RRB NTPC Tier I Official Paper (Held On: 16 Apr 2016 Shift 3) (Previous Year Paper)

RRB NTPC • 2016 • 100 questions • 90 minutes • Answer key and solutions

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Q1. Who founded Twitter?

(a) Mark Zuckerberg
(b) Tim Cook
(c) Noah Ark
(d) Evan Williams

Q2. An Assertion (A) and a Reason (R) are given below.

Assertion (A): In India, females have higher life expectancy than the males.

Reason (R): Females receive a better diet.

Choose the correct option.

(a) A is true but R is false.
(b) A is false but R is true.
(c) Both A and R are true.
(d) Both A and R are false.

Q3. Vikash purchased 5 bananas for Rs. 4 and sold 4 bananas for Rs. 5. Calculate his % profit?

A. 55.56%
B. 53.25%
C. 45.50%
D. 56.25%

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

Q4. Which State in India has the highest forest Cover?

(a) Kerala
(b) Madhya Pradesh
(c) Maharashtra
(d) Bihar

Q5. Based on the analogy given, find the missing word from the given options.

Butter : Milk ? Book : ------

(a) Author
(b) Paper
(c) Chapter
(d) Printing

Q6. _____ is a unit of length, roughly the distance from Earth to the Sun.

(a) Kilometres
(b) Astronomical unit
(c) Kelvin
(d) Joule

Q7. What is the name of the process where solid is directly converted into gas?

(a) Sublimation
(b) Deposition
(c) Condensation
(d) Evaporation

Q8. In which city is the newly proposed AIIMS to be setup in Maharashtra?

A. Nagpur
B. Mumbai
C. Aurangabad
D. Pune

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

Q9. Which vaccine is primarily used against tuberculosis?

(a) BCG
(b) DPT
(c) HiB
(d) Varicella

Q10. Based on the analogy given, find the missing pair from the given options.

5 : 35 ? ----------: ----------

(a) 11 : 55
(b) 7 : 77
(c) 3 : 24
(d) 9 : 45

Q11. Consider the following statements and choose the correct option:

1. It is possible to draw at least 3 straight lines from the given 2 points

2. If the sides of one angle are parallel to the sides of the other respectively, then both the angles are neither equal nor complementary.

A. Both 1 and 2 are not correct.
B. Both 1 and 2 are correct.
C. 1 is false and 2 is correct.
D. 1 is correct and 2 is false.

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

Q12. An Assertion (A) and a Reason (R) are given below.

Assertion (A): Simla is colder than Delhi.

Reason (R): Simla is at a higher altitude as compared to Delhi.

Choose the correct option.

(a) A is true but R is false.

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(b) A is false but R is true.
(c) Both A and R are true and R is the correct explanation of A.
(d) Both A and R are true but R is not the correct explanation of A.

Directions

Study the following information carefully and answer the questions given below it.

There are six persons in a family – three males and three females. Out of these, there are two married couples and two persons who are unmarried. Each one of them likes different colour, viz. Blue, Red, Pink, Green, Yellow and White.

Seema, who likes Red colour, is Anitha's mother-in-law and Anitha is Raja's wife. Dinesh is Rohan's father and he does not like the Blue colour or White colour. Bavya likes the Yellow colour and is Rohan's sister. Rohan likes Pink colour. Raja does not use White colour.

Q13. How is Rohan related to Seema?

(a) Brother
(b) Son
(c) Father
(d) None of these

Q14. Which of the following colours is liked by Anitha?

(a) White
(b) Yellow
(c) Pink
(d) Green

Q15. Which of the following is one of the married couples?

(a) Rohan - Bavya
(b) Dinesh - Bavya
(c) Dinesh - Seema
(d) Rohan - Seema

Q16. If DRIVER is coded as 5 and BELIEVED is coded as 7, then what is the code for EXAMINATION?

(a) 9
(b) 10
(c) 11
(d) 8

Q17. Anil can do a piece of work in 14 days which Rohit can do in 21 days. They worked together for few days after which Anil left. If Rohit worked alone for 3 days, find the total number of days it took to complete the whole work.

A. 31/5
B. 51/5
C. 21/5
D. 13/5

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

Q18. Rearrange the jumbled up letters to form a meaningful word and find the odd one out.

(a) ESAEIDS
(b) EAHLTH
(c) LISESNL
(d) CKSESNSI

Q19. If A : B = 3 : 4 and B : C = 6 : 5 then A : (A + C) is:

A. 9 : 11

B. 9 : 10

C. 9 : 19

D. 6 : 7

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

Q20. If two complimentary angles are in the ratio of 11 : 7, find the smaller angle.

A. 35°

B. 55°

C. 65°

D. 25°

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

Q21. What does TCP stand for with respect to computer networks?

(a) Transmission Control Protocol
(b) Transfer Call Plan
(c) Transfer Control Process
(d) Transmission Call Protocol

Q22. 30 litres of salt solution contains 5% salt. How many litres of water must be added so as to get a resulted solution containing 3% salt?

A. 20 litres

B. 25 litres

C. 30 litres

D. 35 litres

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

Q23. If DIJOB means CHINA, then the last letter of the word got by decoding KBQBO is

(a) I
(b) A
(c) M
(d) N

Q24. Below are given statements followed by two conclusions I and II. You have to take the given statements to be true even if they seem to be at variance from commonly known facts.

Statements: All birds are tall. Some tall are peacocks.

Conclusions:

I. Some birds are peacocks.

II. Some peacocks are tall.

Decide which of the below options locally follows the given statement.

(a) Both conclusions I and II follows
(b) Neither conclusion I nor II follows

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(c) Only conclusion I follows
(d) Only conclusion II follows

Q25. If the length of the shadow of a vertical pole on the horizontal ground is √3 times its height, then the angle of elevation

A. 40°
B. 50°
C. 30°
D. 45°

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

Q26. On which river is the city Madurai situated?

(a) Cooum
(b) Kaveri
(c) Vaigai
(d) Pennar

Q27. Engineer is related to Engineering in the same way as Doctor is related to

A. Medicine
B. Hospital
C. Disease
D. Body

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

Q28. Which of the following Prime Ministers was awarded Bharat Ratna?

(a) V. P. Singh
(b) Morarji Desai
(c) Charan Singh
(d) Manmohan Singh

Q29. How much salt is present in our body?

(a) 1%
(b) 2%
(c) 0.4%
(d) 0.6%

Q30. What is the old name of Singapore?

(a) Temasek
(b) Myanmar
(c) Ceylon
(d) Bohemia

Q31. If the angles of a triangle are in the ratio of 2 : 5 : 8, then find the value of the largest angle.

A. 36°
B. 96°
C. 84°
D. 60°

(a) A

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

Q32. What is the name of the moon of Pluto?
(a) Charon
(b) Ganymede
(c) Luna
(d) Triton

Q33. If GOAT can be written as KSEX, then WOLF can be written as -------
(a) APJS
(b) AJSP
(c) ASPJ
(d) ASSJ

Q34. Find the unit digit in the given product (4211)^(102) × (361)^(52)
(a) 3
(b) 1
(c) 4
(d) 7

Q35. The traffic lights at four different road crossings change after every 15 sec, 18 sec, 27 sec and 30 sec respectively. If they all change simultaneously at 6 : 10 : 00 hours, then at what time will they again change simultaneously?
(a) 6 : 14 : 30 hours
(b) 6 : 40 : 00 hours
(c) 6 : 14 : 00 hours
(d) 10 : 40 : 00 hours

Q36. The mean of a distribution is 21 and the standard deviation is 7. What is the value of the coefficient variation?
(a) 16.66%
(b) 66.66%
(c) 33.33%
(d) 100%

Q37. Michael Schumacher, a racing driver belongs to which country?
(a) USA
(b) Germany
(c) Canada
(d) Australia

Q38. Choose the one which is odd from the following options:
(a) Rupee
(b) Lira
(c) Coin
(d) Dinar

Q39. What was the element used in traditional thermometers which is highly toxic in nature?
(a) Carbon
(b) Mercury
(c) Arsenic
(d) Cadmium

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Q40. Which of the following was built by the ancient Incas?

