RRB NTPC Tier I Official Paper (Held On: 22 Apr 2016 Shift 2) (Previous Year Paper)

RRB NTPC • 2016 • 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. Which of the following rebellions was NOT against restrictions imposed by the British rulers?

(a) Faqir and Sanyasi Rebellion
(b) The Indigo rebellion
(c) Santhal Rebellion
(d) Naxalbari Rebellion

Q2. Which country does Roger Federer represent in Lawn Tennis competitions?

(a) Serbia
(b) US
(c) Switzerland
(d) UK

Directions

Direction: Read the following information carefully and answer the questions given below.

i) Radha, Rekha, Rakhi, Ragini, Rashmi, Reema and Renu are sitting around a circle facing the center.

ii) Reema is not an immediate neighbour of Rashmi.

iii) Radha is to the immediate right of Ragini.

iv) Rekha is second to the left of Reema.

v) Radha is third to the left of Renu.

Q3. Which of the following pairs of persons has the first person sitting to the immediate left of second person?

A. Radha-Reema
B. Rakhi-Rekha
C. Reema-Rakhi
D. Ragini-Rashmi

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

Q4. Who is second to the left of Ragini?

A. Reema
B. Rakhi
C. Radha
D. Rashmi

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

Q5. Which of the following groups has the first person sitting between the other two?

A. Reema-Rashmi-Radha

B. Rakhi-Ragini-Reema

C. Renu-Rekha-Ragini

D. Renu-Rekha-Rakhi

(a) C

(b) A

(c) D

(d) B

Q6. What is the chemical name of common salt that we eat?

(a) Sodium fluoride

(b) Sodium chloride

(c) Sodium salicylate

(d) Sodium hydroxide

Q7. If 39574 is written as XPLMD, and 0826 as TBNQ, then DBMTX will be coded as

A. 48730

B. 48603

C. 48703

D. 48743

(a) C

(b) B

(c) D

(d) A

Q8. The gland in the human body which secretes both enzymes and hormones is:

(a) Liver

(b) Pancreas

(c) Salivary gland

(d) Pituitary

Q9. Which one of the following countries' official language is Dari, a form of Persian?

(a) Pakistan

(b) Bangladesh

(c) Nepal

(d) Afghanistan

Q10. Who is the current minister of State for Commerce and Industry?

(a) Hardeep Singh Puri

(b) Vasundhara Raje Scindia

(c) Smriti Irani

(d) Sushma Swaraj

Q11. Most villages in India are more prone to _____ than other kinds of pollution.

(a) Air pollution

(b) Sound pollution

(c) Radiation pollution

(d) Water pollution

Q12. Given w = -2, x = 3, y = 0 & z = - 1/2, Find the value of 2x (w - z).

A. -9

B. 9

C. 8

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D. -8

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

Q13. Which of the following organizations were NOT formed outside India to help in the struggle for Indian independence?

(a) India House
(b) Gadar Party
(c) Hindustan Socialist Republican Association
(d) Berlin Committee

Q14. Two numbers are in ratio 4 : 9 and their HCF is 11. Their LCM is:

A. 396
B. 44
C. 99
D. 400

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

Q15. Ashok Pillar of Delhi has baffled scientists as it weathers all vagaries of weather and yet does not rust or corrode. Which is it made of?

(a) Iron
(b) Bronze
(c) Terracotta
(d) Single rock stone

Q16. Interchanging which two signs will make the following equation correct?

15 + 3 × 9 – 4 ÷ 16 = 57

A. – and +
B. – and ÷
C. – and ×
D. + and ÷

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

Q17. Which unit is used to measure Noise?

(a) Decibel
(b) Hertz
(c) Ohm
(d) Volt

Q18. An assertion and a reason are given below.

Assertion: India is a Sovereign country.

Reason: Its parliament is placed in Delhi.

Choose the answer.

A. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
B. Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
C. Both Assertion and Reason are false.

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D. Assertion is true but Reason is false.

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

Q19. Below are given statements followed by some conclusions. You have to take the given statements to be true even if they seem to be variance with the commonly known facts and then decide which of the given conclusions logically follow(s) from the given statements.

Statement: Domestic demand has been increasing faster than the production of indigenous crude oil.

Conclusions:

I. Crude oil must be imported.

II. Domestic demand must be reduced.

A. Only conclusion I follows

B. Only conclusion II follows

C. Neither I nor II follows

D. Both I and II follow

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

Q20. A jug has two holes. The 1^(st) hole alone makes the jug empty in 15 minutes and 2^(nd) hole alone makes the jug empty in 20 minutes. If water leaks out at a constant rate, how long in minutes does it take if both the holes together empty the jug?

A. 4/7

B. 74/7

C. 85/7

D. 84/7

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

Q21. Sharad introduced Meena as his son's paternal grandfather's only sister. How is Meena related to Sharad?

A. Mother

B. Sister

C. Paternal Aunt

D. Daughter

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

Q22. The length of a diagonal in cm of a rectangle of length 9 cm and width 6 cm is:

A. 3√13

B. ± 3√13

C. 3√5

D. ±3√5

(a) A
(b) C
(c) D

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(d) B

Q23. Degradation of global environment has not resulted in one of the following.

(a) Biodiversity loss
(b) Increased Carbon-di-oxide concentration in the atmosphere
(c) Exposure to UV radiations
(d) Landfills

Q24. A mobile bill costs Rs. 10 for 3 minutes 30 seconds. What is the cost in rupees for 4 minutes 10 seconds? (rounded to one decimal).

A. 11.9
B. 12
C. 11.8
D. 11.7

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

Q25. Satish Dhawan Space Centre is located in:

(a) Uttar Pradesh
(b) Madhya Pradesh
(c) Andhra Pradesh
(d) Tamil Nadu

Q26. Bloodless surgery is done with _____.

(a) Lasers
(b) Microneedles
(c) Scalpels
(d) Fine scissors

Q27. Compute 35968 ÷ 562 ÷ 8 = ?

A. 80
B. 512
C. 8
D. 521

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

Q28. Monica takes 9 hrs 15 minutes in walking a distance and riding back to the same place where she started. She could walk both ways in 11 hrs 12 minutes. The time taken by her to ride back both ways is:

A. 7 hrs 18 min
B. 7 hrs 35 min
C. 7 hrs 45 min
D. 7 hrs 15 min

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

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Directions

The table below represents the distance (in km) traveled by six trucks on six different days of the week. Read the table and answer the questions based on it.

Day	Truck					
P	Q	R	S	T	U	
Monday	240	250	320	325	330	300
Tuesday	320	264	308	314	318	314
Wednesday	324	294	330	312	310	325
Thursday	288	300	310	278	260	275
Friday	366	302	288	292	270	268
Saturday	292	284	260	274	280	242

Q29. If to travel the given distance, the time taken by Truck Q on Friday was 8 hours, then what was its average speed on that day?

A. 37.75 km/hr

B. 42.50 km/hr

C. 28.25 km/hr

D. 32.25 km/hr

(a) C

(b) B

(c) D

(d) A

Q30. What is the average distance traveled by Truck S on all the days together?

A. 296 km

B. 1795/6 km

C. 198 km

D. 199 km

(a) C

(b) B

(c) D

(d) A

Q31. What is the total distance traveled by all the trucks together on Saturday?

A. 1623 km

B. 1263 km

C. 1362 km

D. 1632 km

(a) B

(b) C

(c) A

(d) D

Q32. To prevent rancidity of oil (due to oxidation) in which potato chips are fried, the bags of chips are flushed with the gas-

(a) Oxygen

(b) Hydrogen

(c) Nitrogen

(d) Chlorine

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Q33. Mr. Piyush sold a bus for Rs. 3400 with a loss of 15%. At what price should the bus be sold to get a profit of 15%?

