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

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

Take this paper as a timed mock test

Practise under exam conditions, then review your answers after you submit.

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

Q1. (√5 + √11) (√5 - √11) is equal to:

(a) 6
(b) -6
(c) -121
(d) 25

Q2. _____ in Punjab was earlier known as Ramdaspur.

(a) Jalandhar
(b) Ludhiana
(c) Amritsar
(d) Kapurthala

Q3. The diameter of a hemisphere is 7 cm. What will its total surface area be?

(a) 105.50 cm²
(b) 154 cm²
(c) 77 cm²
(d) 115.50 cm²

Q4. The city of _____ does NOT have a Jantar Mantar.

(a) Jaipur
(b) Varanasi
(c) Ujjain
(d) Indore

Q5. The value of $p^2 - 7p + 12$ at $p = 3$ is:

(a) 0
(b) 42
(c) 8
(d) -6

Q6. Sohan and Mohan start from the school with a speed of 3.5 km/hr and 4 km/hr. What time will they take to be 1.5 km apart if they start in the same direction?

(a) 3 hours
(b) 1 hour
(c) 12 min
(d) 90 min

Q7. The Modern Periodic Table based on _____ of the elements.

(a) Valency
(b) Equivalent Weight
(c) Atomic Number
(d) Atomic Mass

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Q8. The HCF of 28 p^5q² and 70 p³q^4 is:

(a) 14 p³q²
(b) 14 p^5q^4
(c) 28 p³q²
(d) 70 p³q^4

Q9. Which of the following has been declared as a Marine National Park by the Government of India for marine conservation in 1982?

(a) Gulf of Mannar
(b) Mahim bay
(c) Gulf of Kutch
(d) Gulf of Khambhat

Q10. The weights (in kg) of 7 men are 64, 63, 62, 65, 67, 66 and 61. The median weight is:

(a) 63 kg
(b) 65 kg
(c) 64 kg
(d) 66 kg

Q11. Select the number from the given options that will come next in the following series.

0, 6, 24, 60, _____.

(a) 144
(b) 114
(c) 126
(d) 120

Q12. Who among the following did NOT ever preside over the Indian National Congress as a President?

(a) Sarojini Naidu
(b) Surendranath Banerjee
(c) Dr B R Ambedkar
(d) Dada Bhai Naoroji

Q13. (√5 + √7)² is a:

(a) natural number
(b) whole number
(c) irrational number
(d) rational number

Q14. Select the option that is related to the third term in the same way as the second term is related to the first term.

Day : Week :: Month : ?

(a) Annual
(b) Year
(c) Weeks
(d) Calendar

Q15. Consider the given statements and decide which of the assumptions from the options is implicit in the statements.

A. Some animals are colour-blind.

B. All colourfuls are colour-blind but not animals.

(a) All colour-blinds are colourful.
(b) Some colour-blinds are animals.
(c) All colour-blinds are animals.
(d) Some animals are colourful.

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Q16. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.

Statement:

"Buy pure and natural honey of company Z" - an advertisement.

Assumptions:

I. Artificial honey can be prepared.

II. People do not mind for paying more prices for pure and natural honey.

(a) Neither assumption I nor II is implicit.
(b) Only assumption I is implicit.
(c) Both assumption I and II are implicit.
(d) Only assumption II is implicit.

Q17. Which of the following is NOT a microblogging site?

(a) Pinterest
(b) Tumblr
(c) Twitter
(d) Plurk

Q18. Which community has the Adi Granth as their Holy Book?

(a) Buddhists
(b) Jains
(c) Jews
(d) Sikhs

Q19. Which city of India celebrates the famous Elephant Festival annually on the day of Holi?

(a) Jaisalmer
(b) Ajmer
(c) Jaipur
(d) Jodhpur

Q20. _____ is known as “Saffron town" of Kashmir.

(a) Srinagar
(b) Pampore
(c) Sopore
(d) Jammu

Q21. Farman has to secure 60% marks to pass. He got 60 marks and fail by 60 marks. What are the maximum marks?

(a) 120
(b) 180
(c) 100
(d) 200

Q22. _____ refers to unsolicited commercial emails that flood the Internet.

(a) Spam
(b) Malware
(c) Trojan Horse
(d) Spyware

Q23. What element is a greenish yellow gas with a characteristic smell at room temperature?

(a) Chlorine
(b) Carbon monoxide
(c) Iodine
(d) Hydrogen sulphide

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Q24. A and B working alone can finish a task in 12 and 16 days respectively. In how many days can the task be finished if they work for one day each alternatively, and A begins the work?

(a) 132/3 days
(b) 131/3 days
(c) 121/3 days
(d) 122/3 days

Q25. Mission Indradhanush is related with which of the following government schemes?

(a) E-Banking
(b) Child Education
(c) Child Vaccination
(d) E-Trading

Q26. The Dadasaheb Phalke Award is the highest award for recognising contributions of famous personalities in the field of:

(a) Cinema
(b) Sports
(c) Education
(d) Social work

Q27. In order to encourage more young voters to take part in the political process, Government of India has decided to celebrate _____ as "National Voters Day".

(a) 26^(th) January
(b) 27^(th) January
(c) 28^(th) January
(d) 25^(th) January

Q28. By selling articles at Rs. 31, a shopkeeper losses 7%. What will the profit percentage be when he sells the same article at Rs. 35?

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

Q29. Four options are given below, of which three are similar in a certain manner while one is different from the rest. Find the odd one.

(a) √5
(b) √9
(c) √7
(d) √3

Q30. Which great freedom fighter was known as Deshbandhu?

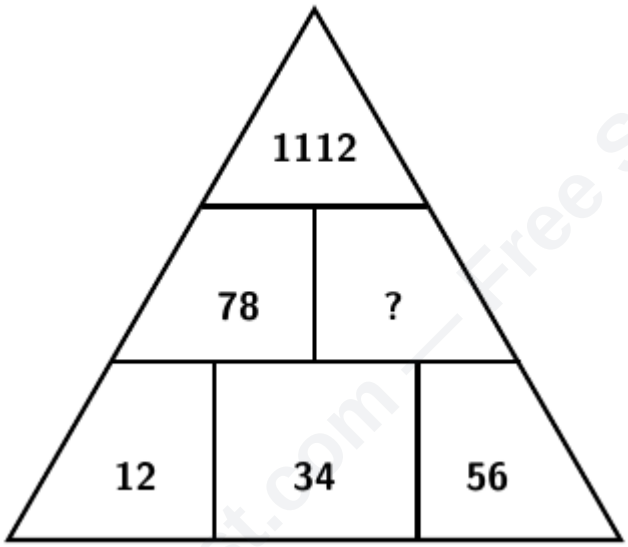
(a) Aurobindo Ghosh
(b) Gopal Krishna Gokhale
(c) Chittaranjan Das
(d) Bal Gangadhar Tilak

Q31. Which structure was built as a war memorial to soldiers of the undivided Indian Army during the First World War?

(a) Buland Darwaza
(b) Lahori Gate in the Red Fort
(c) Gateway of India
(d) India Gate

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Q32. Study the given pattern carefully and select the number from among the given options that can replace the question mark (?).



(a) 808
(b) 190
(c) 901
(d) 910

Q33. Which of the following is NOT a part of the growth area under the Digital India programme?
(a) Public school education for all
(b) Universal access to mobile services
(c) E-governance for reforming India.
(d) Broadband highways

Q34. Which of the following sportspersons was conferred the Padma Bhushan Award in 2020?
(a) P V Sindhu
(b) Gautam Gambhir
(c) Bombayla Devi
(d) Sunil Chhetri

Q35. Which of the given layer of the atmosphere has the lowest density?
(a) Mesosphere
(b) Stratosphere
(c) Exosphere
(d) Ionosphere

Q36. The population of a city increases by 5% annually and its present population is 640000. What will be the population at the end of the second year?
(a) 744880
(b) 705600
(c) 745880
(d) 704600

Q37. The mean of 20 observations is 22.5. One observation was wrongly noted as -25 instead of 25. The correct mean is:
(a) 25
(b) 23.75
(c) 20
(d) 21.75

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Q38. From which country has the Indian constitution derived the feature of a Five-Year Plan?

(a) USSR
(b) USA
(c) South Africa
(d) Ireland

Q39. Where is the central AGMARK laboratory located in India?

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

Q40. Rani spent 6.25% of what she had. If her expenditure amounted to Rs. 75, what amount did she have?

(a) Rs. 1200
(b) Rs. 1000
(c) Rs. 100
(d) Rs. 120

Q41. Who invented HTML in 1990?

(a) Kane Kramer
(b) Tim Berners-Lee
(c) Niklaus Wirth
(d) David Noble

Q42. Which of the following is biodegradable?

(a) Glass
(b) Plants
(c) Polythene
(d) Aluminium Cans

Q43. If a map of a city was drawn on a scale of 0.05 centimetre to kilometre, what area would represent a country if it has an area of 8000 square kilometres?

(a) 25 cm^2
(b) 20 cm^2
(c) 10 cm^2
(d) 5 cm^2

Q44. Cyclone-30, a particle accelerator is used in medical application. It will help patients suffering from _____.

(a) Blood pressure
(b) Cancer
(c) Diabetes
(d) Heart disease

Q45. What is the third proportion to 12 and 30?

(a) 75
(b) 360
(c) 150
(d) 750

Q46. Which of the following countries is NOT a Permanent Member of the Security Council?

(a) France
(b) China
(c) Canada
(d) Russia

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Q47. An irrational number between 3 and 5 is:

(a) √5
(b) √27
(c) √3
(d) √17

Q48. If the ratio of the sine of an acute angle to its cosine is 5 : 12, then what will the value of sine of that angle be?

(a) 12/5
(b) 5/13
(c) 5/12
(d) 12/13

Q49. Which of the following states has more than one seat in the Lok Sabha?

(a) Nagaland
(b) Sikkim
(c) Meghalaya
(d) Mizoram

Q50. Which of the following statements is NOT the purpose behind Swadhar Greh Scheme?

(a) Provide legal aid to Women
(b) Provide Government jobs to socially backward women
(c) Shelter, food, and clothing for women in distress
(d) Provide support to enable women to start afresh

Q51. In the number set given below, all are alike in some manner, except one. Select the odd one.

2, 28, 48, 58, 128

(a) 128
(b) 48
(c) 2
(d) 28

Q52. Which part of the human body is formed by the fusing of the illium, ischium and the pubis?

(a) Hip bone
(b) Cranium
(c) Feet
(d) Jaw

Q53. Where is Indira Gandhi Institute of Development Research (IGIDR) situated?

(a) Mumbai
(b) Ranchi
(c) Bhopal
(d) Bengaluru

Q54. Sita earns 25% more than Rahim. By how much % does Rahim earn less than Sita?

(a) 20%
(b) 5%
(c) 25%
(d) 10%

Q55. In order to celebrate earth's environment and raise public awareness about pollution, which of the following days is observed worldwide as Earth Day each year?

(a) 22^(nd) July
(b) 11^(th) February
(c) 11^(th) November
(d) 22^(nd) April

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Q56. In which city of India, did Dr. K. Kasturirangan, former Chairman of ISRO, inaugurate the Human Space Flight Centre in 2019?