(a) City of Petra
(b) Hagia Sophia
(c) Macho Picchu
(d) Acropolis

Q41. In which year was the Aam Aadmi Party founded?

(a) 2010
(b) 2011
(c) 2012
(d) 2013

Q42. A spoon which looks bent in water is an example of which of the following?

(a) Reflection
(b) Refraction
(c) Retention
(d) Focus

Q43. Who discovered radioactivity?

(a) Max Planck
(b) James Clerk Maxwell
(c) Henri Becquerel
(d) Heinrich Hertz

Q44. What is special about a sword-billed hummingbird?

(a) It is the largest bird in the world
(b) Its bill is longer than rest of its body
(c) It lives only in Antarctica
(d) It cannot fly

Q45. A boy running at 10/9^(th) of his actual speed covers 39 km in 2 hours 20 minutes 24 seconds. Find the actual speed of the boy (approx).

(a) 15 km/hr.
(b) 50 km/hr.
(c) 39 km/hr
(d) 150 km/hr.

Q46. Who devised the policy of Doctrine of Lapse?

(a) Lord Curzon
(b) Lord Mountbatten
(c) Lord Dalhousie
(d) Robert Clive

Q47. Sonam’s age after eight years will be half of her father’s age. Eight years ago the ratio of their ages was 1 : 3. Find the present age of Sonam's father?

(a) 48
(b) 56
(c) 36
(d) 65

Q48. Mohan earns a profit of 20% on selling a jeans at 15% discount on printed price. The ratio of the cost price to printed price of the jean is

(a) 17 : 24
(b) 17 : 34
(c) 16 : 13

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(d) 21 : 23

Q49. Which city is awarded for best quality of life in the world in Quality of Living Ranking 2017?

(a) Vienna
(b) Zurich
(c) Auckland
(d) Munich
(e) Prague

Q50. When was the battle of Chillianwala fought?

(a) 1865
(b) 1892
(c) 1849
(d) 1856

Q51. If 'W' means 'x', 'X' means '-', 'Y' means '+' and 'Z' means '÷', then 28 Z 7 W 8 X 6 Y 4 = ?

(a) 30
(b) 3/2
(c) 32
(d) 34

Q52. If '<' stands for '-', '>' stands for '+', '=' stands for 'x' and '@' stands for '÷' then what will be the value of 27 > 81 @ 9 < 6

(a) 32
(b) 33
(c) 30
(d) 35

Q53. If 'x' means '-', '-' means 'x', '+' means '÷' and '÷ ' means '+', then what will be the value for 15 – 2 ÷ 900 + 90 x 100?

(a) 60
(b) -60
(c) 0
(d) 1

Q54. A boy on a train notices that he can count 31 telephone posts in 60 seconds. The distance between the two posts is 60 meters. Calculate the speed of the train?

(a) 90 km/hr
(b) 108 km/hr
(c) 60 km/hr
(d) 120 km/hr

Q55. Which of the following is a temple built out of marble by Vimal Shah?

(a) The Dilwara temple
(b) Brihadeeswarar temple
(c) Omkareswar temple
(d) Ranakpur Adinath temple

Q56. Who was the first Indian Badminton player to win the men's singles title at the all England Championship in 1980?

(a) Prakash Padukone
(b) Pullela Gopichand
(c) Syed Modi
(d) Chetan Anand

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Q57. Who won the Academy award for documentary 'Amy' in 2016?

(a) Duke Johnson
(b) Asif Kapadia
(c) Steven Spielberg
(d) George Miller

Q58. What is income available with a person after deducting for taxes called?

(a) Disposable Income
(b) Cash Income
(c) Salary
(d) General Income

Q59. Which of the following was the first super computer developed in 1976?

(a) Acorn Atom
(b) Cray-1
(c) PCW
(d) PET

Q60. The average of five consecutive even numbers is 40. What is the value of smallest of these numbers?

(a) 35
(b) 36
(c) 44
(d) 48

Q61. Which series is India's First Supercomputer developed in Pune?

(a) Vigyan
(b) Param
(c) Dhanush
(d) Shakti

Q62. A sum of money (P) doubles in 10 years. How much would it be in 20 years at the same rate of simple interest?

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

Q63. If $(a + c + 1) = 0$, then find the value of $(a^3 + c^3 + 1 – 3ac)$

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

Q64. Based on the analogy given, find the missing number from the given options.

49 : 81 ? 100 : ----------

(a) 144
(b) 169
(c) 225
(d) 64

Q65. If $(x + y)^2 – xy = 0$, then find the value of $(x^3 – y^3)/(x - y)$?

(a) 2
(b) 3
(c) 0
(d) 5

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Q66. One of four words is a class of which the other three belong. Identify the class.

(a) NOVELS
(b) BOOKS
(c) POEMS
(d) SHORT STORIES

Q67. A ladder is leaning against a vertical wall. The ladder is 9 meter high. When the foot of the ladder is taken 3 meter awaythen the top of the ladder reach equal to the bottom of the wall. What is the height of wall?

(a) √46 meters
(b) √45 meters
(c) √20 meters
(d) √30 meters

Q68. Who propounded the homeopathic principle of 'like cures like'?

(a) Hippocrates
(b) Samuel Hahnemann
(c) Samuel Cockburn
(d) George Vithoulkas

Directions

Study the following table carefully and answer the questions based on it.

The following table shows the domestic sales of cars of five manufacturers from 2005 to 2010.

(All the figures are in thousands)

Manufacturer	2005	2006	2007	2008	2009	2010
L	440	480	470	500	520	510
M	400	410	415	415	420	430
N	380	390	390	400	420	495
O	360	380	400	415	440	500
P	480	440	440	421	425	435

Q69. During 2006, what is the approximate share domestic sales of cars of the manufacturer M?

(a) 19.5%
(b) 10.5%
(c) 20.5%
(d) 25.5%

Q70. During 2010, the sales of which manufacturer has shown the maximum percentage increase over the previous year?

(a) L
(b) M
(c) N
(d) P

Q71. With respect to which of the following combinations, is the sales of cars the highest over the given period?

(a) L, 2009
(b) L, 2010
(c) L, 2008
(d) O, 2008

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Q72. Which one of the following interchanges in signs and numbers would make the given equation correct?

3 + 5 – 2 = 4

(a) • and -, 2 and 5
(b) • and -, 3 and 4
(c) • and -, 2 and 3
(d) • and -, 3 and 5

Q73. Which dynasty had its capital at Chittorgarh?

(a) Chauhan
(b) Sisodia
(c) Hada
(d) Rather

Q74. With which sport is the term 'Freestyle' connected with?

(a) Tennis
(b) Kho Kho
(c) Kabaddi
(d) Swimming

Q75. Atul and Binay together complete a piece of work in 5 days. If Binay alone can complete the same work in 8 days, how many days can Atul take to complete the same work alone?

(a) 40/3 days
(b) 20/3 days
(c) 9 days
(d) 10 days

Q76. An Assertion (A) and a Reason (R) are given below,

Assertion (A): The number of smartphone users in India is showing exponential growth.

Reason (R): Good 3G and 4G coverage coupled with affordable costs.

Choose the correct option.

(a) A is true but R is false.
(b) A is false but R is true.
(c) Both A and R are true and R is the correct explanation of A.
(d) Both A and R are true but R is not the correct explanation of A.

Q77. Find the dividend if the divisor is (x + 2), quotient is (4x - 5) and the remainder is 12.

(a) $4x^2 + 5x + 2$
(b) $4x^2 + 3x + 2$
(c) $4x^2 – 3x + 2$
(d) $4x^2 + 3x – 2$

Q78. Who is considered the greatest of the early Chola kings?

(a) Pulakeshi II
(b) Rajasimha
(c) Karikala
(d) Nandivarman

Q79. The mass per unit volume is called

(a) Force
(b) Work
(c) Density
(d) Pressure

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Q80. The BRICS Development Bank is now called as

(a) Asia Development Bank
(b) World Bank
(c) New Development Bank
(d) New BRICS Bank

Q81. If MACHINE is coded as 19-7-9-14-15-20-11, how will you code DANGER?

(a) 10-7-20-13-11-24
(b) 13-7-20-11-10-25
(c) 11-7-20-16-11-24
(d) 13-7-20-9-11-25

Q82. What sum will produce the same interest in 9 years at the rate 8% simple interest as Rs. 800 produce in 3 years at 9/2% per annum?