A. 4500
B. 4300
C. 4700
D. 4600

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

Q34. If TRACTER = 14 and TROLLEY = 14, then SCOOTER =

A. 24
B. 14
C. 28
D. 30

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

Q35. Choose the pair which is related in the same way as the words in the first pair from the given choices.

LUNG : MAN ? GILL : _____

A. FISH
B. COW
C. PEACOCK
D. BIRD

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

Q36. Divide Rs. 156 in the ratio 1 : 2 : 4 : 5. The rupees in the respective ratios are given by:

A. 13, 26, 53 & 64
B. 13, 26, 51 & 66
C. 13, 26, 52 & 65
D. 13, 25, 53 & 65

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

Directions

Direction: Read the data given below and answer the question based on it.

There were 3 sections namely A, B and C in a test. Out of three sections, 33 students passed in Section A, 34 students passed in Section B and 32 passed in Section C. 10 students passed in Section A and Section B, 9 passed in Section B and Section C, 8 passed in Section A and Section C. The number of students who passed each section alone was equal and was 21 for each section.

Q37. The ratio of the number of students passed in one or more of the sections to the number of students who passed in Section A alone is:

A. 78/21
B. 3

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C. 73/21

D. 75/21

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

Q38. How many passed all the three sections?

A. 3

B. 6

C. 5

D. 7

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

Q39. How many passed only one of the three sections?

A. 21

B. 42

C. 63

D. 52

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

Q40. Which of the storage device of computers has now become obsolete?

(a) Floppy
(b) CD ROM
(c) Pen drive
(d) Hard disk

Q41. An Assertion and a Reason are given below.

Assertion: Water is essential for life. Reason: It is formed using three parts of Hydrogen and one part of Oxygen.

Choose the answer.

A. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

B. Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

C. Both Assertion and Reason are false.

D. Assertion is true but Reason is false.

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

Q42. Compute 7497 ÷ 147 – 8 = ?

A. -20

B. 20

C. 43

D. 7479/116

(a) D
(b) A

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(c) C
(d) B

Q43. Bhimbetka caves are located in _____.
(a) Uttar Pradesh
(b) Madhya Pradesh
(c) Andhra Pradesh
(d) Himachal Pradesh

Q44. If '÷' denotes 'multiplication', '-' denotes 'addition', '+' denotes 'division' and '×' denotes 'subtraction', then which of the following is the value of the expression 19 ÷ 9 × 51 – 171 + 19
A. 143
B. 129
C. 179
D. 151
(a) B
(b) C
(c) A
(d) D

Q45. The Hubble Space Telescope, which belongs to_____, captured the first-ever predicted supernova explosion
(a) USA
(b) UK
(c) Canada
(d) Russia

Q46. Which is the correct ascending order of the given numbers?
A. 3/7, 0.3,2/7
B. 0.3,2/7,3/7
C. 2/7, 0.3,3/7
D. 2/7,3/7, 0.3
(a) B
(b) A
(c) C
(d) D

Q47. Which instrument does Dr. L. Subramaniam play?
(a) Sitar
(b) Sarod
(c) Violin
(d) Guitar

Q48. Among, the democratic countries of the world, which country's constitution is the longest written constitution and most detailed?
(a) Japan
(b) UK
(c) South Africa
(d) India

Q49. Monal Kumar traveled equal distance with a speed of 3 km/hr, 5 km/hr, and 8 km/hr and takes a total time of 39.5 minutes.
Find the total distance in km.
A. 4
B. 2

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C. 1

D. 3

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

Q50. If '-' and '×' signs as well as '7' and '3' are interchanged, then which of the one following is correct?

A. 20 × 1 – 7 = 3

B. 1 × 20 – 7 = 20

C. 3 – 7 × 1 = 20

D. 20 – 3 × 1 = 7

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

Q51. Out of the FIFA World Cup awards which one is awarded to the best goal keeper?

(a) Golden Boot
(b) Golden Ball
(c) Golden Glove
(d) Golden Cap

Q52. Choose the pair which is related in the same way as the words in the first pair from the given choices.

EDITOR : MAGAZINE ? _____ : DRAMA

A. PLAY

B. ARTISTS

C. STAGE

D. DIRECTOR

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

Q53. To which country does the 'MOST' (Micro variability and Oscillation of Stars) Space Telescope belong?

(a) India
(b) Canada
(c) Russia
(d) USA

Q54. From the given series of jumbled letters separate the names of flower and tree and select from the given choices the first letter of the name of flower and tree 'saltoteuk'

A. SR

B. RE

C. LK

D. LT

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

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Q55. If TIGER is coded as REGIT, how is LEOPARD coded?

A. DRAOPLE

B. DRAPLED

C. DRAPOEL

D. DRAOPEL

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

Q56. Which of the following rivers is an underground river at Triveni Sangam in Prayagraj?

(a) Ganges
(b) Yamuna
(c) Saraswati
(d) Kaveri

Q57. Mr. Yudish borrowed Rs. 3500 at 4% per annum compound interest. The compound interest compounded annually for 2 years is:

A. 285.6

B. 3785.6

C. 3758.6

D. 258.6

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

Q58. Reema pointed towards a painting and said, ‘He is my son’s paternal grandfather’s only daughter-in-law’s father’s father’. How is he related to Reema?

A. Paternal Uncle

B. Paternal Grandfather

C. Maternal Grandfather

D. Father

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

Q59. Mr. Yashwanth invested money in FD. How much will he get on maturity, if Rs. 10000 in invested at 20% per annum compound interest for 6 months, compounded quarterly?

A. 11025.25

B. 11025

C. 11025.75

D. 11025.5

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

Q60. In November 2015, the Government of India announced an increase in FDI for 'News and current affairs channels' from 26% to ___.

A. 49%

B. 51%

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C. 100%

D. 75%

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

Q61. Sundarbans is the largest single block of tidal halophytic_____forest in the world.

(a) Woody shrubs
(b) Papyrus
(c) Mangrove
(d) Marsh

Q62. Which of the following is a branch of technology that deals with dimensions and tolerances of less than 100 nanometers, especially the manipulation of individual atoms and molecules?

(a) Biotechnology
(b) Femtotechnology
(c) Nanotechnology
(d) Microtechnology

Q63. The variance of a set of data is 144. Then the standard deviation of the data is:

A. ±12

B. 12

C. 44

D. 72

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

Q64. A shopkeeper cheats to the extent of 9% while buying and selling fruits, by using tampered weights. His total gain in percentage is:

A. 18.25

B. 18.81

C. 19.78

D. 18.5

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

Q65. Which of the following is a wrong example of friction?

(a) Washing machine pushed along a floor
(b) Sled sliding across snow
(c) A person sliding down a slide
(d) A person lifting an heavy object

Q66. If sin x = 4/5, then (tan x)/(cot x) = ?

A. 13/9

B. 3/4

C. 9/16

D. 16/9

(a) D

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(b) A
(c) B
(d) C

Q67. Prior to independence, the first Indian jute mill was set up in _____.

(a) Gujarat
(b) Bengal
(c) Odisha
(d) Maharashtra

Q68. .css file extension usually refers to what kind of file?

(a) Image file
(b) System file
(c) Animation file
(d) Hypertext related file

Q69. The number of sides of a regular polygon whose exterior angles are each 45° is:

A. 7
B. 6
C. 8
D. 9

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

Q70. The cash difference between the selling price of an article at a profit of 2% and 14% is Rs. 3. The ratio of two selling prices is:

A. 17 : 19
B. 17 : 20
C. 19 : 20
D. 17 : 53

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

Q71. If signs – and ×, and numbers 5 and 14 are interchanged, then the value of 5 + 4 ÷ 2 – 8 × 14 is

A. 15
B. 20
C. 25
D. 30

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

Q72. The most recently discovered link in human evolution is the discovery of fossils of:

(a) Lucy
(b) Homo naledi
(c) Homo sapiens
(d) Austiopithelines

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Q73. Aquarium is container in which there are living fish and aquatic plants. Which statement about aquarium is correct?