(a) Bhuvneshwar
(b) Bangalore
(c) Bhadrawati
(d) Bhopal

Q57. Study the given pattern carefully and select the number from among the given options that can replace the question mark (?).

4	7	13
5	7	13
6	9	?

(a) 24
(b) 13
(c) 9
(d) 12

Q58. Which among the following languages is one of the six official languages of the United Nations?

(a) Urdu
(b) Hindi
(c) Japanese
(d) Chinese

Q59. Select the number from among the following options that will come next in the following series.

44, 37, 29, _____.

(a) 16
(b) 55
(c) 20
(d) 11

Q60. If the arithmetic mean of 16, 18, 15, 17, p and 14 is 17, then the value of p is:

(a) 24
(b) 22
(c) 21
(d) 23

Q61. Who founded the Visva Bharati which later became a Central University?

(a) Sarojini Naidu
(b) Raja Ram Mohan Roy
(c) Rabindranath Tagore
(d) Sri Aurobindo

Q62. The roots of the equation y2 – √5y - y + √5 = 0 are:

(a) -√5, -1
(b) -√5, 1
(c) √5, -1
(d) √5, 1

Q63. Three of the following four letter-clusters are alike in a certain way and one is different.

Pick the odd one out.

(a) HIKNR
(b) FGILP
(c) JKMPT

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(d) EFGIK

Q64. Consider the given statements and decide which of the assumptions from the options is NOT implicit in the statements.

All birds are wings.

Some wings are feathers.

Some feathers are birds.

(a) Some birds are feathers.
(b) All wings are birds.
(c) Some birds are wings and feathers.
(d) Some feathers are wings.

Q65. 'Centimetre' is related to 'Metre' in the same way as 'Paisa' is related to '_____'.

(a) Rupee
(b) Coin
(c) Wealth
(d) Capital

Q66. If each entry of a piece of data is increased by 7, then the arithmetic mean:

(a) increases by 7
(b) decreases by 7
(c) remains the same
(d) increases by 49

Q67. Which of the following statements is false?

(a) All natural numbers together with zero are called integers.
(b) There is no largest natural number.
(c) There is no largest whole number.
(d) 1 is the smallest natural number.

Q68. Which of the following is a plant hormone?

(a) Estrogen
(b) Chlorophyll
(c) Thyroxin
(d) Auxin

Q69. Which of the following has terminal decimal representation?

(a) 2/7
(b) 2/9
(c) 2/3
(d) 2/5

Q70. Select the option that is related to the third term in the same way as the second term is related to the first term.

FLPX : GJST :: HMRW : ?

(a) IKUS
(b) WDHO
(c) NSTG
(d) ZKYR

Q71. One-sixth of a number exceeds its one-ninth by 100, the number is:

(a) 1800
(b) 3600
(c) 360
(d) 180

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Q72. Which of the following fundamental rights is NOT guaranteed by the Constitution of India?

(a) Right to freedom
(b) Right to profession
(c) Right to equality
(d) Right to freedom of religion

Q73. If the HCF of 85 and 153 is expressible in the form of 85x - 153, then the value of x is:

(a) 1
(b) 5
(c) 3
(d) 2

Q74. _____ of the Indian Constitution deals with the protection of interests of minorities.

(a) Article 27
(b) Article 29
(c) Article 28
(d) Article 26

Q75. A question is given followed by two arguments. Decide which of the arguments is/are strong with respect to the question.

Question:

Should electronic gadgets be allowed in an examination hall?

Arguments:

I. No, it is easy to cheat with their help in an examination.

II. Yes, electronic gadgets are costly and it is not safe to leave them outside the examination hall.

(a) Neither argument I nor II are strong.
(b) Both argument I and II are strong.
(c) Only argument I is strong.
(d) Only argument II is strong.

Q76. If A = 26 and T = 7, then AUTHENTIC = ?

(a) 266719221371824
(b) 266719221471824
(c) 266719221371825
(d) 266719221371823

Q77. Which of the following may be considered as appropriate definition of a natural resource?

(a) A natural resource is available only on land.
(b) A natural resource is a man-made commodity.
(c) A natural resource is available only in forests.
(d) A natural resource is a gift of nature that is useful for mankind.

Q78. If SA and SB are tangents to a circle from an outside point S, such that SA = 12 cm and angle ASB = 60°. What will the length of chord AB be?

(a) 6 cm
(b) 12 cm
(c) 24 cm
(d) 3 cm

Q79. Reena and Jaya can complete a piece of work in 6 days and Jaya alone can complete it in 8 days. In how many days can Reena alone complete it?

(a) 24 days
(b) 12 days
(c) 48 days

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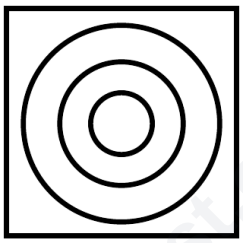
(d) 2 days

Q80. Which two rivers are linked by the Pattiseema Lift Irrigation Project?

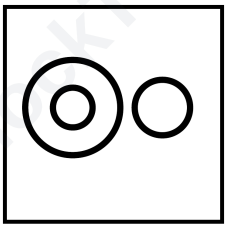
(a) Godavari and Narmada
(b) Godavari and Cauvery
(c) Godavari and Mahanadi
(d) Godavari and Krishna

Q81. Select the Venn diagram that best represents the relationship between the following classes.
Guava, Potato, Vegetables

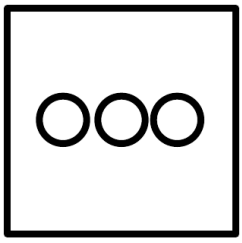
(a)



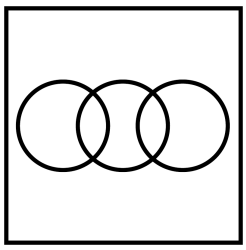
(b)



(c)



(d)



Q82. The value of 0.2323... + 0.2222... is:

(a) 0.4545...
(b) 0.455...
(c) 0.45
(d) 0.4343...

Q83. Travelling from the Arctic Circle to the Equator what sequence of biomes would one pass through?

(a) Tundra, Taiga, Temperate Forests, Tropical Rain Forests
(b) Tropical Rain Forests, Temperate Forests, Taiga, Tundra
(c) Tundra, Temperate Forests, Taiga, Tropical Rain Forests
(d) Taiga, Tundra, Temperate Forests, Tropical Rain Forests

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Q84. Clement Attlee who later became Prime Minister of Britain came to India as a member of _____.

(a) Cabinet Mission
(b) Simon Commission
(c) Wavell Plan
(d) Cripps Mission

Q85. The diameters of the bases of two cones are equal. If their slant heights are in the ratio of 3 : 4, then what will the ratio of their curved surface areas be?

(a) 9 : 16
(b) 3 : 4
(c) 4 : 3
(d) 16 : 9

Q86. Study the given table and answer the question that follows.

The number of cycles produced in a factory during five consecutive weeks is given in the table.

Week	First	Second	Third	Fourth	Fifth
Number of cycles produced	800	1360	1000	900	1400

If the factory had produced the same number of cycles in all 5 weeks as they produced in the week with the maximum production, how many additional cycles would the factory have produced?

(a) 1350
(b) 7000
(c) 5640
(d) 1540

Q87. Study the given table and answer the question that follows.

Institution	Girls	Boys	Teachers
School	3000	2500	690
College	9000	11000	1500
University	15000	16000	2000

What is the ratio of college teachers to school girls?

(a) 2 : 1
(b) 3 : 15
(c) 1 : 2
(d) 1.5 : 30

Q88. Study the given table and answer the question that follows.

The information related to the sale (in rupees) of different items of a baker's shop in one day is given in the table.

Items	Ordinary bread	Fruit bread	Cakes and pastries	Biscuits	Others
Sales (in rupees)	400	320	210	120	100
Customers	40	16	14	12	4

What would be the maximum amount of increase in sales for the baker, if all customers who bought any type of bread would ALSO have bought either Cakes and Pastries OR biscuits?

(a) 840
(b) 700
(c) 560
(d) 600

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Q89. Study the given table and answer the question that follows.

Institution	Girls	Boys	Teachers
School	3000	2500	690
College	9000	11000	1500
University	15000	16000	2000

What is the ratio of the total number of students to the total number of college and university teachers?

(a) 5 : 11
(b) 113 : 7
(c) 11 : 5
(d) 7 : 113

Q90. Select the number from the given options that can come next in the following series.

1, 12, 124, 1248, 12496, _____.

(a) 124978
(b) 124972
(c) 124962
(d) 124982

Q91. Study the given pattern carefully and select the number that can replace the question mark (?) in it.

3	?	4
7	121	8
6	9	5

(a) 9
(b) 12
(c) 114
(d) 8

Q92. Identify the day from the options that belongs to the following class.

15-08, 02-10, 26-01

(a) Monday
(b) Wednesday
(c) Sunday
(d) Tuesday

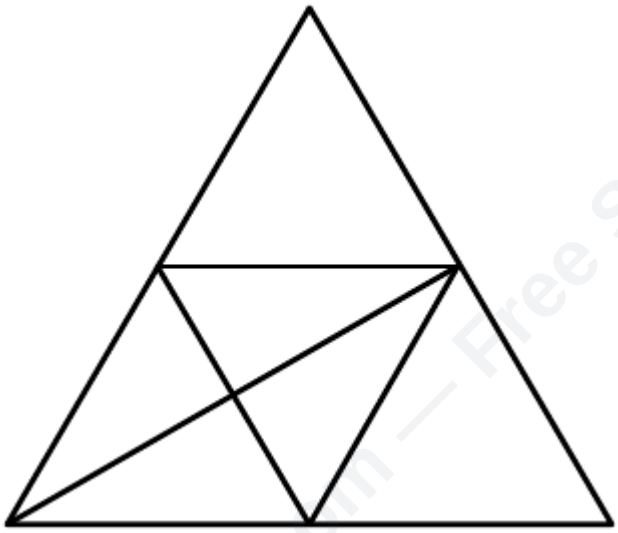
Q93. Select the number from among the given options that will come next in the following series.

17, 36, 76, 158, _____.

(a) 316
(b) 344
(c) 324
(d) 350

Q94. How many triangles does this figure have?

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(a) 11
(b) 9
(c) 13
(d) 15

Q95. Consider the given statements and decide which of the assumptions from the options is NOT implicit in the statements.

Some trucks are bikes.

Some tyres are not bikes but trucks.

(a) Some bikes are trucks.
(b) Some bikes are tyres.
(c) Some tyres are trucks.
(d) Some trucks are tyres.

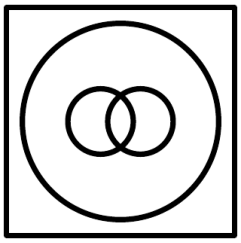
Q96. In a certain code language, HUNGER is written as UHATRE. How will SWIMMING be written as in that language?

(a) GAPTTPTL
(b) FJVZZVAT
(c) FCKSSKSM
(d) UBFCCFCW

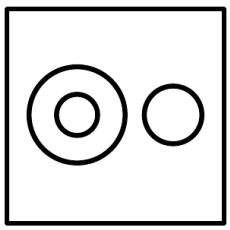
Q97. Select the Venn diagram that best represents the relationship between the following classes.