(a) Rs. 100
(b) Rs. 125
(c) Rs. 150
(d) Rs. 110

Q83. Which among the following is NOT a qualification to become a Vice President of India?

(a) Citizen of India
(b) Above 35 years of age
(c) Possess the Membership of LokSabha
(d) He or she must be qualified for election as a Member of the Rajya Sabha or the Council of States.

Directions

The following questions are based on the information given below:

Out of a group of 60 students, 25 play Cricket, 30 play Football, 24 play Volleyball, 10 play Cricket and Football, 9 play Cricket and Volleyball, 12 play Volleyball and Football and 5 play all the three.

Q84. How many students play exactly two games?

(a) 7
(b) 13
(c) 5
(d) 16

Q85. How many students do not play any one of the games?

(a) 5
(b) 2
(c) 7
(d) 1

Q86. How many students play Cricket only?

(a) 11
(b) 13
(c) 8
(d) 5

Q87. Choose the pair which is related in the same way as the words in the first pair from the given choices

Moon : Satellite ? Earth : ----------

(a) Air
(b) Planet
(c) Sun
(d) Sea

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Q88. Naveen purchased a gas cylinder and a stove for Rs. 4500. He sold the gas cylinder at a gain of 25% and the stove at a loss of 20%, still gaining 4% on the whole. Find the cost of the gas cylinder.

(a) Rs. 3600
(b) Rs. 2400
(c) Rs. 3000
(d) Rs. 2600

Q89. The name of our planet Earth originates from which language?

(a) Greek
(b) Roman
(c) English
(d) Sanskrit

Q90. Which of the following is good source of Vitamin A?

(a) Cabbage
(b) Carrot
(c) Regular Potato
(d) Strawberry

Q91. In new government policy, the price of onion is raised by 35%. By what % should a person reduce onion consumption so that the expenditure on it does not increase?

(a) 25%
(b) 29%
(c) 26%
(d) 33%

Q92. The mean of 10 observations is 13. Two more observations are included and the new mean becomes 14. The mean of two new observations is

(a) 19
(b) 18
(c) 17
(d) 16

Q93. If the standard deviation of a population is 6.5, what would be the population variance?

(a) 40.25
(b) 42.25
(c) 18.25
(d) 13

Q94. Rearrange the jumbled up letters to form a meaningful word and find the odd one out.

(a) ROUWBR
(b) EDN
(c) ORFO
(d) ETNS

Q95. How many natural numbers between 15 and 85 are divisible by 7?

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

Q96. Who proposed the Scientific Management School of thought as opposed to the Administrative Management School of thought?

(a) Henry Fayol
(b) Frederick Taylor

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(c) Peter Drucker
(d) Max Weber

Q97. Who discovered the AB-O blood group system?
(a) Karl Koller
(b) Maurice Hilleman
(c) Karl Landsteiner
(d) Edward Jenner

Q98. Which value is closest to [(5.168 × 4453 × 3.194) / (67.999 × 4224.017)]
(a) 0.2
(b) 0.002
(c) 2
(d) 0.02

Q99. HCF of two numbers is 19 and their LCM is 665. If one of the number is 95, find the other.
(a) 19
(b) 133
(c) 190
(d) 77

Q100. Which of the following states in India has the highest area under mangroves?
(a) Gujarat
(b) Andhra Pradesh
(c) Maharashtra
(d) West Bengal

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) Evan Williams

Twitter was created in March 2006 by Jack Dorsey, Noah Glass, Biz Stone, and Evan Williams and launched in July. The service rapidly gained worldwide popularity. In 2012, more than 100 million users posted 340 million tweets a day, and the service handled an average of 1.6 billion search queries per day.

Q2. Answer: (a) A is true but R is false.

The correct answer is option 1, i.e. A is true and R is false.

• Females in India have a life expectancy of 70.7 years at birth, while the male life expectancy at birth in India is 68.24 years. Hence assertion is correct.

• Although females need a better diet, they do not receive it. Hence reason is not correct.

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Q3. Answer: (b) D

Given:

Vikash purchased 5 bananas for Rs. 4 and sold 4 bananas for Rs. 5

Formula Used:

Profit = SP - CP

Profit % = (Profit/CP) × 100

Calculation:

Vikash purchased 5 bananas for Rs. 4

=> Cost Price of 1 banana = Rs. 4/5

Vikash sold 4 bananas for Rs. 5

=> Selling Price of 1 banana = Rs. 5/4

Profit = 5/4 - 4/5 = 9/20

Therefore Profit % = (9/20)/(4/5) × 100 = 56.25%

Alternate Solution

To make our calculation easy, we can make the number of purchasing bananas and selling bananas equal.

Hence,

Cost price of 20 bananas = 4 × 4 = 16

Selling price of 20 bananas = 5 × 5 = 25

Profit = 25 - 16 = 9

Therefore Profit % = (9/16) × 100 = 56.25%

Q4. Answer: (b) Madhya Pradesh

Madhya Pradesh has the largest forest cover of 77,522 sq. km. in terms of area in the country followed by Arunachal Pradesh with forest cover of 67,321 sq. km. In terms of percentage of forest cover with respect to total geographical area

Q5. Answer: (b) Paper

Butter is made from Milk. Similarly, Books are made from Paper.

Q6. Answer: (b) Astronomical unit

The distance from Earth to the sun is called an astronomical unit, or AU, which is used to measure distances throughout the solar system.It is equal to 149.6 million kilometres, the mean distance from the centre of the earth to the centre of the sun.

Q7. Answer: (a) Sublimation

Sublimation is the transition of a substance directly from the solid to the gas phase, without passing through the intermediate liquid phase.

Q8. Answer: (b) A

The correct answer is Option 2, i.e A.

• New AIIMS were proposed to be set up at Nagpur in Maharashtra, Manglagiri in Andhra Pradesh and Kalyani in West Bengal.

• This was done under the Pradhan Mantri Swasthya Suraksha Yojana (PMSSY), which involves financial implications of Rs.4,949 crore.

• At present, there are 16 AIIMS colleges in India that grant admission to MBBS courses offered by them through the NEET-UG 2020, and 8 AIIMS colleges are under development.

• About Pradhan Mantri Swasthya Suraksha Yojana (PMSSY)

• The Pradhan Mantri Swasthya Suraksha Yojana (PMSSY) was announced in 2003 with objectives of correcting regional imbalances in the availability of affordable/ reliable tertiary healthcare services and also to augment facilities for quality medical education in the country.

• It is a central sector scheme.

• The scheme has two components: Setting up of new AIIMS and upgradation of government medical colleges.

Q9. Answer: (a) BCG

Bacillus Calmette–Guérin (BCG) vaccine is a vaccine primarily used against tuberculosis. In countries where tuberculosis is common, one dose is recommended

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Q10. Answer: (b) 7 : 77

The logic is as follows,

First number × Next prime number of the first number = Second Number.

5 × 7 = 35, (7 is next prime number after 5).

Similar,

7 × 11 = 77, (11 is next prime number after 7).

Hence answer is 7 : 77.

Q11. Answer: (c) A

Considering the given statements

Statement 1

We know that,

A line is a two dimensional figure. It can be determined by two points

So, It is not possible to draw three lines from two given points

Statement 2

We know that,

Sum of the angles of linear pair is 180°

So,

When two lines are parallel then the angles formed are supplementary angles

Therefore Both the statements 1 and 2 are not true.

Q12. Answer: (c) Both A and R are true and R is the correct explanation of A.

Altitude play a very important role in determining the temperature of a place. Shimla is colder than Delhi because Shimla is at a higher altitude as compared to Delhi

Q13. Answer: (b) Son

Given relationships can be drawn as,

Thus Rohan is son of Seema.

Q14. Answer: (a) White

Given relationships can be drawn as,

From the above family tree we can easily see Anitha likes White color.

Q15. Answer: (c) Dinesh - Seema

Given relationships can be drawn as,

From the above family tree, two married couples are Anitha – Raja and Dinesh-Seema.

So, the answer will be Dinesh – Seema.