(a) It is human made ecosystem
(b) It is a natural ecosystem
(c) It is not an ecosystem at all
(d) It can only be termed a community

Q74. Simplify: 2^4 ÷ 2^(-1)

A. 1/32
B. 16
C. 32
D. 8

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

Q75. Correct expression of 0.023636... = x

A. 13/550
B. 236/1000
C. 236/1000
D. 13/555

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

Q76. The other term for genetic engineering is:

(a) DNA fingerprinting
(b) DNA editing
(c) Recombinant DNA technology
(d) Gene therapy

Q77. The mode of the data -3, 4, 0, 4, -2, -5, 1, 7, 10, 5 is:

A. 0
B. 4
C. -2
D. 7

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

Q78. Mouma Das and Soumyajit Ghosh represent India in:

(a) Table Tennis
(b) Badminton
(c) Tennis
(d) Carrom

Q79. Compute of 54367 × 9999 = ?

A. 546315633
B. 543655633
C. 543651633
D. 543615633

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

Q80. HIV is passed from one person to another except which one of the following ways:
(a) Mosquito bite
(b) Breast Feeding
(c) Sharing Needles
(d) Sexual Contact

Q81. Choose the pair which is related in the same way as the words in the first pair from the given choices.
CLIMB : TREE ? _____ : _____
A. ROW : SHIP
B. RISE : TOP
C. ASCEND : CLIFF
D. FILE : FINGER
(a) A
(b) D
(c) C
(d) B

Q82. Choose the pair which is relate din the same way as the words in the first pair from the given choices.
ROASTER : DUTY ? INVENTORY : _____
A. GOODS
B. SALES
C. EXPORT
D. PRODUCTION
(a) D
(b) B
(c) A
(d) C

Q83. Yuvraj is Dipti's mother's father's only granddaughter's son's cousin. How is Yuvraj related to Dipti?
A. Nephew
B. Son
C. Maternal Uncle
D. Grandson
(a) A
(b) C
(c) B
(d) D

Q84. The order of rotational symmetry of a rhombus is:
A. 1
B. 4
C. 2
D. 0
(a) C
(b) D
(c) A
(d) B

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Q85. The first human to travel in space -

(a) Neil Armstrong
(b) Yuri Gagarin
(c) Edwin Aldrin
(d) Valentina Tereshkova

Q86. Which Hollywood star has been confirmed to act with Indian actor Rajnikanth in upcoming film Enthiran 2?

(a) Dwayne Johnson
(b) Vin Diesel
(c) Arnold Schwarzenegger
(d) Sylvester stallone

Q87. Simplify: $7x + 3x(x – 4) = ?$

A. $10x + 12$
B. $10x – 12$
C. $3x^2 + 5x$
D. $3x^2 – 5x$

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

Q88. If the product of two numbers is 3192 and their HCF is 56 then their LCM is:

A. 58
B. 59
C. 56
D. 57

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

Q89. What is galvanized iron?

(a) A form of steel
(b) Zinc coated iron
(c) Pig iron
(d) Iron ore

Q90. The building up and movement of ships is based on _____.

(a) Archimedes' principle
(b) Faradays laws
(c) Fleming's right hand rule
(d) Newton's 2^(nd) law of motion

Q91. The mean deviation of the data 2, 9, 9, 3, 6, 9, 4 from the mean is:

A. 42/7
B. 18/7
C. 2.5
D. 50/7

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

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Q92. Prashanth is twice as good a sportsman as Tarun and together they finish a piece of work in 21 days. In how many days will Tarun alone finish the work?

A. 42

B. 63

C. 84

D. 50

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

Q93. Below are given statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance with the commonly known facts and then decide which of the given conclusions logically follow(s) from the given statement.

Statement:

A. If all players play to their full potential, we will win the match.

B. We have won the match. Conclusions:

I. All players played to their full potential.

II. Some players did not play to their full potential.

A. Only conclusion II follows

B. Only conclusion I follows

C. Neither I nor II follows

D. Both I and II follow

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

Q94. Even before East India Company consolidated power, India was exporting fine textiles made of:

(a) Only cotton
(b) only silk
(c) only nylon
(d) cotton and silk

Q95. If COUNTER is coded as NTERCOU, then ANALOGY is coded as

A. LOGYAAN

B. LOGAYNA

C. LOGYANA

D. LGOYNAA

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

Q96. If tan A = 15/8 and tan B = 7/24 then tan (A + B) = ?

A. 416/87

B. 87/416

C. 304/297

D. 297/304

(a) C
(b) A
(c) B

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(d) D

Q97. Which of the following is NOT a fundamental right of an Indian Citizen?

(a) Right to Equality
(b) Right to Property
(c) Right to freedom of religion
(d) Right against Exploitation

Q98. Which one of the following insects cannot be called a 'social insect'?

(a) Bees
(b) Crickets
(c) Termites
(d) Ants

Q99. Solve: -4 = -7 + 3x

A. -1
B. 1
C. 11/3
D. (- 11)/3

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

Q100. An assertion and a reason are given below.

Assertion: The phenomenon of nuclear fission generates great energy.
Reason: The process in which a nucleus is broken into two parts is called nuclear fission.
Choose the answer.

A. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
B. Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
C. Both Assertion and Reason are false.
D. Assertion is true but Reason is false.

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

ANSWER KEY

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

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SOLUTIONS

Q1. Answer: (d) Naxalbari Rebellion

• Naxalbari Rebellion refers to the Left Wing extremist movement that traces its origin to the May 1967 peasant uprising at Naxalbari in the Darjeeling district of West Bengal.

• The movement was launched under the banner of the Communist Party of Indian (Marxist) (CPI-M), but, on April 1969, a split occurred in the Party and the radical platform was adopted by the new formation, the Communist Party of India (Marxist-Leninist) (CPI-ML) whose programs and activities were 'based on the thought of Mao- Ze- Dung', broadly translated by Mazumdar to its fundamentals as 'the physical annihilation of class enemies.'

Q2. Answer: (c) Switzerland

Roger Federer is a Swiss professional tennis player. Federer is the only player to register at least ten titles on three different surfaces, he has 63 hard court titles, 15 grass court titles, and 11 clay court titles. In his prime years, he won an unparalleled 11 Grand Slams (3 Australian Open titles, 4 Wimbledon titles and 4 US Open titles) of a possible 16 events from 2004 to 2007. He reached the finals of all four Grand Slams in the same calendar year in 2006, 2007, and 2009, joining Rod Laver (1969) and later joined by Novak Djokovic (2015). In the World Tour Finals, Federer has won 6 titles in 10 finals, both Open Era records, at the prestigious year-end tournament featuring the top-8 players in the year-end rankings. He has qualified for the tournament a record 14 consecutive years from 2002 through 2015.

Q3. Answer: (a) C

i) Radha, Rekha, Rakhi, Ragini, Rashmi, Reema and Renu are sitting around a circle facing the center.

ii) Reema is not an immediate neighbour of Rashmi.

iii) Radha is to the immediate right of Ragini.

iv) Rekha is second to the left of Reema.

v) Radha is third to the left of Renu.

So, the final arrangement is:

Among the following pairs, only Reema is sitting to the immediate left of Rakhi.

Hence, ‘Reema-Rakhi’ is the correct answer.

Q4. Answer: (c) A

i) Radha, Rekha, Rakhi, Ragini, Rashmi, Reema and Renu are sitting around a circle facing the center.

ii) Reema is not an immediate neighbour of Rashmi.

iii) Radha is to the immediate right of Ragini.

iv) Rekha is second to the left of Reema.

v) Radha is third to the left of Renu.

So, the final arrangement is:

Hence, Reema is second to the left of Ragini.