Lawyers, Human Beings, Married People

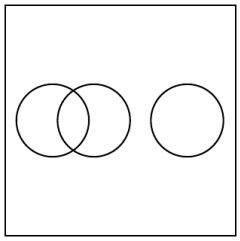
(a)



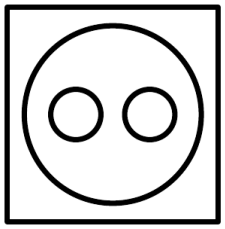
(b)



(c)



(d)

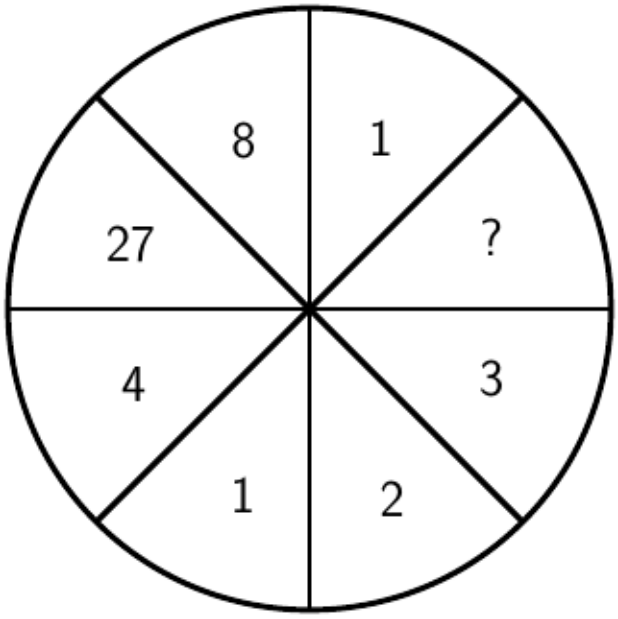


Q98. Select the option that is related to the third term in the same way as the second term is related to the first term.

Radio : Sound :: Television : ?

(a) Channels
(b) Colour
(c) Serials
(d) Images

Q99. Study the given pattern carefully and select the number from the given options that can replace the question mark (?).



(a) 64
(b) 48
(c) 22
(d) 32

Q100. Select the option that is related to the third term in the same way as the second term is related to the first term.

Navy : Ship :: Army : ?

(a) Guns
(b) Tank
(c) Soldier
(d) War

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ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) -6

Given

(√5 + √11) (√5 - √11)

Formula used

(a + b) (a - b) = a² - b²

Calculation

(√5)² - (√11)²

=>5 - 11

=>-6

Therefore (√5 + √11) (√5 - √11) is - 6

Q2. Answer: (c) Amritsar

The correct answer is Amritsar.

Key Points

• Amritsar was originally known as Ramdaspur.

• It was founded by the fourth Sikh Guru, Guru Ram Das, in 1577.

• The city is home to the Harmandir Sahib, also known as the Golden Temple, which is the holiest Gurdwara of Sikhism.

• Amritsar is a major cultural and religious center in the state of Punjab.

Additional Information

Feature	Description
Harmandir Sahib	The holiest Gurdwara of Sikhism, also known as the Golden Temple.
Jallianwala Bagh	A public garden in Amritsar, which houses a memorial of national importance established in 1951 to commemorate the massacre of peaceful celebrators by British forces on April 13, 1919.
Wagah Border	The ceremonial border line between India and Pakistan, known for its daily military parade.
Partition Museum	A museum in Amritsar that focuses on the stories and memories of the partition of India in 1947.

Q3. Answer: (d) 115.50 cm²

Given

Diameter of hemisphere = 7 cm

Formula used

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Total surface area of hemisphere = $3\pi r^2$

r is radius respectively

Calculation

Radius of hemisphere, r = Diameter/2

=> 7/2

Total surface area of hemisphere = $3 \times (22/7) \times (7/2)^2$

=> $3 \times (22/7) \times 49/4$

=> $3 \times 22 \times (7/4)$

=> $(3 \times 11 \times 7)/2$

=> 231/2

=> 115.50 cm^2

Therefore Total surface area is 115.50 cm^2

Q4. Answer: (d) Indore

The correct answer is Indore.

Jantar Mantar refers to a collection of architectural astronomical instruments built in India.

Key Points

• Jantar Mantar locations are well known in Jaipur, Delhi, Varanasi, and Ujjain.

• Each location features uniquely designed instruments allowing observations of the celestial bodies with the naked eye.

• The Jantar Mantar in Jaipur is the largest and most famous, recognized as a UNESCO World Heritage site.

Additional Information

• The term Jantar Mantar is derived from Yantra, instruments for calculation, and Mantra, formula or in this context 'calculation.

• Indore does not have a Jantar Mantar, making it the correct answer for the city that does not possess such astronomical instruments.

Q5. Answer: (a) 0

Given

$p^2 - 7p + 12$

p = 3

Calculation

$(3)^2 - 7 \times 3 + 12$

=> 9 - 21 + 12

=> - 12 + 12

=> 0

Therefore The value of p2 - 7p + 12 is 0

Q6. Answer: (a) 3 hours

Given

Sohan's speed = 3.5 km/h

Mohan's speed = 4 km/h

Distance = 1.5 km

Formula used

Time = Distance/Speed

when two objects move with s1 and s2 speed in the same direction, then final speed will be difference of their speed.i.e. (S1 - S2)

Calculation

Time = 1.5/(4 - 3.5)

=> 1.5/0.5

=> 3 hours

Therefore Sohan and Mohan will take 3 hours to be 1.5 km apart if they start in the same direction.

Q7. Answer: (c) Atomic Number

The correct answer is Atomic Number.

Key Points

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• Atomic Number is the number of protons in the nucleus of an atom.
• The Modern Periodic Table is arranged in order of increasing atomic number.
• This arrangement resolves anomalies present in Mendeleev's periodic table, which was based on atomic mass.
• Elements with similar properties recur at regular intervals or periods when arranged by increasing atomic number.

Additional Information

Option	Details
Option 1: Valency	Valency is the combining capacity of an element, but it does not determine the arrangement in the periodic table.
Option 2: Equivalent Weight	Equivalent weight is the mass of an element that combines with or displaces 1.008 parts by mass of hydrogen. It is not used for the modern arrangement.
Option 3: Atomic Number	Atomic number is the basis for the modern periodic table. It represents the number of protons in an atom's nucleus.
Option 4: Atomic Mass	Atomic mass was used in Mendeleev's periodic table but led to some inconsistencies which were resolved by using atomic number.

Q8. Answer: (a) 14 p^3q^2

Shortcut Trick

Find the HCF of numerical coefficients: HCF(28, 70) = 14.

For variables, take the lowest power of each common base.

Lowest power of p is p^3 and lowest power of q is q^2.

Combine them: 14 × p^3 × q^2.

Therefore The correct answer is 14 p^3q^2.

Alternate Method

Given: First term = 28 p^5q^2, Second term = 70 p^3q^4.

Formula: HCF = Product of the common prime factors with the smallest power.

=> Prime factorization of 28 = 2^2 × 7

=> Prime factorization of 70 = 2 × 5 × 7

=> HCF of (28, 70) = 2^1 × 7^1 = 14

=> Common variables are p and q.

=> Smallest power of p in both terms = p^3

=> Smallest power of q in both terms = q^2

=> Total HCF = 14 × p^3 × q^2 = 14 p^3q^2

Therefore The correct answer is 14 p^3q^2.

Additional Information

LCM of Monomials

To find the LCM, take the highest power of each variable and the LCM of the coefficients.

HCF of Fractions

HCF = HCF of Numerators ÷ LCM of Denominators.

Product Rule

For any two numbers, Product of numbers = HCF × LCM.

Q9. Answer: (c) Gulf of Kutch

The correct answer is Gulf of Kutch.

Key Points

• The Gulf of Kutch was declared as a Marine National Park by the Government of India in 1982 for marine conservation.
• It is located on the southern coast of the Kutch district in the state of Gujarat.
• The park is known for its rich marine biodiversity, including coral reefs, mangroves, and various species of fish and marine animals.
• It is the first Marine National Park in India, highlighting its importance in marine conservation efforts.

Additional Information

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Option	Details
Gulf of Mannar	Located in Tamil Nadu, it is known for its coral reefs and marine biodiversity but was declared a Biosphere Reserve in 1989.
Mahim Bay	Located in Mumbai, Maharashtra, it is an important coastal area but not a Marine National Park.
Gulf of Khambhat	Located in Gujarat, it is known for its rich estuarine ecosystem but not declared a Marine National Park.

Q10. Answer: (c) 64 kg

Given

64, 63, 62, 65, 67, 66 and 61

Concept

To find the median, arrange the data in ascending order

if n is odd number, n is number of observation

Median = [(n + 1)/2]th term

Calculation

Arrange the data in ascending order = 61, 62, 63, 64, 65, 66 and 67

Median = [(7 + 1)/2]th term

=> 4th term

=> 64

Therefore The median weight is 64 Kg.

Q11. Answer: (d) 120

The logic followed here is:

The double difference between the numbers is the multiples of 6.

Hence, the correct answer is 120.

Q12. Answer: (c) Dr B R Ambedkar

The correct answer is Dr B R Ambedkar.

Key Points

• Dr B R Ambedkar was a prominent leader and social reformer but never presided over the Indian National Congress.

• Sarojini Naidu was the first Indian woman to become the President of the Indian National Congress.

• Surendranath Banerjee was one of the early leaders of the Indian National Congress and served as its President.

• Dada Bhai Naoroji was one of the founding members of the Indian National Congress and served as its President multiple times.

Additional Information

Option	Details
Option 1: Sarojini Naidu	She was the President of the Indian National Congress in 1925.
Option 2: Surendranath Banerjee	He presided over the Indian National Congress sessions in 1895 and 1902.
Option 3: Dr B R Ambedkar	He was never a President of the Indian National Congress.
Option 4: Dada Bhai Naoroji	He served as the President of the Indian National Congress three times (1886, 1893, and 1906).

Q13. Answer: (c) irrational number

Given

$(\sqrt{5} + \sqrt{7})^2$

Formula used

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

Calculation

$(\sqrt{5})^2 + (\sqrt{7})^2 + 2 \times \sqrt{5} \times \sqrt{7}$

$=> 5 + 7 + 2\sqrt{35}$

=> 12 + 2√35

=> 2(6 + √35)

√35 is an irrational number.

so, (√5 + √7)² is a irrational number.

Therefore (√5 + √7)² is a irrational number.

Q14. Answer: (b) Year

The logic followed here is:

In order to define the time period:

=> Days are combined to form Week.

=>Week are combined to form a Month.

Similarly,

=> Months are combined to form Year.

Hence, Year is related to the Month in the same way as Week is related to Day.

Hence, the correct answer is " Year".

Q15. Answer: (b) Some colour-blinds are animals.

