earthworms, leeches, and marine worms.

• Annelids have a true coelom, which is a fluid-filled body cavity completely lined by tissue derived from mesoderm.

• Their body is divided into segments, each segment containing a portion of the nervous system, excretory organs, and muscle blocks.

• Phylum Platyhelminthes:

• Platyhelminthes are commonly known as flatworms, including planarians, flukes, and tapeworms.

• They are characterized by their flattened body shape and lack of a coelom (acoelomate condition).

• They have bilateral symmetry and a simple digestive system with only one opening.

• Phylum Mollusca:

• Molluscs include snails, clams, squids, and octopuses.

• They have a soft body, often protected by a hard shell made of calcium carbonate.

• Molluscs have a true coelom and a complex organ system, including a well-developed nervous system and circulatory system.

• Phylum Protochordata:

• Protochordates include animals like tunicates and lancelets that possess a notochord at some stage of their life cycle.

• They are considered to be the primitive relatives of vertebrates.

• Protochordates have a simple body plan with a notochord, dorsal nerve cord, and pharyngeal slits.

Q75. Answer: (b) 2002

The correct answer is 2002.

Key Points

• The 86th Amendment Act, 2002, inserted Article 21-A in the Constitution of India.

• Article 21-A provides for free and compulsory education to all children in the age group of 6 to 14 years as a Fundamental Right.

• This amendment also introduced a new provision under Article 45 to provide early childhood care and education for all children until they complete the age of six years.

• Additionally, the amendment added a new Fundamental Duty under Article 51A, making it the duty of every parent or guardian to provide opportunities for education to their child or ward between the ages of six and fourteen years.

Additional Information

• Article 21-A

• Article 21-A was introduced by the 86th Amendment Act, 2002.

• This article mandates the state to provide free and compulsory education to all children aged 6 to 14 years in a manner determined by the state.

• It is a significant step towards ensuring that every child has access to basic education, which is essential for their overall development and future opportunities.

• Fundamental Right

• Fundamental Rights are the basic human rights enshrined in the Constitution of India, which are guaranteed to all citizens.

• They are enforceable by the courts, subject to specific restrictions.

• Article 21-A is one such right that ensures the right to education for children.

• 86th Amendment Act, 2002

• This amendment was a milestone in the Indian education system as it made education a Fundamental Right for children.

• It emphasized the importance of providing education to children as a means to empower them and ensure their right to a better future.

• Early Childhood Care and Education

• Article 45 emphasizes the state's responsibility to provide early childhood care and education for all children until they complete

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the age of six years.

• This provision aims to prepare young children for formal schooling and ensures their holistic development.

Q76. Answer: (c) -3over2

Given:

$2 \sin^2 30^o + \cos^2 60^o - (3/4) \cot^2 30^o = ?$

Formula used:

$\sin 30^o = 1/2, \cos 60^o = 1/2, \cot 30^o = \sqrt{3}$

Calculation:

$2 \sin^2 30^o + \cos^2 60^o - (3/4) \cot^2 30^o = ?$

$=> 2 (1/2)^2 + (1/2)^2 - (3/4) (\sqrt{3})^2$

$=> 2 (1/4) + (1/4) - (3/4) (3)$

$=> 1/2 + 1/4 - 9/4$

$=> 2/4 + 1/4 - 9/4$

$=> 3/4 - 9/4$

$=> -6/4$

$=> -3/2$

Therefore The correct answer is option (3).

Q77. Answer: (b) Portugal

The correct answer is Portugal.

Key Points

• The current Secretary-General of the United Nations is António Guterres.

• António Guterres has been serving as the Secretary-General since January 1, 2017.

• He was the Prime Minister of Portugal from 1995 to 2002 before becoming the UN Secretary-General.

• António Guterres was re-elected for a second term as the Secretary-General of the UN, which started on January 1, 2022 and will end on December 31, 2026.

Additional Information

• United Nations (UN)

• The United Nations is an international organization founded in 1945 after the Second World War by 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 UN has 193 member states and its headquarters is located in New York City, USA.

• The main organs of the UN are the General Assembly, the Security Council, the International Court of Justice, the Secretariat, the Economic and Social Council, and the Trusteeship Council.

• Secretary-General of the United Nations

• The Secretary-General is the head of the United Nations Secretariat, which is one of the principal organs of the UN, and acts as the de facto spokesperson and leader of the UN.

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

• The role of the Secretary-General is to promote international peace and security, mediate international disputes, and oversee the operations of the UN.