Q5. Answer: (d) B

i) Radha, Rekha, Rakhi, Ragini, Rashmi, Reema and Renu are sitting around a circle facing the center.

ii) Reema is not an immediate neighbour of Rashmi.

iii) Radha is to the immediate right of Ragini.

iv) Rekha is second to the left of Reema.

v) Radha is third to the left of Renu.

So, the final arrangement is:

Rakhi-Ragini-Reema → Rakhi is sitting between Ragini and Reema.

Hence, ‘Rakhi-Ragini-Reema’ is the correct answer.

Q6. Answer: (b) Sodium chloride

The chemical name of common salt that we eat is sodium chloride, which is represented by the chemical formula NaCl. Chemical names for other types of salts include magnesium sulfate, commonly known as Epsom salt, potassium iodide, a salt commonly used in medicine for thyroid treatments, and calcium chloride, the type of salt that is commonly used on icy roads, in swimming pools and in aquariums.

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Q7. Answer: (a) C

The logic is:

3	9	5	7	4
X	P	L	M	D

0	8	2	6
T	B	N	Q

Similarly,

D	B	M	T	X
4	8	7	0	3

Hence, '48703' is the correct answer.

Q8. Answer: (b) Pancreas

The correct answer is Pancreas.

Key Points

• The pancreas is the gland that secretes both enzymes and hormones.
• Enzymes secreted by the pancreas are trypsin, chymotrypsin, etc.
• Hormones secreted by it are insulin, glucagon, and somatostatin.
• Insulin is secreted by the pancreas gland of the human body.
• The liver, the largest gland in the body & the liver secretes bile, a digestive fluid, metabolizes proteins, carbohydrates, and fats.
• Salivary gland, Secrete saliva, a substance that moistens and softens food, into the oral cavity of vertebrates.
• The pituitary gland is called the "master gland" because its hormones regulate other important endocrine glands.

Additional Information

• Insulin is secreted by the beta cells of the islets of Langerhans.
• Insulin was first extracted by Banting and Best in 1921.
• Insulin helps to convert excess glucose into glycogen.
• Diabetes mellitus is a disease caused due to the deficiency of insulin.

Q9. Answer: (d) Afghanistan

Dari is the official name of the Persian language in Afghanistan. It is often referred to as the Afghan Persian.

Pakistan's national language is Urdu, which, along with English, is also the official language.

The official national language of Bangladesh is Modern Standard Bengali.

The official language of Nepal is Nepali, formerly called Khaskura then Gorkhali.

Q10. Answer: (a) Hardeep Singh Puri

The incumbent Minister of Commerce and Industry is Hardeep Singh Puri.

Q11. Answer: (d) Water pollution

The correct answer is water pollution.

• Water pollution is a major environmental issue in India.
• The largest source of water pollution in India is untreated sewage.
• Other sources of pollution include agricultural runoff and unregulated small scale industry.
• Most rivers, lakes and surface water in India are polluted.

Q12. Answer: (c) A

$2x (w – z) = 2 \times 3 \times [(-2) + 1/2]$

$\Rightarrow 6 \times [-3/2]$

$\Rightarrow -9$

Q13. Answer: (c) Hindustan Socialist Republican Association

The correct answer is Hindustan Socialist Republican Association

• Hindustan Socialist Republican Association (HSRA) was a revolutionary organization, also known as the Hindustan Socialist

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Republican Army.

• It was established in 1928 at Feroz Shah Kotla New Delhi by Chandrasekhar Azad, Bhagat Singh, Sukhdev, and others.

• Previously it was known as the Hindustan Republican Association (HRA) whose written constitution and published manifesto titled, "The Revolutionary" was produced as a witness in the Kakori conspiracy case of 1925.

• Likewise, the Hindustan Republican Association (HSRA) was also a revolutionary organization that worked more dangerously from 1928 to 1931 in the Indian subcontinent to uproot the British Raj from the country through armed struggle.

• The Non-cooperation movement of 1920 led to large scale mobilization of the Indian population against the British rule.

Q14. Answer: (a) A

The ratio of the two number is 4 : 9

=> Let the two numbers be 4x and 9x.

=> HCF of 4x and 9x is = x

=> x = 11

Therefore LCM of 4x and 9x = 4 × 9 × x = 36 × 11 = 396

Q15. Answer: (a) Iron

The pillar, made up of nearly seven tones of 98 per cent wrought iron of pure quality, is 7.21m (23 feet 8 inches) high, with 93 cm buried below the present floor level, and has a diameter of 41cm (16 inches). Rest is made up of phosphorous.

Q16. Answer: (b) D

A. – and +

Given expression: 15 + 3 × 9 – 4 ÷ 16 = 57

After interchanging '– and +', we get:

L.H.S = 15 - 3 × 9 + 4 ÷ 16

= 15 – 27 + 0.25

= 15.25 – 27

= -11.75 ≠ R.H.S

B. – and ÷

Given expression: 15 + 3 × 9 – 4 ÷ 16 = 57

After interchanging '– and ÷', we get:

L.H.S = 15 + 3 × 9 ÷ 4 – 16

= 15 + 3 × 2.25 – 16

= 15 + 6.75 - 16

= 21.75 – 16

= 5.75 ≠ R.H.S

C. – and ×

Given expression: 15 + 3 × 9 – 4 ÷ 16 = 57

After interchanging '– and ×', we get:

L.H.S = 15 + 3 - 9 × 4 ÷ 16

= 15 + 3 – 9 × 0.25

= 15 + 3 – 2.25

= 18 – 2.25

= 15.75 ≠ R.H.S

D. + and ÷

Given expression: 15 + 3 × 9 – 4 ÷ 16 = 57

After interchanging '+ and ÷', we get:

L.H.S = 15 ÷ 3 × 9 – 4 + 16

= 5 × 9 – 4 + 16

= 45 – 4 + 16

= 61 – 4

= 57 = R.H.S

Hence, '+ and ÷' is the correct answer.

Q17. Answer: (a) Decibel

Decibel is used to measure Noise. Sound frequency is measured in Hertz. Resistance is measured in Ohm and voltage is measured in Volt.

Q18. Answer: (a) B

Assertion: India is a Sovereign country – True

India is a sovereign country because people have supreme right to make decisions.

Reason: Its parliament is placed in Delhi – True

The SansadBhavan is the house of the Parliament of India, which contains the LokSabha and the RajyaSabha located in New Delhi.

Hence, both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

Q19. Answer: (b) A

Domestic demand has been increasing faster than the production of indigenous crude oil.

Conclusions:

I. Crude oil must be imported. → True

Domestic demand has been increasing faster than the production of indigenous crude oil. so, it is clear we need to import oil.

II. Domestic demand must be reduced. → False

The above conclusion cannot be derived from the given statement.

Hence, I follows

Q20. Answer: (d) D

Total quantity of jug = 60 units (LCM of 15, 20)

Therefore If both hole work simultaneously, then the jug empty in = 60/(4 + 3) = 84/7

Q21. Answer: (a) C

The family tree diagram is given below:

Hence, Meena is paternal aunt of Sharad.

Q22. Answer: (a) A

Given,

Length of the rectangle l = 9 cm

Breadth of the rectangle b = 6 cm

As we know,

Diagonal of the rectangle = $\sqrt{[l^2 + b^2]}$

Therefore Diagonal of the rectangle = $\sqrt{(9^2 + 6^2]} = \sqrt{(81 + 36)} = \sqrt{117}$ or $3\sqrt{13}$ cm

Q23. Answer: (d) Landfills

The correct answer is Landfills.

Environment Degradation: Environmental degradation is the disintegration of the earth or deterioration of the environment through the consumption of assets, for example, air, water, and soil; the destruction of environments and the eradication of wildlife.

• Types of Environmental Degradation:

• Land and soil degradation: Degradation of soil quality from poor farming practices, excessive use of fertilizers and pesticides, leakage from landfills, etc.