The least possible Venn Diagram is as follows:

i) All colour-blinds are colourful. → False (As some color blinds which are animals cannot be colorful).

ii) Some colour-blinds are animals. → True (As some animals are colour-blind then some colour-blind are animals will also be a definite statement).

iii) All colour-blinds are animals. → False (as All colourfuls are colour-blind but not animals.)

iv) Some animals are colourful. → False (as All colourfuls are colour-blind but not animals.).

Hence, the correct answer is "Some colour-blinds are animals".

Q16. Answer: (b) Only assumption I is implicit.

The statement gives an advertisement promoting pure and natural honey of company Z.

• Since it is promoting pure honey, it implies that artificial honey can be prepared. So, assumption I is implicit.

• Nothing about the pricing of pure or artificial honey has been stated, so assumption II is not implicit.

Hence the correct answer is option 2.

Q17. Answer: (a) Pinterest

The correct answer is Pinterest.

Key Points

• Pinterest is primarily a visual discovery engine for finding ideas like recipes, home and style inspiration, and more.

• Unlike microblogging sites, Pinterest focuses on sharing images and visual content rather than text updates.

• Users create and share collections of visual bookmarks (called "pins") organized into themed boards.

• Microblogging sites like Twitter and Tumblr focus on short text posts and quick updates.

Additional Information

Option	Details
Option 2 (Tumblr)	Tumblr is a microblogging and social networking website where users post multimedia and other content to short-form blogs.
Option 3 (Twitter)	Twitter is a microblogging and social networking service where users post and interact with messages known as "tweets."
Option 4 (Plurk)	Plurk is a free social networking and microblogging service that allows users to send updates through short messages or links.

Q18. Answer: (d) Sikhs

The correct answer is Sikhs.

Key Points

• The Adi Granth, also known as the Guru Granth Sahib, is the central religious scripture of Sikhism.

• It was compiled by Guru Arjan, the fifth Sikh Guru, in 1604.

• The Adi Granth is written in Gurmukhi script and includes hymns from Sikh Gurus and various other saints.

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• It serves as a guide for Sikhs in their spiritual and daily lives.

Additional Information

Option	Details
Option 1: Buddhists	Buddhists regard the Tripitaka or Pali Canon as their holy texts.
Option 2: Jains	Jains follow the Agamas and Siddhanta texts as their holy scriptures.
Option 3: Jews	Jews consider the Torah, which is part of the Tanakh, as their sacred scripture.

Q19. Answer: (c) Jaipur

The correct answer is Jaipur.

Key Points

• Jaipur is known for its grand celebration of the Elephant Festival.
• The festival is celebrated annually on the day of Holi.
• During the festival, elephants are decorated with vibrant colors, jewelry, and saddle cloth.
• Events like elephant parades, races, and tug-of-war are organized.
• The festival attracts a large number of tourists from all over the world.

Additional Information

Aspect	Description
Location	The festival is held in Jaipur, the capital city of Rajasthan, India.
Significance	The festival highlights the cultural heritage and importance of elephants in Indian history.
Activities	Includes elephant polo, elephant dance, and live music performances.
Tourism	The festival boosts tourism and showcases Rajasthan's rich traditions.

Q20. Answer: (b) Pampore

The correct answer is Pampore.

Key Points

• Pampore is a town in the Pulwama district of Jammu and Kashmir, India.
• The town is famously known as the "Saffron town" due to its extensive saffron cultivation.
• Saffron from Pampore is considered one of the best in the world due to its high quality and distinct flavor.
• The cultivation of saffron in Pampore dates back to ancient times and is an integral part of the region's heritage.

Additional Information

Aspect	Description
Saffron Cultivation	The process of growing saffron involves planting corms of the saffron crocus in well-drained soil, usually in the summer, and harvesting the delicate stigmas in autumn.
Economic Importance	Saffron is a highly valuable spice, often referred to as "red gold." It plays a significant role in the local economy of Pampore.
Historical Significance	Pampore's association with saffron cultivation dates back to ancient times. Historical records suggest it was introduced by Persian settlers.
Cultural Impact	Saffron is deeply embedded in the cultural fabric of Kashmir. It is used in traditional cuisine, ceremonies, and as a medicinal herb.

Q21. Answer: (d) 200

Given

Marks got = 60

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Failed by 60 marks
Minimum % to pass = 60
Calculation
let the maximum marks are x
According to question
60% of x = 60 + 60
=> 60x/100 = 120
=> x = (120 × 100)/60
=> x = 200
Therefore Maximum marks is 200.

Q22. Answer: (a) Spam

The correct answer is Spam.
Key Points
• Spam refers to unsolicited commercial emails that flood the Internet.
• These emails are often sent in bulk to a large number of recipients.
• Spam emails can contain advertisements, promotions, or fraudulent content.
• They can be annoying and may also pose security risks by containing malicious links or attachments.
Additional Information

Option	Details
Option 1: Spam	Unsolicited commercial emails sent in bulk to a large number of recipients.
Option 2: Malware	Malicious software designed to harm, exploit, or otherwise compromise a computer system.
Option 3: Trojan Horse	Malicious software that misleads users of its true intent, often appearing as legitimate software.
Option 4: Spyware	Software that secretly monitors and collects information about users' activities without their knowledge.

Q23. Answer: (a) Chlorine

The correct answer is Chlorine.
Key Points
• Chlorine is a greenish-yellow gas at room temperature.
• It has a characteristic pungent smell that is easily recognizable.
• Chlorine is commonly used in water purification and disinfectants.
• It is a highly reactive element and can form compounds with most other elements.
Additional Information

Option	Details
Option 1: Chlorine	Greenish-yellow gas, pungent smell, used in disinfectants.
Option 2: Carbon monoxide	Colorless, odorless gas, toxic and produced by burning fossil fuels.
Option 3: Iodine	Solid at room temperature, sublimates to a violet gas, used in antiseptics.
Option 4: Hydrogen sulphide	Colorless gas, smells like rotten eggs, highly toxic.

Q24. Answer: (a) 132/3 days

Given
Number of days taken by A to complete a work = 12
Number of days taken by B to complete a work =16
Concept
find the efficiency of the person

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work = efficiency × time

Calculation

Total work(L.C.M of 12 and 16) = 48 units

Work done by A in one day = 48/12

=> 4 units

Work done by B in one day = 48/16

=> 3 units

Work done by A and B in two days(when work alternatively) = 4 units + 3 units

=> 7 units

work done by A and B in 12 days = 7 × 6

=> 42 units

work done on 13th day = 42 + 4

=> 46 units

Remaining work = (48 - 46)units

2 units

work done by B of 2 units = 2/3 days

Total time taken by A and B when work alternatively is 13 2over3 days.

Therefore In 13 2over3 days the task be finished if they work for one day each alternatively, and A begins the work.

Q25. Answer: (c) Child Vaccination

The correct answer is Child Vaccination.

Key Points

• Mission Indradhanush was launched by the Government of India in December 2014.

• The mission aims to cover all those children who are either unvaccinated or are partially vaccinated against seven vaccine-preventable diseases.

• The diseases targeted are Diphtheria, Pertussis, Tetanus, Polio, Tuberculosis, Measles, and Hepatitis B.

• The mission also aims to improve the coverage of vaccines in areas with low immunization rates.

Additional Information

Option	Details
Option 1	Details about E-Banking: E-Banking refers to the electronic banking services provided by banks, allowing customers to conduct financial transactions over the internet.
Option 2	Details about Child Education: Child Education schemes focus on ensuring access to quality education for children, often targeting underprivileged and marginalized communities.
Option 3	Details about Child Vaccination: Child Vaccination programs aim to immunize children against various preventable diseases, ensuring their health and well-being.
Option 4	Details about E-Trading: E-Trading involves buying and selling financial instruments like stocks, bonds, and commodities through electronic platforms.

Q26. Answer: (a) Cinema

The correct answer is Cinema.

Key Points

• The Dadasaheb Phalke Award is the highest recognition in the field of Indian cinema.

• It was instituted in 1969 by the Government of India.

• The award is named after Dadasaheb Phalke, who is considered the father of Indian cinema.

• Recipients of the award are honored for their outstanding contribution to the growth and development of Indian cinema.

Additional Information

The Dadasaheb Phalke Award includes a Swarna Kamal (Golden Lotus) medal, a shawl, and a cash prize.

The award is presented annually at the National Film Awards ceremony by the Directorate of Film Festivals, an organization set

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up by the Ministry of Information and Broadcasting.

Dadasaheb Phalke, whose full name was Dhundiraj Govind Phalke, made India's first full-length feature film, Raja Harishchandra, in 1913.

The award has been given to many legendary figures in Indian cinema, including Raj Kapoor, Lata Mangeshkar, and Amitabh Bachchan.

Q27. Answer: (d) 25^(th) January

The correct answer is 25th January.

Key Points

• National Voters Day is celebrated on 25th January every year in India.

• This day marks the foundation of the Election Commission of India in 1950.

• The celebration aims to encourage more young voters to participate in the political process.

• Various awareness programs and activities are organized to educate citizens about the importance of voting.

Additional Information

Key Term	Description
Election Commission of India	An autonomous constitutional authority responsible for administering election processes in India at the national and state levels.
Voter Awareness	Efforts made to educate citizens about their rights and responsibilities as voters, including the importance of voting and how to register to vote.
Electoral Roll	A list of all eligible voters who are registered to vote in a particular constituency.
Democracy	A system of government where the citizens exercise power by voting.
Voter ID Card	An identification card issued by the Election Commission of India to eligible voters, which allows them to vote in elections.

Q28. Answer: (d) 5%

Given

Selling Price = Rs.31

Loss = 7%

Formula used

Profit = selling Price - cost Price

or

cost price = selling price + loss

Calculation

let the cost price is Rs. x

x = 31 + 7% of x

=> x - 7% of x = 31

=> 93x/100 = 31

=> x = (31 × 100)/93

=> 100/3

Profit = 35 - (100/3)

=> (105 - 100)/3

=> 5/3

Profit % = [(5/3)/(100/3)] × 100

=> [(5/3) × (3/100)] × 100

=> 5%

Therefore The profit percentage will be 5%, when he sells the same article at Rs. 35

Q29. Answer: (b) √9

The logic followed here is:

The value of √5, √7 and √3 is an irrational number whereas, the value of √9 is a rational number.

√5 = 2.236

√7 = 2.646

√3 = 1.732

√9 = 3

Hence, √9 is the odd one among the given alternatives.

Q30. Answer: (c) Chittaranjan Das

The correct answer is Chittaranjan Das.

Key Points

• Chittaranjan Das was a prominent Indian freedom fighter and political leader.

• He is popularly known as Deshbandhu, which means "Friend of the Nation".

• He played a significant role in the Non-Cooperation Movement against British rule.

• Das was also a leading figure in the Indian National Congress and was elected its president in 1922.

Additional Information

Option	Details
Option 1	Aurobindo Ghosh was an Indian philosopher, yogi, guru, poet, and nationalist.
Option 2	Gopal Krishna Gokhale was a senior leader of the Indian National Congress and a social reformer.
Option 3	Chittaranjan Das was known as Deshbandhu and was a prominent freedom fighter and political leader.
Option 4	Bal Gangadhar Tilak was an Indian nationalist, teacher, and an independence activist.

Q31. Answer: (d) India Gate

The correct answer is India Gate.