• The term of office for the Secretary-General is five years, with the possibility of being re-elected for an additional term.

• António Guterres

• António Guterres was born on April 30, 1949, in Lisbon, Portugal.

• He served as the Prime Minister of Portugal from 1995 to 2002.

• Before becoming the Secretary-General of the UN, he was the United Nations High Commissioner for Refugees (UNHCR) from 2005 to 2015.

• Guterres is known for his efforts in advocating for human rights, sustainable development, and addressing global challenges such as climate change and refugee crises.

Q78. Answer: (d) Jyotiba Phule

The correct answer is Jyotiba Phule.

Key Points

• Jyotiba Phule, also known as Jyotirao Govindrao Phule, was a social reformer, thinker, and writer from Maharashtra, India.

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• He founded the 'Satya Sodhak Samaj' (Society of Seekers of Truth) in 1873 to fight against the social injustices prevalent in the society.

• The primary aim of the Samaj was to liberate the Shudras and Ati Shudras and to prevent their exploitation by the upper caste Brahmins.

• Phule, along with his wife Savitribai Phule, worked tirelessly for the education of women and lower castes and fought against untouchability and caste discrimination.

Additional Information

• Jyotiba Phule

• Born on 11 April 1827 in Satara, Maharashtra, Jyotiba Phule was a prominent social reformer of the 19th century.

• He is also known for his efforts in the field of education, especially for women and the lower castes, who were deprived of educational opportunities.

• Jyotiba Phule and his wife Savitribai Phule are considered pioneers of women's education in India. They started the first school for girls in Pune in 1848.

• Phule's contribution to the anti-caste movement and his efforts to abolish untouchability and the caste system have had a lasting impact on Indian society.

• Satya Sodhak Samaj

• The Satya Sodhak Samaj was established by Jyotiba Phule on 24 September 1873 in Pune, Maharashtra.

• Its main objective was to promote social equality and to fight against the caste system and Brahmanical supremacy.

• The Samaj advocated for the rights of women and lower castes, encouraging them to educate themselves and become self-reliant.

• It also focused on providing social and economic assistance to the marginalized sections of society, including women, Shudras, and Ati Shudras.

• Caste System in India

• The caste system is a hierarchical social stratification system prevalent in India, where people are divided into different social groups (castes) based on their birth.

• The four main categories (varnas) in the traditional caste system are Brahmins (priests and teachers), Kshatriyas (warriors and rulers), Vaishyas (traders and agriculturists), and Shudras (laborers and service providers).

• Below these varnas are the Ati Shudras or Dalits, who were considered "untouchable" and faced severe social discrimination and exclusion.

• Reformers like Jyotiba Phule, along with movements like the Satya Sodhak Samaj, played a crucial role in challenging the caste system and advocating for social justice and equality.

Q79. Answer: (b) 3 cm

Given:

The area of four side walls of a cubical box is 36 cm².

Formula used:

Area of four side walls of a cubical box = 4 × (edge²)

Calculation:

4 × (edge²) = 36

=> edge² = 36 / 4

=> edge² = 9

=> edge = √9

=> edge = 3 cm

Therefore The correct answer is option 2.

Q80. Answer: (d) Manure

Give solution in the given format:

The logic followed here is:

Phosphorus	Chemical element
Nitrogen	Chemical element
Potassium	Chemical element
Manure	No Chemical element

Phosphorus, Nitrogen and Potassium are Chemical element expect Manure

Hence, the correct answer is "Manure".

Q81. Answer: (c) Prime Minister of India

The correct answer is Prime Minister of India.

Key Points

• The National Development Council (NDC) is presided over by the Prime Minister of India.

• It was established in 1952 to strengthen and mobilize the effort and resources of the nation in support of the Plan.

• The NDC includes all Chief Ministers of the States and Union Territories, along with members of the Planning Commission.

• The main function of the NDC is to act as a bridge between the central and state governments for the implementation of the five-year plans.

Additional Information

• National Development Council (NDC)

• The NDC is an apex body for decision-making and deliberations on development matters in India.

• It was created to ensure balanced and rapid development of all parts of the country.

• The council reviews the working of the National Plan from time to time and recommends measures to achieve aims and targets set out in the Plan.

• The NDC also considers important questions of social and economic policy affecting national development.

• Planning Commission

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

• It was established in March 1950 by a resolution of the Government of India.

• The Planning Commission was dissolved in 2014 and replaced by the NITI Aayog (National Institution for Transforming India).