• Water degradation: Pollution of water from trash dumped in oceans, illegal dumping, disposal of large amounts of industrial waste into nearby rivers or lakes, etc.

• Atmospheric degradation: This includes air degradation, particle pollution, and the depletion of the ozone layer.

• Several other kinds of pollution: Apart from land, water, and atmospheric degradation, many other kinds of pollution such as noise pollution, light pollution are part of environmental degradation.

• Causes of Environmental Degradation:

• Land Disturbance

• Pollution

• Overpopulation

• Landfills

• Deforestation

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• Impact of Environmental Degradation:
• Ozone layer depletion
• Loss of Biodiversity
• Impact on human health
• Impact on Tourism Industry
• Economic Impact

Q24. Answer: (a) A

Cost of 3 minutes 30 seconds (210 sec) = Rs. 10

Therefore Cost of 4 minutes 10 seconds (250 sec) = [10/210] × 250 = Rs. 11.9

Q25. Answer: (c) Andhra Pradesh

Satish Dhawan Space Centre, also known as Sriharikota High Altitude Range is located in Sriharikota in Andhra Pradesh. It is a rocket launch centre operated by Indian Space Research Organisation (ISRO).

Q26. Answer: (a) Lasers

In bloodless surgery, the control of bleeding is achieved with the use of laser or sonic scalpels. The recovery rate is faster with bloodless surgery.

Q27. Answer: (b) C

35968 ÷ 562 ÷ 8

=> 35968 × 1/562 × 1/8

=> 8

Q28. Answer: (b) A

Total time to cover and back the same place by walking = 11 hrs 12 min

Total time to cover only one way by walking = (11 hr 12 min)/2 = 5 hr 36 min

Total time to cover only one way by riding = 9 hr 15 min – 5 hr 36 min = 3 hr 39 min

Therefore Total time to cover and back the same place by riding = (3 hr 39 min) × 2 = 7 hr 18 min.

Q29. Answer: (d) A

Distance covered by Track Q on Friday = 302 km

Time to cover 302 km distance by Track Q in = 8 hrs

Therefore Speed of the track Q = 302/8 = 37.75 km/h

Q30. Answer: (b) B

Total distance covered by Truck S on all days = 325 + 314 + 312 + 278 + 292 + 274 = 1795 km

Therefore Required average = 1795/6 km

Q31. Answer: (d) D

Total distance covered by all trucks on Saturday = 292 + 284 + 260 + 274 + 280 + 242

= 1632 km.

Q32. Answer: (c) Nitrogen

The bags of chips are filled with nitrogen gas.

Key Points

• This is done to prevent the chips from oxidizing.
• Oxygen is very reactive, and combines with other molecules, causing chemical changes to take place.
• Nitrogen is very stable and unreactive.
• So bags filled with nitrogen gas is good for storing foods that quickly oxidize.

Q33. Answer: (c) D

Given:

CP = Rs. 3400

Loss = 15%

Desired Profit = 15%

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Formula used:

Profit % = {(SP - CP)/CP} × 100

Loss % = {(CP - SP)/CP} × 100

where,

SP = Selling price

CP = Cost price

Calculations:

Loss % = {(CP - SP)/CP} × 100

=> 15 = {(CP - 3400)/CP} × 100

=> 0.15CP = CP - 3400

=> 0.85CP = 3400

=> CP = Rs. 4000

To gain profit of 15%,

Profit % = {(SP - CP)/CP} × 100

=> 15 = {(SP - 4000)/4000} × 100

=> 600 = SP - 4000

=> SP = Rs. 4600

Therefore The bus should be sold at Rs. 4600 to get a profit of 15%.

Alternate Method

SP of the bus = Rs. 3400

=> CP of the bus = 3400 × 100/85 = Rs. 4000

New SP of the bus = 4000 × 115/100 = Rs. 4600

Therefore The bus should be sold at Rs. 4600 to get a profit of 15%.

Q34. Answer: (c) B

The logic is:

TRACTER = 14

Number of letters in the word TRACTER is 7 and (7 × 2) = 14

TROLLEY = 14

Number of letters in the word TROLLEY is 7 and (7 × 2) = 14

Similarly,

SCOOTER

Number of letters in the word SCOOTER is 7 and (7 × 2) = 14

Hence, '14' is the correct answer.

Q35. Answer: (b) A

The relation is:

LUNG : MAN → The human respiratory system is a series of organs responsible for taking in oxygen and expelling carbon dioxide. The primary organs of the respiratory system are the lungs, which carry out this exchange of gases as we breathe.

Similarly,

GILL : _____ → Fish gills are organs that allow fish to breathe underwater. Most fish exchange gases like oxygen and carbon dioxide using gills that are protected under gill covers on both sides of the pharynx (throat). Gills are tissues that are like short threads, protein structures called filaments.

Hence, 'fish' is the correct answer.

Q36. Answer: (b) C

Divide Rs. 156 in the ratio = 1 : 2 : 4 : 5

1 + 2 + 4 + 5 = 12 unit

=> 12 unit = 156

=> 1 unit = 13

=> 2 unit = 26

=> 4 unit = 52

=> 5 unit = 65

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Therefore The rupees in the respective ratios are given = 13, 26, 52, 65

Q37. Answer: (d) A

The venn diagrammatic representation for the given statements is shown below:

Given :

33 students passed in Section A, 34 students passed in Section B and 32 passed in Section C.

A = 33, B = 34, C = 32.

10 students passed in Section A and Section B,

e + g = 10

9 students passed in Section B and Section C,

g + f = 9

8 passed in Section A and Section C,

d + g = 8

The number of students who passed each section alone was equal and was 21 for each section.

a = b = c = 21

Calculation :

A = 33

→ a + d + g + e = 33

putting values from above statement

→ 21 + 8 + e = 33

→ e = 4

therefore we can get other values from here as

g = 6, d = 2, f = 3

Now,

The number of students passed in one or more of the sections

= a + b + c + d + e + f + g

= (21 + 21 + 21 + 2 + 4 + 3 + 6) = 78

The number of students who passed in Section A alone

= a = 21

The ratio of the number of students passed in one or more of the sections to the number of students who passed in Section A alone = 78/21.

Hence, '78/21' is the correct answer.

Q38. Answer: (a) B

The venn diagrammatic representation for the given statements is shown below:

Given :

33 students passed in Section A, 34 students passed in Section B and 32 passed in Section C.

A = 33, B = 34, C = 32.

10 students passed in Section A and Section B,

e + g = 10

9 students passed in Section B and Section C,

g + f = 9

8 passed in Section A and Section C,

d + g = 8

The number of students who passed each section alone was equal and was 21 for each section.

a = b = c = 21

Calculation :

A = 33

→ a + d + g + e = 33

putting values from above statement

→ 21 + 8 + e = 33

→ e = 4

therefore we can get other values from here as

g = 6, d = 2, f = 3

Now,

The students who passed in all the sections lies in the intersection area of all the three regions A, B and C, that is g.

The number of students who passed all the three sections = g = 6.

Hence, '6' is the correct answer.

Q39. Answer: (b) C

The Venn diagrammatic representation for the given statements is shown below:

Given :

33 students passed in Section A, 34 students passed in Section B and 32 passed in Section C.

A = 33, B = 34, C = 32.

10 students passed in Section A and Section B,

e + g = 10

9 students passed in Section B and Section C,

g + f = 9

8 passed in Section A and Section C,

d + g = 8

The number of students who passed each section alone was equal and was 21 for each section.

a = b = c = 21

Calculation :

A = 33

→ a + d + g + e = 33

putting values from above statement

→ 21 + 8 + e = 33

→ e = 4

therefore we can get other values from here as

g = 6, d = 2, f = 3

Now,

The number of students who passed only one of the three sections

= a + b + c

= 21 + 21 + 21 = 63.

Hence, '63' is the correct answer.