Key Points

• India Gate was built as a war memorial to soldiers of the undivided Indian Army who died during the First World War.

• It was designed by Sir Edwin Lutyens, a prominent British architect.

• The structure was completed in 1931 and stands at the eastern end of the Rajpath in New Delhi.

• The monument is inscribed with the names of over 13,000 servicemen who died in the First World War and the Third Anglo-Afghan War.

Additional Information

Option	Details
Option 1: Buland Darwaza	It is a grand gateway built by Emperor Akbar in 1601 to commemorate his victory over Gujarat.
Option 2: Lahori Gate in the Red Fort	This is the main gate of the Red Fort in Delhi, constructed by Mughal Emperor Shah Jahan in 1638.
Option 3: Gateway of India	Located in Mumbai, this structure was built to commemorate the visit of King George V and Queen Mary to India in 1911.

Q32. Answer: (d) 910

The logic followed here is:

All the numbers are written consecutively from bottom to top.

The numbers are written as follows:

12, 34, 56, 78, 910, and 1112.

Hence, the question mark is replaced by 910.

Alternate MethodThe logic followed here is:

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Step to be followed:

• 2 is added to the first digit of the number to obtain 1 digit of the next number.

• 2 is added to the second digit of the number to obtain the second digit of the next number.

For 12 and 34:

• 1 + 2 = 3

• 2 + 2 = 4

• = 34 which is next number

For 34 and 56:

• 3 + 2 = 5

• 4 + 2 = 6

• = 56 which is the next number

For 78 and missing number:

• 7 + 2 = 9

• 8 + 2 = 10

• = 910

• Thus missing number is 910

Let's check if this logic followed in all:

For 910 and 1112:

• 9 + 2 = 11

• 10 + 2 = 12

• = 1112 which is our top number

Hence, the correct answer is "910".

Q33. Answer: (a) Public school education for all

The correct answer is Public school education for all.

Key Points

• Digital India is a flagship program launched by the Government of India to transform the country into a digitally empowered society and knowledge economy.

• The primary focus areas of the Digital India programme include universal access to mobile services, e-governance, and broadband highways.

• Public school education for all is not specifically mentioned as a growth area under the Digital India programme.

• The initiative aims to ensure that government services are made available to citizens electronically by improving online infrastructure and increasing internet connectivity.

Additional Information

Component	Description
Broadband Highways	Provide high-speed internet access to all citizens, especially in rural areas.
Universal Access to Mobile Connectivity	Ensure mobile connectivity in all uncovered areas in the country.
Public Internet Access Programme	Establish Common Service Centres in rural and remote areas to provide digital services.
E-Governance	Transform and simplify the delivery of government services through digital means.
Information for All	Facilitate open access to government data and information for citizens.

Q34. Answer: (a) P V Sindhu

The correct answer is P V Sindhu.

Key Points

• P V Sindhu is a renowned Indian badminton player.

• She was conferred the Padma Bhushan in 2020, which is India's third-highest civilian award.

• Sindhu has also been awarded the Padma Shri in 2015 and the Rajiv Gandhi Khel Ratna in 2016.

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• She became the first Indian woman to win a silver medal in badminton at the 2016 Rio Olympics.

Additional Information

The Padma Bhushan is one of the highest civilian awards in India, given for distinguished service of a high order in any field.

Award	Description
Padma Vibhushan	Second-highest civilian award for exceptional and distinguished service.
Padma Bhushan	Third-highest civilian award for distinguished service of a high order.
Padma Shri	Fourth-highest civilian award for distinguished service in any field.

Q35. Answer: (c) Exosphere

The correct answer is Exosphere.

Key Points

• The Exosphere is the outermost layer of Earth's atmosphere.

• It has the lowest density of all the atmospheric layers.

• Particles in the exosphere are so sparse that they can travel hundreds of kilometers without colliding with one another.

• This layer gradually transitions into outer space, making it extremely thin.

Additional Information

Option	Details
Mesosphere	The mesosphere is the third layer of the atmosphere and is known for being where most meteorites burn up upon entry.
Stratosphere	The stratosphere is the second layer of the atmosphere, containing the ozone layer which absorbs and scatters ultraviolet solar radiation.
Ionosphere	The ionosphere is a part of the thermosphere and is ionized by solar radiation. It plays a crucial role in radio communication.

Q36. Answer: (b) 705600

Given:

The population of a town increases by 5% annually

The present population = 640000

Calculation:

According to the question:

The population of town in first year = (640000 × 5/100)

=> 32000

After first year, the population of town = (640000 + 32000)

=> 672000

Now,

The population of town in second year = (672000 × 5/100)

=> 33600

After second year, the population of town = (672000 + 33600)

=> 705600

Therefore The population be in 2 years' time is 705600.

Q37. Answer: (a) 25

Given:

The mean of 20 observations = 22.5

One observation was wrongly noted as -25 instead of 25

Formula used:

Mean = sum of observations/Number of observations

Calculation:

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The mean of 20 observations = (20 × 22.5)

=> 450

Now,

The correct sum = 450 – (-25) + 25

=> (475 + 25) = 500

The correct mean = (500/20)

=> 25

Therefore The correct mean is 25.

Q38. Answer: (a) USSR

The correct answer is USSR.

Key Points

• Five-Year Plans were first implemented in the USSR under Joseph Stalin in 1928.

• India adopted the concept of Five-Year Plans from the USSR to systematically plan its economic development.

• India's first Five-Year Plan was launched in 1951, focusing on agriculture and irrigation.

• The Planning Commission, established in 1950, was responsible for formulating and overseeing the Five-Year Plans in India.

• The Five-Year Plans aimed to achieve balanced economic growth and social justice in India.

Additional Information

Five-Year Plans are centralized and integrated national economic programs. They were first implemented in the USSR and later adopted by several countries, including India, to plan and manage their economic development effectively. The main objectives of these plans are to increase the overall economic productivity, reduce poverty, and promote social equity. India's Planning Commission, which was later replaced by the NITI Aayog in 2015, was responsible for creating these plans.

Q39. Answer: (d) Nagpur

The correct answer is Nagpur.

Key Points

• The Central AGMARK Laboratory is located in Nagpur, India.

• It is responsible for quality control and certification of agricultural products under the AGMARK standards.

• AGMARK is a certification mark employed on agricultural products in India, assuring that they conform to a set of standards approved by the Directorate of Marketing and Inspection (DMI).

• The laboratory plays a crucial role in ensuring the quality and safety of agricultural products in the market.

Additional Information

AGMARK is a certification mark used on agricultural products in India, ensuring their quality and standardization. The term AGMARK is derived from 'Ag' for agriculture and 'mark' for certification.

The AGMARK standards cover a wide range of products including cereals, pulses, vegetable oils, fruits, and vegetables. These standards are framed and regulated by the Directorate of Marketing and Inspection (DMI), an attached office of the Ministry of Agriculture and Farmers Welfare.

The Central AGMARK Laboratory in Nagpur performs the analysis and testing of agricultural products to ensure they meet the required standards. This helps in maintaining the quality and reliability of agricultural commodities in the Indian market.

The AGMARK certification is crucial for exporting agricultural products, as it serves as a mark of quality assurance recognized internationally.

Q40. Answer: (a) Rs. 1200

Given:

Spent by Rani = 6.25%

Expenditure amount of Rani = Rs. 75

Calculation:

According to the question:

Let the Total amount be x

=> 6.25% of x = 75

=> 6.25/100 × x = 75

=> 2.5/40 × x = 75

=> 2.5x/40 = 75

=> x/40 = 30

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=> x = Rs. (40 × 30)

=> x = Rs. 1200

Therefore The required amount saved by Rani is Rs. 1200.

Q41. Answer: (b) Tim Berners-Lee

The correct answer is Tim Berners-Lee.

Key Points

• Tim Berners-Lee invented HTML in 1990.

• HTML stands for HyperText Markup Language.

• It is the standard markup language for creating web pages.

• Tim Berners-Lee also developed the first web browser and web server.

Additional Information

Option	Details
Option 1	Kane Kramer: Known for inventing the digital audio player.
Option 2	Tim Berners-Lee: Invented HTML and is considered the father of the World Wide Web.
Option 3	Niklaus Wirth: Known for creating the Pascal programming language.
Option 4	David Noble: Known for his work in the field of robotics and automation.

Q42. Answer: (b) Plants

The correct answer is Plants.

Key Points

• Biodegradable materials are those that can be broken down by natural processes, such as the action of microorganisms.

• Plants are organic materials that decompose naturally, returning nutrients to the soil.

• Biodegradation helps in reducing waste and environmental pollution.

• Non-biodegradable materials, like glass and polythene, persist in the environment for a long time, causing harm.

Additional Information

Option	Details
Glass	Non-biodegradable; takes thousands of years to decompose.
Polythene	Non-biodegradable; contributes to plastic pollution.
Aluminium Cans	Non-biodegradable; recyclable but takes a long time to break down naturally.

Q43. Answer: (b) 20 cm²

Given:

If a map of a city was drawn on a scale of 0.05 centimetre to kilometre

Calculation:

According to the question:

0.05 cm = 1 km

=> 1 km = 5/100 cm

Then,

=> 1 km² = 25/10000 cm²

Now,

8000 km² = (25/10000 × 8000) cm²

=> (25/10 × 8) cm²

=> 200/10 cm²

=> 20 cm²

Therefore The required area is 20 cm².

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Q44. Answer: (b) Cancer

The correct answer is Cancer.

Key Points

• Cyclone-30 is a particle accelerator developed by the Department of Atomic Energy (DAE).

• It is primarily used for the production of radioisotopes for medical applications.

• These radioisotopes are used in the diagnosis and treatment of cancer.

• It enables the production of isotopes like Fluorine-18, which is critical for PET scans in oncology.

Additional Information

Option	Details
Blood pressure	Blood pressure disorders are usually treated with medications and lifestyle changes, not particle accelerators.
Cancer	Cyclone-30 helps produce radioisotopes used in the diagnosis and treatment of cancer.
Diabetes	Diabetes is managed through insulin, medications, and diet, not through particle accelerators.
Heart disease	Heart disease treatments include medications, lifestyle changes, and surgical interventions, not particle accelerators.

Q45. Answer: (a) 75

Given:

The third proportion to 12 and 30

Formula used:

$b^2 = ac$

Calculation:

According to the question:

=> a/b = b/c

=> 12/30 = 30/c

=> 12c = (30 × 30)

=> 12c = 900

=> c = (900/12)

=> c = 75

Therefore The third proportion is 75.

Q46. Answer: (c) Canada

The correct answer is Canada.

Key Points

• The United Nations Security Council (UNSC) has five permanent members.

• The Permanent Members are: France, China, Russia, the United Kingdom, and the United States.

• Canada is not a Permanent Member of the UNSC.

• The Permanent Members have veto power over substantive resolutions.

Additional Information

The United Nations Security Council (UNSC) is one of the six principal organs of the United Nations (UN), charged with ensuring international peace and security, recommending the admission of new UN members to the General Assembly, and approving any changes to the UN Charter.

The UNSC is composed of 15 members: 5 permanent members and 10 non-permanent members elected for two-year terms by the General Assembly.