• NITI Aayog

• NITI Aayog is a policy think tank of the Government of India, established with the aim to achieve sustainable development goals and to enhance cooperative federalism by fostering the involvement of State Governments in the economic policy-making process using a bottom-up approach.

• The Prime Minister of India is the Chairperson of NITI Aayog.

• NITI Aayog replaced the Planning Commission, which followed a top-down model.

Q82. Answer: (b) 3

Given:

The data is arranged in ascending order: 3, 5, 6, (2p + 3), (3p + 2), 15, 25, 51.

The median is given as 10.

Calculation:

Understanding the median:

When the data is arranged in ascending order, the median is the middle value. If there is an even number of observations, the median is the average of the two middle values.

Count the total number of terms:

The total number of terms = 8 (even).

Middle terms:

The two middle terms are the 4th and 5th terms in the given data.

• 4th term = (2p + 3)

• 5th term = (3p + 2)

Median formula for even number of terms:

Median = (4th term + 5th term) ÷ 2

Given that the median is 10:

(2p + 3 + 3p + 2) ÷ 2 = 10

Simplify the equation:

(2p + 3p + 3 + 2) ÷ 2 = 10

(5p + 5) ÷ 2 = 10

Solve for p:

Multiply both sides by 2:

5p + 5 = 20

5p = 20 - 5

5p = 15

p = 15 ÷ 5

p = 3

Conclusion:

The value of p is 3.

Q83. Answer: (b) Bromine

The correct answer is Bromine.

Key Points

• Bromine is the only non-metal that exists in a liquid state at room temperature.

• Bromine is denoted by the chemical symbol Br.

• It has a reddish-brown color and emits a pungent odor.

• Bromine is used in various industries, including flame retardants, water treatment, and photography.

Additional Information

• Iodine

• Iodine is a solid at room temperature and has a characteristic purple-black color.

• It is used in medical applications, particularly as an antiseptic, and in the production of iodized salt.

• Fluorine

• Fluorine is a gas at room temperature and is highly reactive and toxic.

• It is used in the production of fluoride compounds, which are used in dental care products and in the manufacture of Teflon.

• Chlorine

• Chlorine is also a gas at room temperature, known for its strong, pungent smell.

• It is widely used in water purification, disinfection, and in the production of various chemicals.

Q84. Answer: (c) Nilgiri Hills

The correct answer is Nilgiri Hills.

Key Points

• Nilgiri Hills are a range of mountains with at least 24 peaks above 2,000 meters (6,600 ft), in the Western Ghats of India.

• The highest peak in the Nilgiri Hills is Doddabetta, which stands at an elevation of 2,637 meters (8,650 ft).

• The name "Nilgiri" translates to "Blue Mountains" in English, which is derived from the blue haze created by the dense forests that cover these hills.

• The Nilgiri Hills are known for their rich biodiversity and are home to several endemic species of flora and fauna.

Additional Information

• Doddabetta:

• Doddabetta is the highest mountain in the Nilgiri Hills and is the fourth highest peak in South India.

• It is a popular tourist destination, offering panoramic views of the surrounding regions.

• The peak is located approximately 9 km from Ooty, a prominent hill station in Tamil Nadu.

• There is an observatory at the top of Doddabetta with a telescope for visitors to enjoy the scenic beauty.

• Western Ghats:

• The Western Ghats are a mountain range that runs parallel to the western coast of the Indian peninsula.

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

• The Western Ghats are home to numerous endemic species of plants and animals, making them a significant area for conservation.

• They stretch from Gujarat in the north to Tamil Nadu in the south, covering a distance of around 1,600 km.

• Biodiversity in Nilgiri Hills:

• The Nilgiri Hills boast a rich variety of flora and fauna, including several species that are unique to this region.

• Some of the notable fauna include the Nilgiri tahr, Nilgiri langur, and the Indian elephant.

• The region is also known for its tea plantations and eucalyptus forests.

• The Nilgiri Biosphere Reserve, established in 1986, encompasses the Nilgiri Hills and is part of the UNESCO World Network of Biosphere Reserves.

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Q85. Answer: (d) Assam

The correct answer is Assam.

Key Points

• Dibru-Saikhowa is a national park as well as a biosphere reserve located in the Tinsukia district of Assam, India.

• The biosphere reserve covers an area of approximately 765 square kilometers, making it one of the largest in Assam.

• It is known for its rich biodiversity, including many endangered species of flora and fauna.

• The park is situated on the floodplains of the Brahmaputra River, which contributes to its unique ecosystem.