Q40. Answer: (a) Floppy

New technology has left the floppy disk almost obsolete. In the late 80's, the 5.25-inch floppy disk was on its way out and in 1987 the 3.5-inch floppy disk had moved into the high density category with a capacity of 1.44 MB. 711 1.44 MB floppy disks to equal 1 Gigabyte.

Q41. Answer: (a) D

Assertion: Water is essential for life. → True

All known life needs liquid water to function properly. It's essential in part because water is such a good solvent, readily dissolving and transporting nutrients across a wide range of temperatures. Its molecules also play a key role in ensuring proteins behave properly.

Reason: It is formed using three parts of Hydrogen and one part of Oxygen. → False

The water molecule is composed of two hydrogen atoms, each linked by a single chemical bond to an oxygen atom. Most hydrogen atoms have a nucleus consisting solely of a proton.

Hence, Assertion is true but Reason is false.

Q42. Answer: (c) C

7497 ÷ 147 – 8

=> 51 – 8

=> 43

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Q43. Answer: (b) Madhya Pradesh

• The Bhimbetka rock shelters are an archaeological site of the Paleolithic, exhibiting the earliest traces of human life on the Indian Subcontinent, and thus the beginning of the Indian Stone Age.

• They are located in the foothills of the Vindhyan Mountains on the southern edge of the central Indian plateau, in the Raisen district of MP.

• It is located inside the Ratapani Wildlife Sanctuary.

• It was declared as a World Heritage Site in 2003.

Q44. Answer: (a) B

Symbol	**÷**	**•**	**•**	**×**
Meaning	×	•	÷	•

Given expression: 19 ÷ 9 × 51 – 171 + 19

After replacing the letters by their meaning, we get:

19 × 9 - 51 + 171 ÷ 19

= 171 – 51 + 9

= 180 – 51

= 129

Hence, '129' is the correct answer.

Q45. Answer: (a) USA

NASA's Hubble Space Telescope was launched April 24, 1990, on the space shuttle Discovery from Kennedy Space Center in Florida (Southeastern most U.S. state). The Hubble Space Telescope is named in honor of astronomer Edwin Hubble.

Q46. Answer: (c) C

Make the denominator same of all the given fractions,

=> 2/7 = 2/7 × 10/10 = 20/70

=> 0.3 = 3/10 × 7/7 = 21/70

=> 3/7 = 3/7 × 10/10 = 30/70

Therefore Ascending order of the fractions = 2/7, 0.3, 3/7

Q47. Answer: (c) Violin

Dr. Lakshminarayana Subramaniam is an Indian violinist. He was honored with the title "Violin Chakravarthy" (emperor of the violin).

Q48. Answer: (d) India

The correct answer is India.

• The Constitution of India is the longest written constitution of any sovereign country in the world, containing 449 articles in 25 parts, 12 schedules with 117,369 words in its English-language translation.

Key Points

• Many provisions of the Indian Constitution is borrowed from other constitution but the Indian Constitution is Indian in character.

• We just borrowed these provisions and moulded them as per the Indian requirement.

List of provisions that are borrowed from other constitutions are-

Country	**Borrowed Provisions**
Government of India Act 1935	The federal scheme, Office of Governor, Judiciary, Public Service Commission, Emergency, Administrative details
British Constitution	Parliamentary Government, Rule of Law, legislative Procedure, Single citizenship, Cabinet system, Writs, Bicameralism
US Constitution	Fundamental rights, Independence of Judiciary, Judicial Review, Impeachment of the President, Removal of the Supreme court and High Court judges, Post of Vice-President.
Irish Constitution	DPSP, the nomination of members to Rajya Sabha, Method of the election of President

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Canadian Constitution	Federation with a strong centre, vesting of Residuary powers in the Center, Appointment of the state governors by the Center, Advisory jurisdiction of the Supreme court.
Australian Constitution	Concurrent list, Freedom of trade, commerce, and intercourse, Joint sitting of the two houses of parliament
Soviet Constitution	Fundamental Duties, Ideal of Justice
French Constitution	Republic, ideals of Liberty, Equality, and Fraternity
South African Constitution	Procedure for the amendment of the Constitution and election of members of the Rajya Sabha
Weimar Constitution	Suspension of Fundamental Rights during Emergency
Japanese Constitution	The procedure established by law

Q49. Answer: (a) D

Let the distance be x km

According to the question

x/3 + x/5 + x/8 = 39.5/60

=> x [(40 + 24 + 15)/120] = 39.5/60

=> 79x = 39.5 × 2

=> x = 39.5/79 × 2

=> x = 1

Therefore The total distance = 3x = 3 km.

Q50. Answer: (d) C

A. 20 × 1 – 7 = 3

After interchanging '-' and '×' signs as well as '7' and '3', we get:

20 – 1 × 3 = 7

L.H.S = 20 – 3

= 17 ≠ R.H.S

B. 1 × 20 – 7 = 20

After interchanging '-' and '×' signs as well as '7' and '3', we get:

1 – 20 × 3 = 20

L.H.S = 1 – 60

= -59 ≠ R.H.S

C. 3 – 7 × 1 = 20

After interchanging '-' and '×' signs as well as '7' and '3', we get:

7 × 3 – 1 = 20

L.H.S = 21 – 1

= 20 = R.H.S

D. 20 – 3 × 1 = 7

After interchanging '-' and '×' signs as well as '7' and '3', we get:

20 × 7 – 1 = 3

L.H.S = 140 – 1

= 139 ≠ R.H.S

Hence, '3 – 7 × 1 = 20' is the correct answer.

Q51. Answer: (c) Golden Glove

The Golden Glove Award (currently commercially termed "Adidas Golden Glove"; previously known as the "Lev Yashin Award" from 1994 to 2006) for best goalkeeper, first awarded in 1994.

Q52. Answer: (c) D

The relation is:

EDITOR : MAGAZINE→ A magazine editor is a senior-level journalist responsible for the planning and execution of issues of

consumer and trade magazines. These editors choose the exact content, including written work and photos, the print or Web magazine will publish.

Similarly,

_____ : DRAMA → A theatre director or stage director is a professional in the theatre field who oversees and orchestrates the mounting of a theatre production such as a play, opera, dance-drama, musical theatre performance etc. by unifying various endeavours and aspects of production.

Hence, 'director' is the correct answer.

Q53. Answer: (b) Canada

The MOST Space Telescope (which stands for Micro variability and Oscillation of Stars) was launched into space in 2003. It is the first Canadian scientific satellite in orbit in 33 years, and it is the first space telescope to be entirely designed and built in Canada.

Q54. Answer: (a) D

Saltoteuk → LOTUS flower and TEAK tree are the two words made.

First letter of the name of flower is 'L' and tree is 'T'

Hence, 'LT' is the correct answer.

Note: Teak is a type of tree that produces hardwood.

Q55. Answer: (d) C

The logic is:

Similarly,

Hence, 'DRAPOEL' is the correct answer.

Q56. Answer: (c) Saraswati

Ganga and Yamuna are the two physical rivers and Saraswati is an invisible river. The Saraswati remains hidden, but the faithful believe that she makes her presence felt underwater. During the monsoon, when the rivers are in full flow, the confluence is seen clearly due to the force of the water.

Q57. Answer: (a) A

P = Rs. 3500, r = 4% and time = 2 years

As we know,

A = P (1 + r/100)^t

=> A = 3500 (1 + 4/100)²

=> A = 3500 × 26/25 × 26/25

=> A = Rs. 3785.6

Therefore CI = 3785.6 – 3500 = Rs. 285.6

Q58. Answer: (d) B

The family tree diagram is shown below:

Hence, the person in the painting is 'Paternal Grandfather' of Reema.

Q59. Answer: (b) B

P = 10,000, r = 20% and time = 6 month

If interest compounded quarterly, then

r = 20/4 = 5% and time = 6/2 = 2 quarters

As we know,

A = P (1 + r/100)^t

=> A = 10000 (1 + 5/100)²

=> A = 10000 × 21/20 × 21/20

Therefore A = Rs. 11025

Q60. Answer: (d) A

The correct answer is Option 4, i.e A - 49%.