Q16. Answer: (b) 10

Number of letters in word DRIVER = 6 and it is decoded as (6 - 1) = 5

Similarly, number of letters in BELIEVED = 8 and it is decoded as (8 - 1) = 7

Hence, EXAMINATION is decoded as (11 - 1) = 10

Q17. Answer: (b) B

Given:

Anil can do a piece of work in 14 days

Rohit can do a piece of work in 21 days

They worked together for few days after which Anil left

Rohit worked alone for 3 days

Calculation:

Anil can do a piece of work in 14 days

=> 1 day work of Anil = 1/14 unts

Rohit can do a piece of work in 21 days

=> 1 day work of Rohit = 1/21 units

According to the question,

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Work done by Anil in 3 days = 3/21 units = 1/7 units
Remaining work = 1 - 1/7 = 6/7 units
Remaining work is done by A and B together
Work done done by A and B together in 1 day = 1/14 + 1/21 = 5/42 units
=> Number of days A and B work together = (6/7)/(5/42) = 7.2 days
Therefore Total work is completed in 7.2 + 3 days = 10.2 days = 51/5 days
Alternate solution
Let total work be 42 units.
Efficiency of Anil = 42/14 = 3 units/day
Efficiency of Rohit = 42/21 = 2 units/day
Let both did work together for x days.
Hence,
Work done by both in x days + Work done by Rohit in 3 days = Total work
=> (3 + 2)x + 2 × 3 = 42
=> 5x + 6 = 42
=> 5x = 36
=> x = 36/5 days
Therefore Total days = x + 3 = 36/5 + 3 = 51/5 days

Q18. Answer: (b) EAHLTH

Meaningful words formed are,
DISEASE
HEALTH
ILLNESS
SICKNESS
Here, DISEASE, ILLNESS and SICKNESS are synonyms.
So, odd one out is HEALTH.

Q19. Answer: (d) C

Given:
A : B = 3 : 4 and B : C = 6 : 5
Calculation:
Ratio of A and B = 3 : 4
Ratio of B and C = 6 : 5
Equation the ratios we get,
A : B : C = 18 : 24 : 20
Let A, B and C be 18x, 24x and 20x respectively.
Now,
A : (A + C) = 18x : (18x + 20x)
Therefore A : (A + C) = 18x : 38x = 9 : 19

Q20. Answer: (c) A

Given:
Ratio of complimentary angles = 11 : 7
Formula Used:
Sum of complementary angles = 90°
Calculation:
Let the angles be 11x and 7x
According to the question,
11x + 7x = 90°
=> 18x = 90°
=> x = 5°
Therefore Smallest angle = 5 × 7 = 35°

Short Trick

Ratio of angles = 11 : 7

Smaller angle must be a multiple of 7.

In given options, only 35 is multiple of 7.

Hence, correct answer will be 35.

Q21. Answer: (a) Transmission Control Protocol

The Transmission Control Protocol (TCP) is one of the main protocols of the Internet protocol suite. It originated in the initial network implementation in which it complemented the Internet Protocol (IP). Therefore, the entire suite is commonly referred to as TCP/IP

Additional Information

•

https://kb.iu.edu/d/abkr#:~:text=TCP%2FIP%20stands%20for%20Transmission,adopted%20as%20a%20networking%20standard.

Q22. Answer: (d) A

Given:

30 litres of salt solution contains 5% salt

Calculation:

Let the quantity of water added be x litres

Initial quantity of water = (95/100) × 30 = 28.5 litre

If the x litre of water is added then

=> Percentage of water = (97/100) × (30 + x) = 29.1 + 097x

Now total quantity of water after adding x litres of water

=> 28.5 + x = 29.1 + 0.97x

=> 0.03x = 0.6

=> x = 20 litres

Therefore 20 litres of water is added

Alternate Method

Quantity of salt = 30 × (5/100) = 1.5

Let x lt of water is added.

Hence,

1.5/(30 + x) × 100 = 3

=> 30 + x = 50

=> x = 20 lt.

Q23. Answer: (d) N

Given relation is as follows,

Similarly,

So, last letter of the word is N.

Q24. Answer: (d) Only conclusion II follows

The least possible Venn diagram for the given statements is as follows,

Conclusions:

I. Some birds are peacocks → It's possible but not definite, hence false.

II. Some peacocks are tall → It's true as shown above in diagram.

So, only conclusion II follows.

Q25. Answer: (a) C

Shortcut Trick

Ratio of Height : Shadow = 1 : √3

In a right-angled triangle, tan θ = Perpendicular ÷ Base

tan θ = 1 ÷ √3

Since tan 30° = 1/√3, the angle of elevation is 30°.

Therefore The correct answer is 30°.

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Alternate Method

Given:

Length of the shadow = √3 × Height of the pole

Let the height of the pole be h.

=> Length of the shadow = √3h

Formula Used:

tan θ = (Opposite Side) ÷ (Adjacent Side)

h (Pole)

√3h (Shadow)

θ

A

B

C

Sun

Calculations:

Let θ be the angle of elevation of the sun.

In right-angled triangle ABC:

=> tan θ = AB ÷ BC

=> tan θ = h ÷ (√3h)

=> tan θ = 1 ÷ √3

=> θ = tan^(−1)(1/√3)

=> θ = 30°

Therefore The correct answer is 30°.

Additional Information

Standard Trigonometric Ratios

For standard angles: tan 30° = 1/√3, tan 45° = 1, and tan 60° = √3.

Angle of Elevation and Depression

The angle of elevation is the angle between the horizontal line and the line of sight when looking up at an object. The angle of depression is equal to the angle of elevation due to alternate interior angles.

Pythagoras Theorem

In any right-angled triangle, (Hypotenuse)² = (Perpendicular)² + (Base)².

Q26. Answer: (c) Vaigai

Madurai is a major city in the Indian state of Tamil Nadu. It is the administrative headquarters of Madurai District. Madurai is the third largest city by population in Tamil Nadu. It is located on the bank of the river Vaigai.

Q27. Answer: (b) A

Engineer gives the solution of the problems using scientific principles that is called "Engineering"

Similarly, Doctors gives solution of different medical problems using "Medicine".

So doctor is related to Medicine.

Hence, option 2) is the correct answer.

Q28. Answer: (b) Morarji Desai

Morarji Desai is the only Indian to receive the highest civilian awards from both India and Pakistan, the Bharat Ratna and Nishaan-e-Pakistan.

Q29. Answer: (c) 0.4%

The correct answer is 0.4%.

Key Points

• The human body contains many salts, of which sodium chloride (AKA common table salt) is the major one, making up around 0.4 per cent of the body's weight at a concentration pretty well equivalent to that in seawater.

• An adult human body contains about 250g of salt and any excess is naturally excreted by the body.

• Sodium enables the transmission of nerve impulses around the body.

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Q30. Answer: (a) Temasek

Singapore's name comes from 'Singa Pura' which means Lion City in Sanskrit. According to the Sejarah Melayu (Malay Annals), a Sumatran prince called Sang Nila Utama landed on Temasek (Singapore's old name) and saw a Lion which is called 'Singa' in Malay. Thus he gave the island a new name, 'Singapura'.

Q31. Answer: (d) B

Given:

Angles of a triangle are in the ratio of 2 : 5 : 8

Formula Used:

Sum of the angles of a triangle = 180°

Calculation:

Let the angle of a triangles are 2x, 5x and 8x

=> 2x + 5x + 8x = 180°

=> 15x = 180°

=> x = 12°

Therefore Largest angle of the triangle = 8 × 12 = 96°

Smart trick

Here, ratio of angles is 2 : 5 : 8.

Hence, the largest angle must be multiple of 8.

In given options, only 96° is a multiple of 8.

Therefore Correct answer will be 96°.

Q32. Answer: (a) Charon

Charon, also known as Pluto I, is the largest of the five known natural satellites of the dwarf planet Pluto. It was discovered in 1978 at the United States Naval Observatory in Washington, D.C., using photographic plates taken at the United States Naval Observatory Flagstaff Station.

Q33. Answer: (c) ASPJ

Given Relation is as follows

Similarly,

Thus WOLF will be coded as ASPJ.