Additional Information

• Biosphere Reserve

• A biosphere reserve is a designated area meant to promote sustainable development by integrating ecological, social, and economic dimensions.

• It typically includes core areas, buffer zones, and transition zones to balance conservation efforts with human activity.

• Biosphere reserves are recognized by UNESCO and part of its Man and the Biosphere (MAB) Programme.

• Endangered Species in Dibru-Saikhowa

• The park is home to several endangered species like the Bengal tiger, Asian elephant, and Hoolock gibbon.

• It also hosts various species of migratory birds, making it a popular spot for bird-watching.

• Flora and Fauna

• The park features a range of habitats, including grasslands, wetlands, and forests.

• This diversity supports a wide array of plant and animal species, contributing to its ecological richness.

• Brahmaputra River

• The Brahmaputra River is one of the major rivers in India, flowing through Tibet, India, and Bangladesh.

• Its floodplains create fertile lands and unique ecosystems that support a variety of wildlife.

Q86. Answer: (a) 2

Given:

Subject Maximum Marks:

Maths = 150, Chemistry = 130, Physics = 120, Geography = 100, History = 60, Computer Science = 40

Calculation:

Checking each student's scores:

A: Maths = 90, Chemistry = 50, Physics = 90, Geography = 60, History = 70, Computer Science = 80

=> A did not meet the 60% requirement in Chemistry.

B: Maths = 100, Chemistry = 80, Physics = 80, Geography = 40, History = 80, Computer Science = 70

=> B did not meet the 60% requirement in Geography.

C: Maths = 90, Chemistry = 60, Physics = 70, Geography = 70, History = 90, Computer Science = 70

=> C met the 60% requirement in all subjects.

D: Maths = 80, Chemistry = 65, Physics = 80, Geography = 80, History = 60, Computer Science = 60

=> D met the 60% requirement in all subjects.

E: Maths = 80, Chemistry = 65, Physics = 85, Geography = 95, History = 50, Computer Science = 90

=> E did not meet the 60% requirement in History.

F: Maths = 70, Chemistry = 75, Physics = 65, Geography = 85, History = 40, Computer Science = 60

=> F did not meet the 60% requirement in History.

G: Maths = 65, Chemistry = 35, Physics = 50, Geography = 77, History = 80, Computer Science = 80

=> G did not meet the 60% requirement in Chemistry, and Physics.

Therefore Only C and D obtained 60% and above marks in all subjects.

Q87. Answer: (b) 449

Given:

The table shows marks in percentage obtained by students in six subjects, with maximum marks as follows:

Maths = 150

Chemistry = 130

Physics = 120

Geography = 100

History = 60
Computer Science = 40
Aggregate marks obtained by student C
Calculation:
Marks obtained by C:
Maths = 90% of 150 = (90 ÷ 100) × 150 = 135
Chemistry = 60% of 130 = (60 ÷ 100) × 130 = 78
Physics = 70% of 120 = (70 ÷ 100) × 120 = 84
Geography = 70% of 100 = (70 ÷ 100) × 100 = 70
History = 90% of 60 = (90 ÷ 100) × 60 = 54
Computer = 70% of 40 = (70 ÷ 100) × 40 = 28
=> Total Marks = 135 + 78 + 84 + 70 + 54 + 28 = 449
Therefore Aggregate marks obtained by Student C = 449

Q88. Answer: (c) 60%

Overall percentage of student G
Calculation:
Marks obtained by G:
Maths = 65% of 150 = (65 ÷ 100) × 150 = 97.5
Chemistry = 35% of 130 = (35 ÷ 100) × 130 = 45.5
Physics = 50% of 120 = (50 ÷ 100) × 120 = 60
Geography = 77% of 100 = (77 ÷ 100) × 100 = 77
History = 80% of 60 = (80 ÷ 100) × 60 = 48
Computer = 80% of 40 = (80 ÷ 100) × 40 = 32
=> Total Marks = 97.5 + 45.5 + 60 + 77 + 48 + 32 = 360
=> Total Maximum Marks = 150 + 130 + 120 + 100 + 60 + 40 = 600
=> Overall Percentage = (360 ÷ 600) × 100 = 60%
Therefore Overall percentage of Student G = 60%

Q89. Answer: (d) 74%

Approximate average percentage marks in Physics
Calculation:
Physics Marks:
A = 120 × 90% = 108
B = 120 × 80% = 96
C = 120 × 70% = 84
D = 120 × 80% = 96
E = 120 × 85% = 102
F = 120 × 65% = 78
G = 120 × 50% = 60
=> Total = 108 + 96 + 84 + 96 + 102 + 78 + 60 = 624
=> Average = 624 ÷ 7 = 89.14
=> Average percentage marks = 89.14 × 100/120 = 74.28% ≈ 74%
Therefore Average percentage marks in Physics ≈ 74%

Q90. Answer: (c) [figure]

The diagram that best represents the given scenario is shown below :
Thus, option figure 3 represents the given scenario.
Hence, "Option 3" is the correct answer.