• The Government increased the FDI limit (foreign direct investment) for news and current affair channels, DTH and Cable Operators.

• The government announced that foreign investment will be relaxed in 15 sectors.

• While 100% FDI has been allowed in DTH and Cable Networks (MSOs and LCOs), the foreign investment in the uplinking of news and current affairs TV channels has been raised to 49% from 26% earlier.

• Print and Digital Media have an FDI of 26%.

Q61. Answer: (c) Mangrove

The Correct answer is Mangrove.

Key Points

• Sundarbans is the largest single block of tidal halophytic mangrove forest in the world.

• It is a natural region in southern Bangladesh and the extreme southern part of the Indian state of West Bengal in the vast river delta on the Bay of Bengal.

Important Points

• Mangrove, any of certain shrubs and trees that belong primarily to the families Rhizophoraceae, Acanthaceae, Lythraceae, Combretaceae, and Arecaceae.

• Grow in dense thickets or forests along tidal estuaries, The term mangrove also applies to thickets and forests of such plants.

• Woody shrub, has several stems, none dominant, and is usually less than 3 m (10 feet) tall. When much-branched and dense, it may be called a bush.

• A marsh is a wetland dominated by herbaceous plants such as grasses, rushes, or sedges. Marshes usually form along the shallow edges of lakes.

• Papyrus, writing material of ancient times and also the plant from which it was derived, Cyperus papyrus also called paper plant & Papyrus is a grasslike aquatic plant that has a woody.

Q62. Answer: (c) Nanotechnology

The Oxford English Dictionary (OED) defines nanotechnology as "The branch of technology that deals with dimensions and tolerances of 1 to 100 nanometers, or, generally, with the manipulation of individual atoms and molecules."

Q63. Answer: (b) B

The variance of a set of data is = 144

Therefore The standard deviation of the data is = √144 = 12

Q64. Answer: (b) C

Given:

A shopkeeper cheats to the extent of 9% while buying and selling fruits

by using tampered weights.

Concept Used:

Profit% = Cheat weight/Original weight × 100

Calculation

Let the cost price (C.P.) per kg of the fruits is Rs. 1000.

The shopkeeper cheats to the extent of 9% while buying and selling

Cheat 9% at the time of buy on 1000 gm

=> 1000 × (100 + 9)/100

=> 1090 gm purchase

Cheat at the time of selling on 1000 gm

=> 1000 × (100 - 9)/100

=> 910 gm sold

Profit % = (1090 - 910)/910

=> 19.78%

Therefore His total gain in percentage is 19.78%.

Q65. Answer: (d) A person lifting an heavy object

CONCEPT:

• Friction: The opposing force which opposes the relative motion between two surfaces is called friction.

• It is denoted by f and the SI unit of the frictional force is Newton (N).

Friction (f) = μ N

Where μ is the coefficient of friction and N is the normal force between two surfaces

EXPLANATION:

• Friction is the resistance that one surface or object encounters when moving over another.

• A person lifting a heavy object is not an example of friction because there is no relative motion between two surfaces here. So option 4 is correct.

Q66. Answer: (a) D

sin x = 4/5

Perpendicular = P, Hypotenuse = H and Base = B.

=> sin x = P/H = 4/5

=> P = 4 and H = 5

As we know,

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

=> $5^2 = 4^2 + B^2$

=> $B^2 = 25 – 16 = 9$

=> B = √9

=> B = 3

Now, tan x = P/B

=> tan x = 4/3

And, cot x = B/P

=> cot x = 3/4

Now,

Therefore (tan x)/(cot x) = (4/3)/(3/4)

=> 4/3 × 4/3

=> 16/9

Other Method:

sin x = 4/5

Perpendicular = P, Hypotenuse = H and Base = B.

=> sin x = P/H = 4/5

=> P = 4 and H = 5

As we know,

H2 = P2 + B2

=> 52 = 42 + B2

=> B2 = 25 – 16 = 9

=> B = √9

=> B = 3

So, cos x = B/H = 3/5

Now, tan x/cot x = tan x × tan x = $\tan^2 x = (\sin x/\cos x)^2$

=> $(4/5)^2/(3/5)^2 = 16/9$

Q67. Answer: (b) Bengal

The first jute mill was established at Rishra, on the River Hooghly near Calcutta in 1855 when Mr. George Acland brought jute spinning machinery from Dundee.

Q68. Answer: (d) Hypertext related file

CSS is an acronym for Cascading Style Sheet. Files that contain the .css file extension are used to format the contents of an associated Web page. While the CSS file format is most commonly associated with website pages that have been written in the HTML and XHTML programming languages, the format can also be applied to any type of XML document.

Q69. Answer: (b) C

As we know,

Number of sides any polygon = 360°/each exterior angle

Therefore Required number of sides of a polygon having each exterior angle 45° is = 360°/45° = 8

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Q70. Answer: (d) A

Let the cost price of the article be Rs. x

SP (at 2% profit) = 102/100 × x = 1.02x

SP (at 14% profit) = 114/100 × x = 1.14x

Therefore Required ratio = 1.02 : 1.14 = 17 : 19

Q71. Answer: (c) C

Given expression: 5 + 4 ÷ 2 – 8 × 14

When signs – and ×, and numbers 5 and 14 are interchanged, we get:

14 + 4 ÷ 2 × 8 – 5

= 14 + 2 × 8 – 5

= 14 + 16 – 5

= 30 – 5

= 25

Hence, '25' is the correct answer.

Q72. Answer: (b) Homo naledi

Homo naledi is an extinct species of hominin, which anthropologists first described in 2015 and have assigned to the genus Homo. The word "naledi" means "star" in the Sotho-Tswana languages. It, and the corresponding name Dinaledi Chamber ("chamber of stars"), were chosen to reference the Rising Star cave system where the fossils were found.

Q73. Answer: (a) It is human made ecosystem

Aquarium is a human made ecosystem. An aquarium comprises of green plants, fish and other aquatic animals.

Q74. Answer: (c) C

2^4 ÷ 2^(-1)

=> 2^(4 + 1)

=> 2^5

=> 2 × 2 × 2 × 2 × 2

=> 32

Q75. Answer: (b) A

Suppose, 0.023636... = x ----(i)

Multiply by 100 in equation (i), we get

100x = 2.3636... ----(ii)

Multiply by 100 in equation (ii), we get

10000x = 236.3636... ----(iii)

Subtract equation (ii) from equation (iii)

9900x = 234

=> x = 234/9900 = 26/1100

Therefore x = 13/550

Q76. Answer: (c) Recombinant DNA technology

Genetic engineering is the direct manipulation of an organism's genome using biotechnology. It is a set of technologies used to change the genetic makeup of cells, including the transfer of genes within and across species boundaries to produce improved or novel organisms.

Q77. Answer: (c) B

The mode of the data is (-3, 4, 0, 4, -2, -5, 1, 7, 10, 5) = 4 (highest frequency)

Q78. Answer: (a) Table Tennis

Mouma Das is a table-tennis player from West Bengal, India. Soumyajit Ghosh is also an Indian table tennis player from Siliguri, West Bengal. He was the youngest Indian player to qualify for the London, 2012 Olympics.

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Q79. Answer: (d) D

54367 × 9999

=> 54367 × (10000 – 1)

=> 543670000 – 54367

=> 543615633

Q80. Answer: (a) Mosquito bite

Only certain body fluids — blood, semen (cum), pre-seminal fluid (pre-cum), rectal fluids, vaginal fluids, and breast milk — from an HIV - infected person can transmit HIV. Most commonly, people get or transmit HIV through sexual behaviors and needle or syringe use. HIV is not passed through mosquito bites.