Q34. Answer: (b) 1

We know that one to the power of any number will always be one

Units digit in (4211)^(102) = 1

Units digit in (361)^(52) = 1

Therefore Units digit in (4211)^(102) × (361)^(52)is also 1

Q35. Answer: (a) 6 : 14 : 30 hours

Shortcut Trick

LCM of 15, 18, 27, and 30 represents the time interval for simultaneous changes.

LCM(15, 18, 27, 30) = 270 seconds.

Convert 270 seconds to minutes → 270 ÷ 60 = 4 minutes 30 seconds.

Add this to the initial time: 6 : 10 : 00 + 4 min 30 sec = 6 : 14 : 30 hr.

Therefore The correct answer is 6 : 14 : 30 hr.

Alternate Method

Given: Intervals are 15 sec, 18 sec, 27 sec, and 30 sec. Initial time = 6 : 10 : 00 hr.

Calculation:

=> Prime factorization of 15 = 3 × 5

=> Prime factorization of 18 = 2×3^2

=> Prime factorization of 27 = 3^3

=> Prime factorization of 30 = 2 × 3 × 5

=> LCM = $2 \times 3^3 \times 5 = 2 \times 27 \times 5 = 270$ seconds

=> Time in minutes = 270 ÷ 60 = 4.5 minutes = 4 minutes 30 seconds

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=> Final time = 6 : 10 : 00 + 0 : 04 : 30 = 6 : 14 : 30 hr

Therefore The correct answer is 6 : 14 : 30 hr.

Additional Information

LCM Application

The Least Common Multiple (LCM) is used to find the first instance when multiple events with different periodicities coincide.

Unit Conversion

Always ensure all time units are consistent (e.g., all seconds) before calculating the LCM and convert back to HH:MM:SS format for the final result.

Successive Meetings

If the question asks for the 'n-th' time they meet, the time required is n × LCM.

Q36. Answer: (c) 33.33%

Concept:

The coefficient of variation is given by: σ/(bar x) × 100 where σ is the standard deviation and bar x is the mean.

Calculation:

Given: Mean of distribution is 21 and the standard deviation is 7.

Here, σ = 7 and bar x = 21

As we know that coefficient of variationis given by: σ/(bar x) × 100 where σ is the standard deviation and bar x is the mean.

=> 7/21 × 100 = 33.33 %

Q37. Answer: (b) Germany

Michael Schumacher is a German retired racing driver. He is a seven-time Formula One World Champion and is widely regarded as one of the greatest Formula One drivers of all time. He was named Laureus World Sportsman of the Year twice

Q38. Answer: (c) Coin

In the given question Rupee, Lira and Dinar are currency whereas Coin is not a currency. So Coin is odd from the given options.

Q39. Answer: (b) Mercury

Mercury poisoning is a type of metal poisoning, due to mercury exposure. High level exposure to methylmercury is known as Minamata disease.

Q40. Answer: (c) Macho Picchu

Most archaeologists believe that Machu Picchu was built as an estate for the Inca emperor Pachacuti (1438–1472). Often mistakenly referred to as the "Lost City of the Incas" (a title more accurately applied to Vilcabamba), it is the most familiar icon of Inca civilization.

Q41. Answer: (c) 2012

The correct answer is 2012.

Key Points

• Aam Aadmi Party:

• Following the 2011 Indian anti-corruption campaign, Arvind Kejriwal launched the AAP in November 2012.

• Currently, the AAP controls two governments: that of Punjab, and that of Delhi.

• A broom is the party's electoral emblem.

• Spokesperson: Saurabh Bhardwaj

• Rajya Sabha leader: Sanjay Singh

• Founder: Arvind Kejriwal

• Founded: 26 November 2012

Q42. Answer: (b) Refraction

CONCEPT:

Refraction: When a ray of light passes from one medium to another it suffers a change in direction at the boundary of two media is called refraction.

• The change in direction because the speed of light travels at different speeds in different mediums.

• Refractive Index of a medium defines that it is denser or rarer

• Refractive Index = Speed of light in Vacuum /speed of light in that medium.

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• Refractive Index = η = c/v where, c = Speed of light in Vacuum, v = speed of light in that medium.

Explanation:

When light passes from a region of lower n, such as air, through a surface into a region of higher n, such as glass, the light changes direction. This means its path is closer to perpendicular, or "normal," to the surface. When the light passes from a region of higher n to the region of lower n, it bends away from the "normal" direction. This is what causes the submerged part of a spoon in a glass of water to appear to bend when you put it in water.

Extra point:

Reflection: It can be defined as bouncing back of light, on the shiny smooth surface.

• It is done in a single medium no change of medium is seen.

• It follows law's of reflection

1) Angle of incidence = Angle of reflection

2) The incident ray, the reflected ray, and normal to the surface of incidence always lies in the same plane.

Total Internal reflection: The total reflection of light from a higher refractive index medium to back in its medium at an angle more than a critical angle known as total internal reflection.

• It always happens when light travels from denser medium to rarer medium.

• At critical angle θc it makes 90° angle with normal separating two media.

• Sin ic = n2/n1 [where n2 = rarer medium, n1 = denser medium].

EXPLANATION:

A coin in a beaker filled with water appears raised because of Refraction.

Q43. Answer: (c) Henri Becquerel

Marie Curie became the first woman to be awarded the nobel prize and the first person to obtain two nobel prizes when she won the prize for the discovery of Polonium and Radium in 1911. Though it was Henri Becquerel that discovered radioactivity, it was Marie Curie who coined the term

Q44. Answer: (b) Its bill is longer than rest of its body

The sword-billed hummingbird (Ensifera ensifera) is a species of hummingbird from South. It is noted as the only species of bird to have a bill longer than the rest of its body.

Q45. Answer: (a) 15 km/hr.

From the given data,

Let the actual speed be x

Time = 2 hr 20 min 24 sec

= 2 × 3600 + 20 × 60 + 24

= 8400 + 24

= 8424 sec

= 8424/3600

= 2.34 hr

Distance = 39 km

Speed = 10/9 × x

We know that speed = distance/time

=> 10/9 × x = 39/(2.34)

=> x = [39 × 9]/(2.34 × 10) = 15 km/hr

Therefore Actual speed = 15 km/hr

Q46. Answer: (c) Lord Dalhousie

The correct answer is Lord Dalhousie.

• Lord Dalhousie devised the policy of Doctrine of Lapse.

Key Points

• The doctrine of Lapse:

• The policy was devised by Lord Dalhousie.

• He was the Governor-General of India from 1848 to 1856.

• It was an annexation policy applied by the East India Company in India which was implemented in 1848.

• The provinces that came under the Doctrine of Lapse are Satara (1848 AD), Jaitpur and Sambalpur (1849 AD), Baghat (1850 AD), Udaipur (1852 AD), Jhansi (1853 AD), and Nagpur (1854 AD).

Additional Information

• Lord Dalhousie:

• Abolished Titles and pensions, Widow Remarriage Act (1856 AD).

• He annexed the whole Punjab.

• Santhal uprisings took place during his tenure.

• Wood's Educational Despatch of 1854 AD.

• He established an Engineering College at Roorkee.

• Started the first railway line in 1853 AD.

• Started electric telegraph service.

• Laid the basis of the modern Postal System (1854 AD).

• A separate public works department was set up for the first time.

Q47. Answer: (b) 56

Shortcut Trick

Ratio of ages (Sonam : Father) 8 years ago = 1 : 3 (Difference = 2 units).

Ratio after 8 years = 1 : 2 → 2 : 4 (Multiplied by 2 to make the age difference constant at 2 units).

Increase in ratio units = 4 − 3 = 1 unit.

Actual time gap = 8 + 8 = 16 years Therefore 1 unit = 16 years.

Father's age 8 years ago = 3 units = 3 × 16 = 48 years.

Father's present age = 48 + 8 = 56 years.

Therefore The correct answer is 56.

Alternate Method

Let the ages of Sonam and her father 8 years ago be x and 3x respectively.