The Permanent Members were granted their status in recognition of their pivotal roles in the establishment of the UN after World War II.

The UNSC is the only UN body with the authority to issue binding resolutions to member states.

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Q47. Answer: (d) √17

Concept used:

Irrational number - An irrational number is a type of real number which cannot be represented as a simple fraction.

Calculation:

According to the given option:

We clearly see that √17 comes between 3 and 5

Therefore The required number is √17.

Q48. Answer: (b) 5/13

Shortcut Trick

The given ratio sin θ : cos θ = 5 : 12 implies tan θ = 5/12.

Using the standard Pythagorean triplet (5, 12, 13), where Perpendicular = 5 and Base = 12.

The Hypotenuse must be 13.

Since sin θ = Perpendicular / Hypotenuse, the value is 5/13.

Therefore The correct answer is 5/13.

Alternate Method

Given: Ratio of sin θ to cos θ is 5 : 12.

Formula: tan θ = sin θ / cos θ and sin θ = P / H.

=> sin θ / cos θ = 5 / 12

=> tan θ = 5 / 12

=> Let Perpendicular (P) = 5k and Base (B) = 12k

=> Hypotenuse (H) = $\sqrt{(P^2 + B^2)}$

=> H = $\sqrt{((5k)^2 + (12k)^2)} = \sqrt{(25k^2 + 144k^2)}$

=> H = $\sqrt{(169k^2)} = 13k$

=> sin θ = P / H = 5k / 13k = 5/13

This corresponds to Option 2 as provided in the question.

Therefore The correct answer is 5/13.

Additional Information

Pythagorean Triplets

Common sets of integers (a, b, c) that satisfy $a^2 + b^2 = c^2$ include (3, 4, 5), (5, 12, 13), (8, 15, 17), and (7, 24, 25).

Trigonometric Ratios

For an acute angle: sin θ = Opp/Hyp, cos θ = Adj/Hyp, and tan θ = Opp/Adj.

Fundamental Identity

The primary trigonometric identity is $\sin^2\theta + \cos^2\theta = 1$, which holds for any angle θ.

Q49. Answer: (c) Meghalaya

The correct answer is Meghalaya.

Key Points

• Nagaland, Sikkim, and Mizoram each have only one seat in the Lok Sabha. - Meghalaya has two seats in the Lok Sabha: Shillong and Tura. - The Lok Sabha is the lower house of India's bicameral Parliament. - Meghalaya is represented by two Members of Parliament due to its population and geographical considerations.

Additional Information

State	Number of Lok Sabha Seats
Nagaland	1
Sikkim	1
Meghalaya	2
Mizoram	1

• The Lok Sabha is composed of representatives of the people, elected by direct election on the basis of adult suffrage. - The total number of seats in the Lok Sabha is 545, out of which 543 members are elected and 2 members are nominated by the President. - The Lok Sabha has a term of five years, after which it is automatically dissolved unless extended during a national emergency. - The Speaker of the Lok Sabha is responsible for the conduct of business in the house and maintaining order.

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Q50. Answer: (b) Provide Government jobs to socially backward women

The correct answer is Provide Government jobs to socially backward women.

Key Points

• The Swadhar Greh Scheme aims to provide shelter, food, and clothing for women in distress.

• It offers legal aid to women to help them resolve their issues.

• The scheme provides support to enable women to start afresh.

• It does not specifically aim to provide government jobs to socially backward women.

Additional Information

Component	Description
Target Group	Women in distress, including widows, trafficked women, victims of domestic violence, and mentally challenged women.
Services Offered	Provision of shelter, food, clothing, and healthcare.
Capacity Building	Vocational and skill development training to help women become self-reliant.
Counseling	Psychological counseling and legal aid to help women address their issues.
Rehabilitation	Efforts to rehabilitate women back into society through various support mechanisms.

Q51. Answer: (c) 2

The logic followed here is:

Given number set 2, 28, 48, 58, 128:

=> 2 → Prime Number

=> 28 → Composite Number

=> 48 → Composite Number

=> 58 → Composite Number

=> 128 → Composite Number

Thus, except for option 3, all the given numbers are composite numbers whereas option 3 which is 2 is a Prime Number.

Hence, the correct answer is "Option 3".

Q52. Answer: (a) Hip bone

The correct answer is Hip bone.

Key Points

• The hip bone is formed by the fusion of three bones: the ilium, ischium, and pubis.

• These three bones fuse during late adolescence to form a single bone known as the os coxae or pelvic bone.

• The hip bone is a major component of the pelvic girdle and plays a crucial role in supporting the body’s weight during standing and walking.

• It also provides attachment points for muscles and ligaments involved in movement and stability.

Additional Information

Option	Details
Option 1: Hip bone	Formed by the fusion of the ilium, ischium, and pubis, essential for weight-bearing and movement.
Option 2: Cranium	The cranium is the part of the skull that encloses the brain but is not formed by the ilium, ischium, and pubis.
Option 3: Feet	The feet are composed of bones such as the tarsals, metatarsals, and phalanges, not the ilium, ischium, and pubis.
Option 4: Jaw	The jaw consists of the mandible and maxilla, and is not formed by the fusion of the ilium, ischium, and pubis.

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Q53. Answer: (a) Mumbai

The correct answer is Mumbai.

Key Points

• Location: Indira Gandhi Institute of Development Research (IGIDR) is located in Mumbai, Maharashtra.

• Establishment: It was established by the Reserve Bank of India in 1987.

• Objective: The institute's primary objective is to carry out research on developmental issues from a multi-disciplinary point of view.

• Academic Programs: IGIDR offers M.Sc. and Ph.D. programs in Development Studies.

• Campus: The campus is spread over 14 acres and provides various facilities including a library, computer center, and residential quarters.

Additional Information

Aspect	Details
Foundation Year	1987
Founder	Reserve Bank of India
Programs Offered	M.Sc. and Ph.D. in Development Studies
Research Focus	Developmental issues from a multi-disciplinary perspective
Location	Mumbai, Maharashtra

Q54. Answer: (a) 20%

Given:

Sita earns 25% more than Rahim

Calculation:

Let the earning of Rahim be 100%

Then,

Sita earns 25% more than Rahim = (100 + 25)%

=> 125%

Now,

Required percentage = Earning difference/Sita's earning × 100

=> (125 – 100)/125 × 100

=> 25/125 × 100

=> 20%

Therefore The required percentage is 20%.

Q55. Answer: (d) 22^(nd) April

The correct answer is 22nd April.

Key Points

• Earth Day is observed on 22nd April each year.

• This day is celebrated worldwide to demonstrate support for environmental protection.

• The first Earth Day was celebrated on April 22, 1970.

• Earth Day events are coordinated globally by the Earth Day Network.

• Over 193 countries participate in Earth Day activities each year.

Additional Information

Year	Milestone
1970	The first Earth Day was celebrated, leading to the creation of the U.S. Environmental Protection Agency.
1990	Earth Day went global, mobilizing 200 million people in 141 countries.
2000	Earth Day focused on global warming and clean energy, involving hundreds of millions of people.

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2010	Earth Day's 40th anniversary, with a focus on climate action and environmental education.
2020	The 50th anniversary of Earth Day, with digital events due to the COVID-19 pandemic.

Q56. Answer: (b) Bangalore

The correct answer is Bangalore.

Key Points

• Dr. K. Kasturirangan, former Chairman of ISRO, inaugurated the Human Space Flight Centre in Bangalore in 2019.

• The Human Space Flight Centre is responsible for the implementation of the Gaganyaan mission.

• The centre is located within the ISRO headquarters in Bangalore.

• The inauguration marks a significant step towards India's first manned space mission.

• The Gaganyaan mission aims to send Indian astronauts to space by 2022.

Additional Information

Aspect	Description
ISRO	Indian Space Research Organisation, the space agency of the Government of India, headquartered in Bangalore.
Gaganyaan Mission	India's first manned space mission, aiming to send Indian astronauts to space by 2022.
Human Space Flight Centre	The centre responsible for the implementation of the Gaganyaan mission, located in Bangalore.
Dr. K. Kasturirangan	Former Chairman of ISRO, known for his contributions to the Indian space program.

Q57. Answer: (c) 9

The logic followed here is:

Row 1:

• $4^2 = 16 \rightarrow 1 + 6 = 7$ = Middle number

• $7^2 = 49 \rightarrow 4 + 9 = 13$ = Last number

Row 2:

• $5^2 = 25 \rightarrow 2 + 5 = 7$ = Middle number

• $72 = 49 \rightarrow 4 + 9 = 13$ = Last number

Similarly,

• $6^2 = 36 \rightarrow 3 + 6 = 9$ = Middle number

• $9^2 = 81 \rightarrow 8 + 1 = 9$ = Last number

Hence, the correct answer is "Option 3".

Alternate Method

The logic followed here is:

Row 1: 7 + 13 = 20; 20 ÷ 4 = 5

Row 2: 7 + 13 = 20; 20 ÷ 5 = 4

Similarly, the resultant of row 3 should be 3

Row 3: 9 + ? = 18; 18 ÷ 6 = 3

Here the value of ? will be

18 - 9 = 9

Hence, 9 is the correct answer.

Q58. Answer: (d) Chinese

The correct answer is Chinese.

Key Points

• Chinese is one of the six official languages of the United Nations.

• The other official languages are Arabic, English, French, Russian, and Spanish.

• The use of these languages ensures effective communication within the UN.
• Official documents are translated into these languages for accessibility.
• Meetings are also interpreted in these six languages.

Additional Information

United Nations:

Aspect	Description
Established	Founded on 24 October 1945.
Purpose	Aims to maintain international peace and security.
Headquarters	Located in New York City, USA.
Membership	Comprises 193 member states.
Key Organs	Includes General Assembly, Security Council, International Court of Justice, etc.

Q59. Answer: (c) 20

The logic followed here is:

Here, the difference between the numbers of the series are in increasing order.

Hence, the correct answer will be 20.

Q60. Answer: (b) 22

Given:

The arithmetic mean of 16, 18, 15, 17, p and 14 = 17

Formula used:

Mean = sum of observations/Number of observations

Calculation:

According to the question:

The sum of mean = (16 + 18 + 15 + 17 + p + 14) = 80 + p

Now,

The correct mean = (80 + p)/6 = 17

=> 80 + p = 102

=> p = (102 – 80)

=> p = 22

Therefore The required value of p is 22.

Q61. Answer: (c) Rabindranath Tagore

The correct answer is Rabindranath Tagore.

Key Points

• Rabindranath Tagore founded Visva Bharati in 1921.
• Visva Bharati was initially established as a center for culture with the motto "Yatra Visvam Bhavatyekanidam" which means "where the world makes a home in a single nest".
• Tagore envisioned the university as a place where the whole world could meet in a single nest.
• In 1951, Visva Bharati was declared a Central University.

Additional Information

Option	Details
Option 1	Sarojini Naidu was an Indian independence activist and poet. She was also the first woman to become the president of the Indian National Congress and to be appointed as a governor of an Indian state.
Option 2	Raja Ram Mohan Roy was a social reformer who is often called the "Father of the Indian Renaissance." He played a key role in the abolition of the practice of Sati.