Q91. Answer: (c) 6

According to the given Venn diagram:
The shaded region represents the number of pens which are coal.

So, the number of pens which are coal → (2 + 4) = 6

Hence, the correct answer is "Option 3".

Q92. Answer: (c) Well

The logic followed here is:

Logic: Source and Extraction.

Here,

Gold : Mine → Gold is extracted from a Mine.

Similarly,

Petroleum : Well → Petroleum is extracted from a Well.

Hence, the correct answer is "Option 3".

Q93. Answer: (d) EFVW

The logic followed here is:

GHST : IJUV

And,

CDTU : ?

Hence, "Option 4" is the correct answer.

Q94. Answer: (a) Only conclusion 3 follows.

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

Conclusions:

I. No blue is a crow → Does not follow (As all blue are black, some black are crows and no crow is brown. As no direct relation is given between blue and crow, therefore it is false.)

II. All crows are black → Follow (As some black are crows. So it is possible but not definite.)

III. No brown is a crow → Does not follow (As no crow is brown. As direct relation is given between crow and brown, therefore it is true.)

Therefore Here, Only conclusion 3 follows.

Hence, the correct answer is "Option 1".

Q95. Answer: (d) Shalini

Given:

1) Sahil and Manish play Ludo and Cricket.

Sports => Person ?	Ludo	Cricket
Sahil	Yes	Yes
Manish	Yes	Yes

2) Manish and Shalini play Cricket and Badminton.

Sports => Person ?	Ludo	Cricket	Badminton
Sahil	Yes	Yes	
Manish	Yes	Yes	
Shalini		Yes	Yes

3) Tarun and Shalini play Badminton and Kabaddi.

Sports => Person ?	Ludo	Cricket	Badminton	Kabaddi
Sahil	Yes	Yes		
Manish	Yes	Yes		
Shalini		Yes	Yes	Yes
Tarun			Yes	Yes

4) Shalini and Sahil play Badminton and Kabaddi.

Sports => Person ?	Ludo	Cricket	Badminton	Kabaddi
Sahil	Yes	Yes	Yes	Yes
Manish	Yes	Yes		
Shalini		Yes	Yes	Yes
Tarun			Yes	Yes

Thus, according to the final arrangement Shalini plays Badminton, Cricket and Kabaddi but NOT Ludo.
Hence, "Option 4" is the correct answer.

Q96. Answer: (a) [figure]

The diagram that best represents the relationship between school, classroom, and blackboard is shown below :
Blackboard is a subset of classroom
Classroom is a subset of school.
Hence, "Option 1" is the correct answer.

Q97. Answer: (c) 100

Given: Group of 140 people.
1) 75 love to watch cricket and 60 love to watch football.
2) There are 35 people who love to watch both the sports.
So, People love to watch at least one sport → (40 + 35 + 25) = 100
Hence, "Option 3" is the correct answer.

Q98. Answer: (b) 3 hours, 25 minutes, 12 Seconds

Given : 3.42 hours
So, 3.42 hours can be written as:
3.42 hours => 3 hours + 0.42 hours
Now, Converting hours to minutes:
1 hour = 60 min
0.42 hrs = 60 × 0.42 => 25.2 min
Here, 25.2 min can be written as → 25 min + 0.2 min
Now, Converting minutes to seconds:
1 min = 60 sec
0.2 min = 60 × 0.2 => 12 sec
Thus, 3.42 hours can be written as 3 hours, 25 minutes, 12 seconds.
Hence, "Option 2" is the correct answer.

Q99. Answer: (b) Black

The logic followed here is:

Green	Rainbow color
Black	Not a rainbow color
Yellow	Rainbow color
Red	Rainbow color

Green, Yellow, Red all are colors present in a rainbow,
Whereas,
Black is not a color of the rainbow.
Hence, the correct answer is "Black".

Q100. Answer: (d) BRAEGLA

The logic followed here is:
ARITHEMATIC is written as MATICEHTIRA
And,

ALGEBRA is written as

Hence, "Option 4" is the correct answer.

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