Present age of Sonam = x + 8

Present age of father = 3x + 8

According to the question, after 8 years:

=> (Sonam's present age + 8) = 1/2 × (Father's present age + 8)

=> (x + 8 + 8) = 1/2 × (3x + 8 + 8)

=> x + 16 = 1/2 × (3x + 16)

=> 2 × (x + 16) = 3x + 16

=> 2x + 32 = 3x + 16

=> 3x − 2x = 32 − 16

=> x = 16

Father's present age = 3x + 8

=> 3 × 16 + 8

=> 48 + 8 = 56 years.

Therefore The correct answer is 56.

Additional Information

Constant Age Difference

The difference between the ages of two persons always remains the same, regardless of how many years pass or have passed.

Ratio Balancing Method

To solve age ratio problems quickly, multiply the ratios so that the difference between the ratio parts of the two individuals becomes equal in both time periods.

Time Gap Calculation

If one condition is 'n' years ago and the other is 'm' years later, the total time gap between the two conditions is (n + m) years.

Q48. Answer: (a) 17 : 24

From the given data,

Let x be the marked price and y be the cost price

When Mohan earns a profit of 20%

Then, Selling Price = cost price + 20% of cost price

Selling Price = y + y × 20/100 ---- equation (1)

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When 15% discount on printed price

Selling Price = Marked price × (1 – discount%)

Selling Price = x × (1 – 15/100) ---- equation (2)

According to Question equate both equation

=> x – 15x/100 = y + 20y/100

=> x × (85/100) = y × (120/100)

=> y/x = 17/24

Therefore Ratio of the cost price to printed price of the jean is 17 : 24

Alternate Method

CP/MP = (100 – Discount%)/(100 + Profit%)

=> CP/MP = (100 – 15)/(100 + 20)

=> CP/MP = 85/120

=> CP/MP = 17/24

Therefore Ratio of the cost price to printed price of the jean is 17 : 24

Q49. Answer: (a) Vienna

Austria's capital Vienna once again defended its position as the city offering the best quality of life in the world in an annual survey from consulting firm Mercer. Vienna is followed by Switzerland's Zurich and then New Zealand's Auckland and Germany's Munich in joint third. The criteria to rank the cities were political stability, health care, education, crime, recreation and transport.

Q50. Answer: (c) 1849

The Battle of Chillianwala was fought in January 1849 during the Second Anglo-Sikh War in the Chillianwala region of Punjab, now part of modern-day Pakistan. The battle was one of the bloodiest fought by the British East India Company

Q51. Answer: (a) 30

'W' stands for 'x',

'X' stands for '-',

'Y' stands for '+'

'Z' stands for '÷'

So the given statement 28 Z 7 W 8 X 6 Y 4 will become 28 ÷ 7 × 8 – 6 + 4

Using BODMAS rule ((((28 ÷ 7) × 8) – 6) + 4) = (((4 × 8) – 6) + 4) = ((32 – 6) + 4) = (26 + 4) = 30

Q52. Answer: (c) 30

Given,

'<' stands for '-'

'>' stands for '+'

'=' stands for 'x'

'@' stands for '÷'

So the given statement 27 > 81 @ 9 < 6 can be written as 27 + 81 ÷ 9 – 6

Using BODMAS rule ((27 + (81 ÷ 9)) – 6)

= ((27 + 9) – 6) = (36 – 6) = 30

Q53. Answer: (b) -60

Given,

'x' stands for '-',

'-' stands for 'x',

'+' stands for '÷'

'÷' stands for '+',

So the given statement 15 – 2 ÷ 900 + 90 x 100 will become 15 x 2 + 900 ÷ 90 – 100

Using BODMAS rule (15 x 2) + (900 ÷ 90) – 100 = 30 + 10 – 100 = -60

Q54. Answer: (b) 108 km/hr

For 31 telephone post,

Therefore Distance = 60 × 30 = 1800 m

Time = 60 sec

We know that speed = distance/time = 1800/60 = 30 m/s = (30 × 18)/5 = 108 km/hr

Q55. Answer: (a) The Dilwara temple

This temple carved entirely out of white marble was built in 1031 A.D. by Vimal Shah, a minister of Bhima I, the Chaulukya of Gujarat. The temple is dedicated to Lord Rishabh.

Q56. Answer: (a) Prakash Padukone

In 1980, Prakash Padukone won the Danish Open, the Swedish Open and became the first Indian to win the men's singles title at the All England Championship with a victory over Indonesian rival Liem Swie King

Q57. Answer: (b) Asif Kapadia

Indo-British filmmaker Asif Kapadia won the best documentary Oscar for “Amy”, a poignant examination of singer Amy Winehouse’s life and her tragic death at the age of 27.

Q58. Answer: (a) Disposable Income

Disposable income, also known as disposable personal income (DPI), is the amount of money that households have available for spending and saving after income taxes have been accounted for.

Q59. Answer: (b) Cray-1

The Cray-1 was a supercomputer designed, manufactured and marketed by Cray Research. The first Cray-1 system was installed at Los Alamos National Laboratory in 1976

Q60. Answer: (b) 36

Given:

Average of 5 consecutive even number = 40

Formula used:

Average = (Sum of all the terms/Total number of terms)

Calculation:

From the given data,

Let us consider five consecutive even numbers be x, x + 2, x + 4, x + 6, x + 8

=> (x + x + 2 + x + 4 + x + 6 + x + 8)/5 = 40

=> 5x + 20 = 200

=> 5x = 180

=> x = 180/5 = 36

Therefore Smallest of the numbers is 36

Average of numbers in the arithmetic progression is always the middle number.

Hence, Middle number = 3^(rd) number = 40

Therefore Smallest number = 1st number = 40 – 4 = 36

Q61. Answer: (b) Param

PARAM is a series of supercomputers designed and assembled by the Centre for Development of Advanced Computing (C-DAC) in Pune, India. The latest machine in the series is the PARAM ISHAN.

Q62. Answer: (c) 3P

Given:

A sum of money (P) doubles in 10 years

Formula Used:

Simple interest = PTR/100

Amount = P + Interest

Where, P = Principle, R = Rate, T = Time period

Calculation:

According to the question

Amount after 10 years = 2P

So, Simple Interest = A - P

=> Simple interest = 2P - P = P

=> P × R × 10/100 = P

R = 10%

When time is 20 years

=> Simple interest = R × T × P/100

=> Simple interest = 10 × 20 × P/100

=> Simple interest = 2P

=> Amount = P + 2P = 3P

Therefore The amount after 20 years would be 3P.

Q63. Answer: (d) 0

Shortcut Trick

According to the algebraic identity, if the sum of three terms is zero (i.e., x + y + z = 0), then the value of $x^3 + y^3 + z^3 - 3xyz$ is always 0.

Here, the given condition is a + c + 1 = 0, which fits the form x + y + z = 0 where x = a, y = c, and z = 1.

The expression $a^3 + c^3 + 1 - 3ac$ corresponds exactly to $x^3 + y^3 + z^3 - 3xyz$.

Therefore, since the sum of the variables is 0, the entire expression evaluates to 0.

Therefore The correct answer is 0.

Alternate Method

Given: a + c + 1 = 0

Formula Used: $x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$

=> Let x = a, y = c, and z = 1.

=> The expression to find is $a^3 + c^3 + 1^3 - 3(a)(c)(1)$.

=> Substituting the values into the expansion formula:

=> $a^3 + c^3 + 1 - 3ac = (a + c + 1) \times (a^2 + c^2 + 1^2 - ac - c - a)$

=> Since it is given that a + c + 1 = 0:

=> $a^3 + c^3 + 1 - 3ac = 0 \times (a^2 + c^2 + 1 - ac - c - a)$

=> $a^3 + c^3 + 1 - 3ac = 0$

Therefore The correct answer is 0.

Additional Information

Conditional Cubic Identity

When x + y + z = 0, the identity $x^3 + y^3 + z^3 = 3xyz$ holds true, which is frequently used in competitive exams to simplify complex polynomials.

Alternative Expansion

The expression $x^3 + y^3 + z^3 - 3xyz$ can also be written as $(1/2)(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$.

Non-negative Property

The quadratic part $x^2 + y^2 + z^2 - xy - yz - zx$ is always greater than or equal to zero for all real values of x, y, and z.

Q64. Answer: (a) 144

The relation is as follows,

$7^2 = 49$ (7 + 2 = 9)

$9^2 = 81$

Hence,

$10^2 = 100$ (10 + 2 = 12)

$12^2 = 144$

Thus 144 is the answer.