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Option 3	Rabindranath Tagore was a polymath and a Nobel laureate in Literature who founded Visva Bharati University.
Option 4	Sri Aurobindo was a philosopher, yogi, guru, and poet. He was also a nationalist who played a significant role in India's freedom struggle.

Q62. Answer: (d) √5, 1

Given:

y2 – √5y - y + √5 = 0

Calculation:

y2 – √5y - y + √5 = 0

=> y(y – √5) – 1(y – √5) = 0

=> (y – √5) or (y – 1) = 0

=> y = √5 or 1

Therefore The required value is √5, 1

Q63. Answer: (d) EFGIK

The logic followed here is:

Now analyzing the options:

i) HIKNR

ii) FGILP

iii) JKMPT

iv) EFGIK

Thus, EFGIK is not following the common pattern of +1, +2, +3, +4.

\Hence, ' EFGIK' is the odd one.

Q64. Answer: (b) All wings are birds.

The least possible Venn Diagram is as follows:

i) Some birds are feathers. → True

ii) All wings are birds. → False (as it is possible but not definite)

iii) Some birds are wings and feathers. → True

iv) Some feathers are wings. → True

Hence, 'All wings are birds.' is NOT implicit in the statements.

Q65. Answer: (a) Rupee

The logic followed here is:

1 Centimetre × 100 = 1 Metre

Similarly,

1 Paisa × 100 = 1 Rupee

Hence, Rupee is the correct answer.

Q66. Answer: (a) increases by 7

Given:

Let the original data be x1, x2, x3,..., xn.

Formula Used:

Arithmetic mean = (x1 + x2 + x3 +... + xn) / n

Calculation:

=> If each entry is increased by 7, the new data becomes (x1 + 7), (x2 + 7), (x3 + 7),..., (xn + 7).

=> New arithmetic mean = [(x1 + 7) + (x2 + 7) + (x3 + 7) +... + (xn + 7)] / n

=> New arithmetic mean = (x1 + x2 + x3 +... + xn) / n + (7 + 7 + 7 +... + 7) / n

=> New arithmetic mean = Arithmetic mean + 7

Therefore, the correct option is 1.

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Q67. Answer: (a) All natural numbers together with zero are called integers.

Calculation:

1) All natural numbers together with zero are called integers.

2) There is no largest natural number.

3) There is no largest whole number.

4) 1 is the smallest natural number.

=> Statement 1 is false because integers also include negative numbers.

=> Therefore, the correct answer is option 1.

Q68. Answer: (d) Auxin

The correct answer is Auxin.

Key Points

• Auxins are a class of plant hormones that regulate various aspects of plant growth and development.

• They play a crucial role in the elongation of cells in shoots and are essential for the growth of plants.

• Auxins are involved in the regulation of plant organ formation and are key in processes like phototropism and gravitropism.

• They also help in the differentiation of cells and tissues, which is critical for the formation of roots and other organs.

Additional Information

Option	Details
Estrogen	Estrogen is a hormone found in animals, primarily involved in the regulation of the reproductive system.
Chlorophyll	Chlorophyll is a pigment found in plants that is crucial for photosynthesis, not a hormone.
Thyroxin	Thyroxin (or Thyroxine) is a hormone produced by the thyroid gland in animals, involved in metabolism regulation.

Q69. Answer: (d) 2/5

Concept used:

Terminating decimal means a decimal that can be expressed in a finite number of figures or for which all figures to the right of someplace are zero.

Calculation:

Given options are:

2/7 ≈ 0.2857 (not continues)

2/9 ≈ 0.2222 (continues)

2/3 ≈ 0.6667 (continues)

2/5 = 0.4

Hence, 2/5 has a terminating decimal representation.

Therefore 2/5 among the following has terminating decimal representation.

Q70. Answer: (a) IKUS

The logic followed here is:

Similarly,

Hence, 'IKUS' is the correct answer.

Q71. Answer: (a) 1800

Given:

One-sixth of a number exceeds its one-ninth by 100

Calculation:

Let the number be x

According to the question,

x/6 - x/9 = 100

=> (3x - 2x)/18 = 100

=> x/18 = 100

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=> x = 1800

Therefore The number is 1800

Q72. Answer: (b) Right to profession

The correct answer is Right to profession.

Key Points

• Right to profession is not explicitly mentioned as a fundamental right in the Constitution of India.

• The Constitution guarantees the right to practice any profession, or to carry on any occupation, trade, or business under Article 19(1)(g), but it is not termed as "Right to profession."

• Right to freedom includes freedom of speech and expression, assembly, association, movement, residence, and the right to practice any profession.

• Right to equality guarantees equality before the law and equal protection of the laws.

• Right to freedom of religion ensures religious freedom and allows individuals to profess, practice, and propagate their religion.

Additional Information

Option	Details
Right to freedom	Includes various freedoms like speech, assembly, association, movement, residence, and profession.
Right to equality	Guarantees equality before the law and equal protection of the laws.
Right to freedom of religion	Ensures religious freedom, allowing individuals to profess, practice, and propagate their religion.

Q73. Answer: (d) 2

Shortcut Trick

Find the HCF of 85 and 153 by identifying their common factors:

85 = 5 × 17

153 = 9 × 17

Thus, HCF = 17.

Equate the given expression to the HCF: 85x − 153 = 17 => 85x = 170 => x = 2.

Therefore The correct answer is 2.

Alternate Method

Given:

The numbers are 85 and 153.

The HCF of 85 and 153 is expressible in the form 85x − 153.

Formula Used:

The Highest Common Factor (HCF) of two integers is the largest positive integer that divides both numbers without leaving a remainder.

Calculations:

Find the prime factorisation of both numbers:

=> 85 = 5 × 17

=> 153 = 3 × 3 × 17 = 3^2 × 17

Identify the common factor between 85 and 153:

=> Common Factor = 17

=> HCF(85, 153) = 17

According to the problem, the HCF is equal to 85x − 153:

=> 85x − 153 = 17

=> 85x = 17 + 153

=> 85x = 170

=> x = 170 ÷ 85

=> x = 2

Therefore The correct answer is 2.

Additional Information

Highest Common Factor (HCF)

The HCF of two or more numbers is the greatest common divisor that divides each of them exactly without leaving any remainder.

HCF and LCM Relation

For any two positive integers a and b, the product of their HCF and LCM is equal to the product of the numbers: HCF(a, b) × LCM(a, b) = a × b.

Euclid's Division Algorithm

An efficient method to calculate the HCF of two integers by repeatedly expressing the larger number in terms of the smaller one using the division lemma (a = bq + r) until the remainder r becomes zero.

Q74. Answer: (b) Article 29

The correct answer is Article 29.

Key Points

• Article 29 of the Indian Constitution provides for the protection of interests of minorities.

• This article ensures that any section of citizens having a distinct language, script, or culture have the right to conserve the same.

• It also ensures that no citizen shall be denied admission into any educational institution maintained by the State or receiving aid out of State funds on grounds of religion, race, caste, language, or any of them.

• Article 29 is a key provision for safeguarding the cultural and educational rights of minorities in India.

Additional Information

Option	Details
Option 1	Article 27 deals with the freedom as to payment of taxes for promotion of any particular religion.
Option 2	Article 29 deals with the protection of interests of minorities.
Option 3	Article 28 deals with the freedom as to attendance at religious instruction or religious worship in certain educational institutions.
Option 4	Article 26 deals with the freedom to manage religious affairs.

Q75. Answer: (c) Only argument I is strong.

The question asks whether or not electronic gadgets be welcome in examination halls.

• Argument I suggests that they should not be allowed since they can help in cheating. Cheating is an unacceptable offence. So, argument I is strong.

• Argument II suggests that since electronic gadgets are costly, they should not be kept outside. But, for that matter, other facilities for safe deposit can be made, the main concern would be if they are allowed in the examination hall. Thus, argument II is not strong.

Hence the correct answer is option 3.

Q76. Answer: (a) 266719221371824

The logic followed here is:

Given:

A = 26

• A → Opposite → Z → Positional Value = 26 (which is the given code)

T = 7

• T → Opposite → G → Positional Value = 7 (which is the given code)

• The alphabets are coded as per their positional value in reverse alphabetical order.

The code for AUTHENTIC will be as follows:

Here, the code for AUTHENTIC will be 266719221371824.

Hence, '266719221371824' is the correct answer.

Additional InformationShortcut to remember the reverse positional letters.

Q77. Answer: (d) A natural resource is a gift of nature that is useful for mankind.

The correct answer is A natural resource is a gift of nature that is useful for mankind.

Key Points

• Natural resources are materials or substances occurring in nature which can be exploited for economic gain.

• They are classified into renewable and non-renewable resources.

• Examples of natural resources include water, air, soil, minerals, and forests.
• They play a crucial role in the sustenance of life and the functioning of ecosystems.
• Natural resources are essential for economic development and human well-being.

Additional Information

Type of Natural Resource	Description
Renewable Resources	Resources that can be replenished naturally over short periods, such as solar energy, wind energy, and biomass.
Non-Renewable Resources	Resources that cannot be easily replenished once they are depleted, such as fossil fuels (coal, oil, natural gas) and minerals.
Biotic Resources	Resources obtained from the biosphere, such as forests, animals, and plants.
Abiotic Resources	Non-living resources, such as water, air, and minerals.

Q78. Answer: (b) 12 cm

Shortcut Trick

Tangents drawn from an external point to a circle are always equal in length => SA = SB = 12 cm.

In triangle SAB, since SA = SB and the included angle angle ASB = 60°, the triangle must be equilateral.

For any equilateral triangle, all sides are equal => AB = SA = SB = 12 cm.

Therefore The correct answer is 12 cm.

Alternate Method

Given: Tangent SA = 12 cm and angle ASB = 60°.

Formula Used: Length of tangents from an external point are equal; Sum of angles in a triangle = 180°.

=> In ΔSAB, SA = SB (Length of tangents from external point S are equal).

=> Since SA = SB, then angle SAB = angle SBA (Angles opposite to equal sides).

=> In ΔSAB, angle ASB + angle SAB + angle SBA = 180°.

=> 60° + 2 × angle SAB = 180°.

=> 2 × angle SAB = 120° => angle SAB = 60°.

=> Therefore, angle SAB = angle SBA = angle ASB = 60°.

=> This implies ΔSAB is an equilateral triangle.

=> AB = SA = SB = 12 cm.

Therefore The correct answer is 12 cm.

Additional Information

Tangent-Radius Property

The radius of a circle is always perpendicular to the tangent at the point of contact (angle OAS = angle OBS = 90°).

External Point Tangents

The lengths of the two tangents drawn from an external point to a circle are equal (SA = SB).

Line Joining Center and External Point

The line joining the center of the circle to the external point (SO) bisects the angle between the two tangents (angle ASO = angle BSO).

Q79. Answer: (a) 24 days

Given:

Reena and Jaya can complete a piece of work in 6 days

Jaya alone can complete it in 8 days

Concept used:

Total work = LCM of time of workers

Calculation:

LCM of 6 and 8 = 24 i.e total work,

Efficiency of Reena and Jaya together = 24/6 = 4

Efficiency of Jaya = 24/8 = 3

So, efficiency of Reena = 4 - 3 = 1

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So, Reena will take 24/1 = 24 days

Therefore Required answer is 24 days

Q80. Answer: (d) Godavari and Krishna

The correct answer is Godavari and Krishna.