Q81. Answer: (c) C

The relation is:

CLIMB : TREE → Tree climbing is a recreational or functional activity consisting of ascending and moving around in the crown of trees.

Similarly,

A. ROW : SHIP → Row is the position where the container is placed across the width of the ship.

B. RISE : TOP →These two words are synonyms.

Rise - move from a lower position to a higher one; come or go up.

Top - the highest or uppermost point, part, or surface of something.

C. ASCEND : CLIFF → Rock climbing is a sport in which participants climb up, down or across natural rock formations, and a*scend* c*liffs*.

D. FILE : FINGER → These two words have different meaning.

File - a folder or box for holding loose papers together and in order for easy reference.

Finger - each of the four slender jointed parts attached to either hand (or five, if the thumb is included).

Hence, ‘ASCEND : CLIFF’ is the correct answer.

Q82. Answer: (c) A

The relation is:

ROASTER : DUTY → Duty Roaster is a program for managing and generating duty rotas.

Similarly,

INVENTORY : _____ → Inventory is the account of all the goods a company has in its stock, including raw materials, work-in-progress materials, and finished goods that will ultimately be sold.

Hence, ‘goods’ is the correct answer.

Q83. Answer: (a) A

The family tree diagram is shown below:

Hence, Yuvraj is ‘nephew’ of Deepti.

Q84. Answer: (a) C

Rotational symmetry:

If a figure is rotated around a centre point and it still appears exactly as it did before the rotation, it is said to have rotational symmetry. A number of shapes like squares, circles, regular hexagon, etc. have rotational symmetry.

The order of rotational symmetry of a rhombus is 2, (1 in respect to length and 1 in respect to height)

Q85. Answer: (b) Yuri Gagarin

On 12 April 1961, Russian cosmonaut Yuri Gagarin became the first human to travel into space when he launched into orbit on the Vostok 3KA - 3 spacecraft (Vostok 1).

Q86. Answer: (c) Arnold Schwarzenegger

Arnold Schwarzenegger has agreed to act in the upcoming film Enthiran 2.

Q87. Answer: (a) D

? = 7x + 3x(x – 4)

=> 7x + $3x^2$ – 12x

Therefore ? = $3x^2$ – 5x

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Q88. Answer: (d) D

As we know,

The product of two numbers = HCF × LCM

=> 3192 = 56 × LCM

=> LCM = 3192/56

Therefore LCM = 57

Q89. Answer: (b) Zinc coated iron

Galvanized iron is a type of iron that has been coated in a layer of zinc to help it resist corrosion.

Q90. Answer: (a) Archimedes' principle

The correct answer is Archimedes' principle.

Concept:

Archimedes principle:

the principle of Archimedes states "When a body is immersed in a liquid, an upward thrust, equal to the weight of the liquid displaced, acts on it."

Thus, when a solid is fully immersed in a liquid, it loses weight which is equal to the weight of the liquid it displaces.

i.e., Apperent weight = actual weight - buoyant force = mg - ρ gV

where m is mass of the object, ρ is the density of the fluid

Hence if there is no gravity, there is no Upward Thrust.

The upward force applied to the object is called the buoyant force.

Here,

ρ = density of liquid

g = acceleration due to gravity

V = volume of liquid displaced by the object

Explanation:

Archimedes' principle, a physical law of buoyancy states that any body completely or partially submerged in a fluid (gas or liquid) at rest is acted upon by an upward, or buoyant, force the magnitude of which is equal to the weight of the fluid displaced by the body.

Hence floating of the ship is based on Archimedes principle:

Q91. Answer: (a) B

The data are 2, 9, 9, 3, 6, 9, 4

As we know,

Mean of the data = Sum of all observations/Number of all observations

=> Mean of the data = (2 + 9 + 9 + 3 + 6 + 9 + 4)/7 = 42/7 = 6

Mean deviation = [|2 – 6|+|9 – 6|+|9 – 6|+|3 – 6|+|6 – 6|+|9 – 6|+|4 – 6|]/7

Therefore Mean deviation = (4 + 3 + 3 + 3 + 0 + 3 + 2)/7 = 18/7

Q92. Answer: (c) B

Let the efficiency of the Tarun be 1 unit/day

=> Efficiency of Prahshanth = 2 units/day

Total work = (2 + 1) × 21 = 63 units

Therefore Tarun alone finish the whole work in = 63/1 = 63 days

Q93. Answer: (b) B

A. If all players play to their full potential, we will win the match.

B. We have won the match.

Conclusions:

I. All players played to their full potential. → True

As, both the statement justifies the conclusion, they have won the match which means they played to their full potential.

II. Some players did not play to their full potential. → False

As, they have won the match and 'if all players play to their full potential, we will win the match'.

So, the conclusion is not justified by the statement.

Hence, only conclusion I follows.

Q94. Answer: (d) cotton and silk

Even before East India Company consolidated power, India was exporting cotton, silk, indigo dye, salt, saltpetre, tea and opium. Fine textiles among them were cotton and silk.

Q95. Answer: (d) C

The logic is:

Similarly,

Hence, 'LOGYANA' is the correct answer.

Q96. Answer: (b) A

Shortcut Trick

Apply the direct formula for tan (A + B).

Numerator = sum of tan A and tan B → 15/8 + 7/24 = (45 + 7)/24 = 52/24 = 13/6.

Denominator = 1 − (product of tan A and tan B) → 1 − (15/8 × 7/24) = 1 − 105/192 = 87/192.

Result = (13/6) ÷ (87/192) = (13/6) × (192/87) = 13 × 32 / 87 = 416/87.

Therefore The correct answer is 416/87.

Alternate Method

Given:

tan A = 15/8

tan B = 7/24

Formula Used:

tan (A + B) = (tan A + tan B) / (1 − tan A × tan B)

Calculations:

=> Numerator = (15/8) + (7/24)

=> LCM of 8 and 24 is 24.

=> Numerator = (15×3 + 7) / 24 = (45 + 7) / 24 = 52/24 = 13/6

=> Denominator = 1 − (15/8 × 7/24)

=> Denominator = 1 − (105 / 192)

=> Denominator = (192 − 105) / 192 = 87 / 192

=> tan (A + B) = (13/6) / (87/192)

=> tan (A + B) = (13/6) × (192/87)

=> tan (A + B) = 13 × 32 / 87 = 416/87

Therefore The correct answer is 416/87.

Additional Information

Compound Angle Formulas

tan (A − B) = (tan A − tan B) / (1 + tan A × tan B).

Double Angle Formulas

tan 2A = (2 tan A) / (1 − $\tan^2$ A).

Complementary Angles

If A + B = 45°, then (1 + tan A)(1 + tan B) = 2.

Q97. Answer: (b) Right to Property

The six fundamental rights recognized by the Indian constitution are:

1. Right to equality
2. Right to freedom
3. Right against exploitation
4. Right to freedom of religion
5. Cultural and Educational rights
6. Right to constitutional remedies

The Forty-Fourth Amendment of 1978 deleted right to property from the list of fundamental rights

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Q98. Answer: (b) Crickets

Social insect, any of numerous species of insects that live in colonies and manifest three characteristics: group integration, division of labor, and overlap of generations. Social insects are best exemplified by all termites (Isoptera) and ants (Formicidae) and by various bees and wasps (Hymenoptera).

Q99. Answer: (a) B

Given:

-4 = -7 + 3x

Calculation:

-4 = -7 + 3x

=> 3x = 7 – 4

=> x = 3/3

Therefore x = 1

Q100. Answer: (a) A

Assertion: The phenomenon of nuclear fission generates great energy. → True

Nuclear fission is when an atoms nucleus splits into two smaller nuclei, which typically releases some high energy photons (light, gamma rays really), and free neutrons, which themselves have kinetic energy.

Reason: The process in which a nucleus is broken into two parts is called nuclear fission. → True

Hence, Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

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