Q65. Answer: (c) 0

Shortcut Trick

Expand the given equation: $(x + y)^2 - xy = x^2 + 2xy + y^2 - xy = x^2 + xy + y^2 = 0$.

The expression to find is $(x^3 - y^3)/(x - y)$.

Using the identity $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$.

Substituting the identity: $[(x - y)(x^2 + xy + y^2)] / (x - y) = x^2 + xy + y^2$.

Since $x^2 + xy + y^2 = 0$, the final value is 0.

Therefore The correct answer is 0.

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Alternate Method

Given:

$(x + y)^2 - xy = 0$

Formula Used:

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

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

Calculations:

$\Rightarrow (x + y)^2 - xy = 0$

$\Rightarrow x^2 + 2xy + y^2 - xy = 0$

$\Rightarrow x^2 + xy + y^2 = 0$

Now, we need to find the value of $(x^3 - y^3) / (x - y)$:

$\Rightarrow (x^3 - y^3) / (x - y) = [(x - y)(x^2 + xy + y^2)] / (x - y)$

$\Rightarrow x^2 + xy + y^2$

Substitute the value from the given condition:

$\Rightarrow 0$

Therefore The correct answer is 0.

Additional Information

Sum of Cubes Identity

The identity for the sum of two cubes is $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$.

Square of a Binomial

The expansion of $(x - y)^2$ is $x^2 - 2xy + y^2$, which differs from the sum of squares.

Difference of Squares

The identity $x^2 - y^2 = (x - y)(x + y)$ is frequently used to simplify algebraic fractions.

Q66. Answer: (b) BOOKS

Novel is a book. Poems and Short Stories are also written in Books.

So BOOKS is a main class.

Q67. Answer: (b) √45 meters

From the given data,

Height of the ladder = 9 m

Also given that the foot of the ladder is taken 3 meter away, then the top of the ladder reach equal to the bottom of the wall

Let us x be the distance between wall and ladder

$\Rightarrow x + 3 = 9$

$\Rightarrow x = 6$ m

Therefore let us ΔABCwill be formed with BC = 9 m and AC = 6 m

$\Rightarrow BC^2 = AC^2 + AB^2$

$\Rightarrow 9^2 = 6^2 + AB^2$

$\Rightarrow AB^2 = 81 - 36 = 45$

$\Rightarrow AB = \sqrt{45}$ m

Therefore Height of the wall is √45 m

Q68. Answer: (b) Samuel Hahnemann

Homeopathy or homoeopathy is a system of alternative medicine created in 1796 by Samuel Hahnemann, based on his doctrine of like cures like (similia similibus curentur), a claim that a substance that causes the symptoms of a disease in healthy people would cure similar symptoms in sick people.

Q69. Answer: (a) 19.5%

From the given data,we get

Totaldomestic sales of cars of five manufactures in 2006 = 480 + 410 + 390 + 380 + 440 = 2100

Approximate share domestic sales of cars of the manufacturer M = 410/2100 × 100 = 19.5%

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Q70. Answer: (c) N

Percentage increase of sales of domestic cars of manufacturer L from 2009 to 2010

= (510–520)/510 × 100 = -1.96%, negative sign shows that sales has dropped for manufacturer L from 2009 to 2010

Percentage increase of sales of domestic cars of manufacturer M from 2009 to 2010

= (430 – 420)/420 × 100 = 2.38%

Percentage increase of sales of domestic cars of manufacturer N from 2009 to 2010

= (495 – 420)/420 × 100 = 17.85%

Percentage increase of sales of domestic cars of manufacturer P from 2009 to 2010

= (435 – 425)/425 × 100 = 2.35%

Therefore Maximum percentage increase is shown by N manufacturer

Q71. Answer: (a) L, 2009

Thesales of cars in L,2008 = 500

Thesales of cars in L,2009 = 520

Thesales of cars in L,2010 = 510

Thesales of cars in O,2008 = 415

Therefore The sales of cars the highest over the period L,2009

Q72. Answer: (d) • and -, 3 and 5

Given equation is: 3 + 5 – 2 = 4

Option A: interchange + and -, 2 and 5

3 – 2 + 5 ≠ 4, hence false

Option B: interchange + and -, 3 and 4

4 – 5 + 2 ≠ 3, hence false

Option C: interchange + and -, 2 and 3

2 – 5 + 3 ≠ 4, hence false

Option D: interchange + and -, 3 and 5

5 – 3 + 2 = 4, hence true.

Q73. Answer: (b) Sisodia

The Chittor Fort or Chittorgarh is one of the largest forts in India. It is a World Heritage Site. The fort was the capital of Mewar and is today situated in the Chittorgarh. It is constructed by the Mewar rulers of Sisodia and their kinsmen and women and children.

Q74. Answer: (d) Swimming

Freestyle is a category of swimming competition, defined by the rules of the International Swimming Federation (FINA), in which competitors are subject to only limited restrictions on their swimming stroke, affording the swimmer great freedom in style.

Freestyle is used to describe sports competitions, especially in swimming, wrestling, and skiing, in which competitors can use any style or method that they like when they take part.

Q75. Answer: (a) 40/3 days

Shortcut Trick

Use the formula for individual work when combined time and one person's time are known.

Time taken by Atul = (A × B) ÷ (B − A)

Time = (5 × 8) ÷ (8 − 5) = 40 ÷ 3 days.

Therefore The correct answer is 40/3 days.

Alternate Method

Given:

Time taken by Atul and Binay (A + B) = 5 days

Time taken by Binay (B) = 8 days

Person	Days	Total Work	Efficiency
Atul + Binay	5	40	8
Binay	8	5	

Calculations:

=> Total Work = LCM of 5 and 8 = 40 units

=> Efficiency of (Atul + Binay) = 40 ÷ 5 = 8 units/day

=> Efficiency of Binay = 40 ÷ 8 = 5 units/day

=> Efficiency of Atul = Efficiency of (Atul + Binay) − Efficiency of Binay

=> Efficiency of Atul = 8 − 5 = 3 units/day

=> Time taken by Atul = Total Work ÷ Efficiency of Atul

=> Time = 40 ÷ 3 days

Therefore The correct answer is 40/3 days.

Additional Information

Combined Work Formula

If person X takes x days and person Y takes y days, together they take (x × y) ÷ (x + y) days.

Efficiency and Time Relation

Efficiency is inversely proportional to the time taken to complete the work (E prop. to 1/T).

Work and Wages

Wages are generally distributed in the ratio of efficiency or the ratio of work done by each person.

Q76. Answer: (c) Both A and R are true and R is the correct explanation of A.

As technology enhances each day, smartphone users in India is showing exponential growth.

Given assertion is true and the given reason Good 3G and 4G coverage coupled with an affordable cost is also true.

So, answer is both A and R are true and R is the correct explanation of A.

Q77. Answer: (b) $4x^2 + 3x + 2$

We know that dividend = divisor × quotient + remainder

$= (x + 2) \times (4x - 5) + 12$

$= 4x^2 + 8x - 5x - 10 + 12$

Therefore Dividend $= 4x^2 + 3x + 2$

Q78. Answer: (c) Karikala

• 90Early Chola Kings -Sangam Period.

• The Chola Kingdom was called as Cholamandalam between Pennar and Vella River.

• Capital: Uraiyaur

• Greatest King: Karikala

• Due to the Sangam Period, they were called greatest of Early Chola Kings.

• He founded the port city of Puhar

• Note: Chola Empire => Rajaraja and Rajendra I and this is not considered as Early Chola Empire,it comes in Medevial Period so it is later Chola Empire.

Q79. Answer: (c) Density

The density, or more precisely, the volumetric mass density, of a substance is its mass per unit volume. The symbol most often used for density is ρ (the lower case Greek letter rho), although the Latin letter D can also be used

Q80. Answer: (c) New Development Bank

The New Development Bank, formerly referred to as the BRICS Development Bank, is a multilateral development bank established by the BRICS states

Q81. Answer: (a) 10-7-20-13-11-24

Given word is decoded as

A → 7

B → 8

C → 9

D → 10

& so on i.e. each alphabet place in alphabet series + 6.