Key Points

• The Pattiseema Lift Irrigation Project is designed to divert water from the Godavari River to the Krishna River.

• This project aims to utilize surplus water from the Godavari to address water scarcity in the Krishna basin.

• It is a key initiative to improve irrigation and water supply in Andhra Pradesh.

• The project is one of the first river interlinking projects in India.

Additional Information

Option	Details
Option 1	Godavari and Narmada: No major interlinking projects between these two rivers.
Option 2	Godavari and Cauvery: There are discussions but no implemented projects linking these rivers.
Option 3	Godavari and Mahanadi: These rivers are part of different river interlinking proposals but not linked by the Pattiseema project.

Q81. Answer: (b) [figure]

The relation between Guava, Potato and Vegetables will be as follows:

All potatoes are vegetables.

No guava is vegetable.

The least possible Venn diagram is as follows:

Hence, the correct answer is "Option 2".

Q82. Answer: (a) 0.4545...

Given:

0.2323... + 0.2222...

Concept used:

0.ab = 0.ababab

Calculation:

0.2323... + 0.2222...

=> 0.232323 + 0.222222

=> 0.454545

=> 0.4545...

Therefore Required answer is 0.4545...

Q83. Answer: (a) Tundra, Taiga, Temperate Forests, Tropical Rain Forests

The correct answer is Tundra, Taiga, Temperate Forests, Tropical Rain Forests.

Key Points

• The Tundra biome is located near the Arctic Circle, characterized by extremely cold temperatures and a lack of trees.

• Following the Tundra, one encounters the Taiga or Boreal Forest, which has cold winters and coniferous forests.

• Next, the Temperate Forests biome, which has a moderate climate and a mix of deciduous and coniferous trees.

• Finally, near the Equator, one reaches the Tropical Rain Forests, known for high biodiversity, warm temperatures, and high rainfall.

Additional Information

Biome	Description
Tundra	Characterized by cold, harsh winters, a short growing season, and permafrost.
Taiga	Also known as Boreal Forest, it features cold winters and primarily coniferous trees.

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Temperate Forests	Have a moderate climate and a mix of deciduous and coniferous trees.
Tropical Rain Forests	Located near the Equator, these forests have high biodiversity, warm temperatures, and high rainfall.

Q84. Answer: (b) Simon Commission

The correct answer is Simon Commission

Key Points

• Clement Attlee who later became Prime Minister of Britain came to India as a member of Simon Commission.
• The British government appointed the Simon Commission to review the Government of India Act 1919 in the year 1927.
• The Simon commission arrived in India in 1928.
• It was formed to study constitutional reforms and make recommendations to the government in India.
• Simon commission was an all- commission without any Indian members.
• The commission consisted of seven Englishman and sir John Simon was its chairman.
• It was formed on 26th November 1927.
• Simon commission arrived in India on 3rd February 1928.
• The Madras session of the congress passed a resolution to boycott the Simon Commission.
• Simon commission submitted its reports on 27th May 1930.

Additional Information

Option	Details
Option 1	The Cabinet Mission came to India in 1946 to discuss the transfer of power from British rule to Indian leadership.
Option 2	The Simon Commission was a group of British Members of Parliament that came to India in 1928 to study constitutional reform.
Option 3	The Wavell Plan was a proposal by the then Viceroy of India, Lord Wavell, in 1945 to involve Indian leaders in the governance of India.
Option 4	The Cripps Mission was an attempt in 1942 by the British government to secure Indian cooperation during World War II.

Q85. Answer: (b) 3 : 4

Given:

The diameters of the bases of the two cones are equal.

If their slant heights are in the ratio of 3 : 4

Concept used:

The curved surface area of a cone = πrl

r = radius

l = slant height

Calculation:

Since the diameters of the two cones are equal, their radius will also be the same.

Let the slant height of the two cones be l1 and l2 respectively.

So, l1 : l2 = 3 : 4

The curved surface area of the two cones is πrl1 and πrl2.

So, the ratio of their curved surface area is πrl1/πrl2.

π and r are canceled.

l1/l2 = 3/4

Therefore The ratio of the curved surface area of two cones is 3 : 4

Q86. Answer: (d) 1540

Calculation:

Total cycle produced in 5 weeks = 800 + 1360 + 1000 + 900 + 1400
=> 5460
Heightest production is in 5th week which is 1400 units
So, total production in 5 week if 1400 units is produced in each week = 1400 × 5 = 7000 units
Difference = 7000 - 5460
=> 1540
Therefore Required answer is 1540

Q87. Answer: (c) 1 : 2

Calculation:
No. of college teachers = 1500
No. of school girls = 3000
Ratio = 1500: 3000
=> 1 : 2
Therefore Required answer is 1 : 2

Q88. Answer: (a) 840

Calculation:
Total customers who bought any type of breads = 40 + 16 = 56
Amount of cakes and pastries each = 210/14 = Rs. 15
Amount of biscuit each = 120/12 = Rs. 10
To get the maximum amount we need to work on maximum amount between cakes and pastries, and biscuits
So, maximum amount of sales increase = 56 × 15
=> Rs. 840
Therefore Required answer is 840

Q89. Answer: (b) 113 : 7

Calculation:
Total students in school = 3000 + 2500 = 5500
Total students in college = 9000 + 11000 = 20000
Total students in university = 15000 + 16000 = 31000
Total number of the students = 5500 + 20000 + 31000 = 56500
Total teachers in college and university = 1500 + 2000 = 3500
Ratio = 56500 : 3500
=> 113 : 7
Therefore Required answer is 113 : 7

Q90. Answer: (b) 124972

The logic followed here is:
Here, twice the last of the number is added to the ten times the number to get the next term in the given series:
(1 × 10) + (2 × 1) = 10 + 2 = 12
(12 × 10) + (2 × 2) = 120 + 4 = 124
(124 × 10) + (2 × 4) = 1240 + 8 = 1248
(1248 × 10) + (2 × 8) = 12480 + 16 = 12496
(12496 × 10) + (2 × 6) = 124960 + 12 = 124972
Hence, '124972' is the next term in the given series.

Q91. Answer: (a) 9

The logic followed here is:
In row 2
7 × 8 = 56; 5 + 6 = 11; 11^2 = 121
In row 3
6 × 5 = 30; 3 + 0 = 3; 32 = 9
Similarly,

In row 1

3 × 4 = 12; 1 + 2= 3; 32 = 9

Hence, 9 is the correct answer.

Q92. Answer: (c) Sunday

The logic followed here is:

15 - 08 → 15 August → Independence Day → Holiday

02 - 10→ 2 October → Gandhi Jayanti → Holiday

26 - 01 → 26 January → Republic Day → Holiday

Similarly,

Sunday is a Holiday.

Hence, Sunday is the correct answer.

Q93. Answer: (c) 324

The logic followed here is:

(17 × 2) + 2 = 34 + 2 = 36;

(36 × 2) + 4 = 72 + 4 = 76;

(76 × 2) + 6 = 152 + 6 = 158;

(158 × 2) + 8 = 316 + 8 = 324;

Hence, 324 is the correct answer

Q94. Answer: (c) 13

The number of triangles in the given figure are as follows:

Hence, there are 13 triangles in the given figure.

Q95. Answer: (b) Some bikes are tyres.

The least possible Venn diagram is as follows:

i) Some bikes are trucks. → True

ii) Some bikes are tyres. → False (As no direct relation is given between Bike to tyre thus it is possible but not definite)

iii) Some tyres are trucks. → True

iv) Some trucks are tyres. → True

Hence, ' Some bikes are tyres.' is NOT implicit in the statements.

Q96. Answer: (b) FJVZZVAT

The logic followed here is:

In the given code language the code for HUNGER is coded as follows:

Similarly, the code for SWIMMING will be as follows:

Hence, the code for 'SWIMMING' will be FJVZZVAT.

Q97. Answer: (a) [figure]

The relationship between Human beings, Lawyers, Human Beings, and Married People is as follows:

All lawyers are human beings.

All married people are human beings.

Some lawyers can be married.

The least possible Venn diagram is as follows.

Hence, the above diagram is the correct answer.

Q98. Answer: (d) Images

The logic followed here is:

The output of the machine called RADIO is SOUND.

Similarly,

The output of the machine called TELEVISION is IMAGES.

Hence, IMAGES is the correct answer.

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Q99. Answer: (a) 64

The logic followed here is:

The numbers in diagonally opposite sector is cube of the numbers given in lower semicircle.

$1^3 = 1$;

23 = 8;

33 = 27;

Similarly,

43 = 64

Hence, 64 is the correct answer.

Q100. Answer: (b) Tank

The logic followed here is:

The Navy of a country operates in SEA. Therefore, a Ship is the main component of a NAVY.

Similarly,

The Army of a country operates on LAND. Therefore, the Tank is the main component of an ARMY.

Hence, 'Tank' is the correct answer.

Key Points

• Arjun is an indigenous main battle tank of the Indian army.

• The Arjun Main Battle Tank project was initiated by DRDO in 1972 with the Combat Vehicles Research and Development Establishment (CVRDE) as its lead laboratory.

• Mass production began in 1996 at the Indian Ordnance Factory's production facility in Avadi, Tamil Nadu.

• The Indian Army received the first batch of 16 tanks in 2004 and they were inducted as a squadron of the 43 Armoured Regiment. In 2009, the first Arjun regiment of the Indian Army had 45 tanks.

• It also has a computer-controlled integrated fire control system with a stabilized sighting that works in all lighting conditions.

• The Mk-1A version has 14 major upgrades on the earlier version.

Additional Information

• The Indian army uses various types of tanks that include:

• T-72 (Ajeya)

• In the 1970s, the Indian Army wanted to replace its Centurion and Vijayanta main battle tanks.

• The Soviet-built T-72 tank was selected after many trials.

• In 1978, India ordered 500 T-72, T-72M, and T-72M1 tanks directly from USSR.

• In the 1980s the production of the same started at Heavy Vehicles Factory, Avadi, Chennai.

• There are more than 2,000 T-72 tanks operational in the Indian Army.

• T-90 (Bhishma)

• It is a third-generation Russian main battle tank.

• In February 2001, the Indian Army signed a contract for 310 T-90S tanks.

• In October 2006, another contract was signed to manufacture 330 T-90S in India by Heavy Vehicles Factory at Avadi, Tamil Nadu.

• The T-90S has been codenamed Bhishma. It has been developed with assistance from Russia and France.

• BMP-2 Sarath

• BMP is a Soviet amphibious tracked infantry fighting vehicle.

• BMP stands for Boyevaya Mashina Pjehoty meaning "infantry fighting vehicle

• The first SARATH was rolled out in 1987.

• It is the best infantry combat vehicle in the world with modern weapon systems.

• It is ideal for fighting battles with speed, surprise, and deadly precision.

• It offers a chameleon-like camouflage with the help of smoke grenades creating a smokescreen.

• Sarath BMP 2 is a truly amphibian vehicle that can travel at 7 KMPH on water and can overcome slopes up to 35 degrees.

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