Therefore MACHINE: 19-7-9-14-15-20-11

Similarly, DANGER: 10-7-20-13-11-24

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Q82. Answer: (c) Rs. 150

Here we need to find simple interest with principle P = 800, time T = 3 years and R = 9/2 % per annum

We know that simple interest = P × T × R/100

=> Simple interest = (800 × 9/2 × 3)/100 = Rs.108

We need to find sum P for time 9 years with 8 % rate and simple interest Rs.108

=> Principle P = (S.I × 100)/time × rate = (108 × 100)/(9 × 8) = Rs.150

Q83. Answer: (c) Possess the Membership of LokSabha

The qualifications needed to become a Vice President of India are the following:

• He or she must be a citizen of India.

• He or she must be over 35 years of age.

• He or she must not hold any office of profit.

• He or she must be qualified for election as a Member of the Rajya Sabha or the Council of States.

Q84. Answer: (d) 16

Based on the information given, we get the following diagram.

Now,

Here C = Cricket, V = Volleyball, F = Football

We have given Students who plays all the three games = 5

Students who plays only Cricket and Volleyball is = (9 – 5) = 4

Students who plays only Volleyball and Football is = (12 – 5) = 7

Students who plays only Cricket and Football is = (10 – 5) = 5

Students who plays only Cricket = 25 – (V & C) – (C & F) – (V & F & C)

= 25 – 4 – 5 – 5 = 11

Students who plays only Volleyball = 24 – (V & C) – (V & F) – (V & F & C)

= 24 – 4 – 7 – 5 = 8

Students who plays only Football = 30 – (F & C) – (V & F) – (V & F & C)

= 30 – 5 – 7 – 5 = 13

Now, the Students who play exactly two games are = (C & V) + (C & F) + (F & V)

= 4 + 5 + 7 = 16

Q85. Answer: (c) 7

We have given total number of students are 60.

Students who don't play any of the game will be = Total students – (Students who play at least one game)

= 60 – (11 + 13 + 8 + 4 + 5 + 5 + 7)

= 60 – 53 = 7

Q86. Answer: (a) 11

From the above Venn diagram we can clearly see that the students who play only Cricket are 11.

Q87. Answer: (b) Planet

Moon is a Satellite.

Similarly,

Earth is a Planet.

Hence, Planet is the correct answer.

Q88. Answer: (b) Rs. 2400

Let the cost of the gas cylinder be Rs. x

=> x × 125/100 + (4500 – x) × 80/100 = 4500 × 104/100

=> 125x + 80(4500 – x) = 4500 × 104

=> x = 2400

Therefore The cost of the gas cylinder is Rs. 2400

Alternate Method

Using ratio method

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25% -20%

4%

24 : 21

Hence, ratio of cost price of gas and stove = 24 : 21 = 8 : 7

Therefore Cost price of gas = 4500 × (8/15) = 2400

Q89. Answer: (c) English

The name "Earth" is derived from both English and German words, 'eor(th)e/ertha' and 'erde', respectively, which mean ground. But, the handle's creator is unknown. One interesting fact about its name: Earth is the only planet that wasn't named after a Greek or Roman god or goddess.

Q90. Answer: (b) Carrot

Carrots are rich in beta-carotene, which is converted into vitamin A in the liver. Vitamin A is transformed in the retina, to rhodopsin, a purple pigment necessary for night vision. Beta-carotene has also been shown to protect against macular degeneration and senile cataracts.

Q91. Answer: (c) 26%

Shortcut Trick

Use the direct percentage reduction formula: Reduction % = [r ÷ (100 + r)] × 100

Here, r = 35% (increase in onion price).

=> Reduction % = [35 ÷ (100 + 35)] × 100

=> Reduction % = (35 ÷ 135) × 100 = (7 ÷ 27) × 100

=> Reduction % = 25.92% ≈ 26%

Therefore The correct answer is 26%.

Alternate Method

Given: Increase in price = 35% | Target: No change in expenditure.

Formula Used: Expenditure = Price × Consumption. If Expenditure is constant, Price and Consumption are inversely proportional.

=> Let the initial price be Rs. 100 and initial consumption be 100 units.

=> Initial Expenditure = 100 × 100 = Rs. 10,000.

=> New Price = Rs. 135.

=> Since Expenditure must remain Rs. 10,000, New Consumption = 10,000 ÷ 135.

=> New Consumption = 74.07 units.

=> Reduction in consumption = 100 − 74.07 = 25.93 units.

=> Percentage Reduction = (25.93 ÷ 100) × 100 = 25.93% ≈ 26%.

Therefore The correct answer is 26%.

Additional Information

Price-Consumption Relationship

When the expenditure is constant, the ratio of price is the inverse of the ratio of consumption. If price ratio is a : b, consumption ratio must be b : a.

Percentage Increase-Decrease Duality

If one quantity increases by r%, the other must decrease by [r ÷ (100 + r)] × 100% to keep the product constant.

Rounding in Exams

Competitive exams often require rounding the final calculation (like 25.92%) to the nearest whole number provided in the options.

Q92. Answer: (a) 19

Given that mean of 10 observations is 13

Therefore Sum of 10 observations = 10 × 13 = 130

Also given that when two observations are included the new mean is 14

=> Mean of 12 observations = 14

Therefore Sum of 12 observations = 12 × 14 = 168

=> Sum of two observations which are added = sum of 12 observations - sum of 10 observations

= 168 - 130 = 38

=> Mean of the two observations which are added = 38/2 = 19

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Q93. Answer: (b) 42.25

Given

Standard deviation = σ = 6.5

Calculation

We know that variance is the square of the standard deviation

Therefore Variance = (standard deviation)² = (σ)² = 6.5² = 42.25

Q94. Answer: (c) ORFO

Meaningful words formed are,

Burrow: It's a habitation of wild animal

Den: It's also a habitation of wild animals

Roof: A protective covering that covers or form the top of building

Nest: it's a habitation of bird.

So, odd one out is Roof.

Q95. Answer: (b) 10

The multiple of 7between 15 to 85 are (21, 28, 35, 42, 49, 56, 63, 70, 77, 84)

Therefore There are a total of 10 numbers which are divisible by 7 between 15 to 85

Alternate Method

In between 15 and 85 smallest number divisible by 7 is 21 and largest number is 84.

We know,

Last number = First number + (n - 1) × Common difference

=> 84 = 21 + (n - 1) × 7

=> 63 = 7(n - 1)

=> n - 1 = 9

=> n = 10

Q96. Answer: (b) Frederick Taylor

Frederick Winslow Taylor was an American mechanical engineer who sought to improve industrial efficiency. He was one of the first management consultants

Q97. Answer: (c) Karl Landsteiner

The correct answer is Karl Landsteiner.

• Karl Landsteiner found out that the blood of two people under contact agglutinates, and in 1901 he found that this effect was due to contact of blood with blood serum. As a result, he succeeded in identifying the three blood groups A, B and O, which he labelled C, of human blood.

• Karl Koller was an Austrian ophthalmologist, Koller introduced cocaine as a local anaesthetic for eye surgery.

• Maurice Ralph Hilleman was an American microbiologist who specialised in vaccinology and developed over 40 vaccines, which consists of measles, mumps, hepatitis A, hepatitis B, chickenpox, meningitis, pneumonia and Haemophilus influenza bacteria.

• Edward Jenner was an English physician and scientist who was the pioneer of smallpox vaccine.

Q98. Answer: (a) 0.2

Given:

[(5.168 × 4453 × 3.194) / (67.999 × 4224.017)]

Concept used:

Calculation:

[(5.168 × 4453 × 3.194) / (67.999 × 4224.017)]

we round off the values to the nearest number

Then=> (5 × 4453 × 3)/(68 × 4224)

(66795)/(287232)

=> 0.232 which is approximate to 0.2.

Therefore The answer is 0.2.

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Q99. Answer: (b) 133

From the given data,

We can write it as LCM × HCF = first number × other number

=> 19 × 665 = 95 × other number

=> Other number = 12635/95 = 133

Q100. Answer: (d) West Bengal

West Bengal, which has a total mangrove cover of 2097 sq. km., accounts for 44.5 per cent, the highest in the country. It is followed by Gujarat

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