RRB NTPC Tier I Official Paper (Held On: 29 Apr 2016 Shift 2) (Previous Year Paper)

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

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Q1. Leukemia is a type of human disease which is

A. a cancer of the white blood cells

B. caused by a deficiency of vitamins

C. cancer in the brain

D. caused by an overdose of proteins

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

Q2. If √625 = 25; then√(.00000625/25)is:

A. 0.0025

B. 0.001

C. 0.0001

D. 0.0005

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

Q3. 30 pens and 75 pencils were purchased for Rs. 390. If the average price of a pencil is Rs. 2.00, then calculate the average price (in Rs.) of a pen.

A. 6

B. 4

C. 8

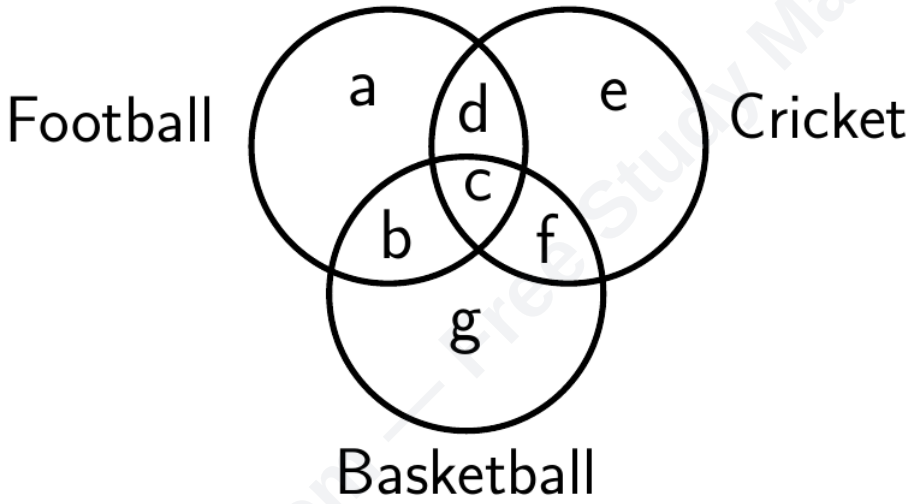
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(a) C
(b) A
(c) B
(d) D

Directions

Direction: Based on the diagram answer the following questions:

The figure given below consists of three intersecting circle which represent sets of students who play Football, Cricket and Basket Ball. Each region in the figure is represented by a small letter.



Q4. Which region represents the set of persons who play Football and Basket Ball both but not Cricket?

A. Region g
B. Region e
C. Region c
D. Region b

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

Q5. Which region represent the set of persons who play Football but neither Cricket not Basket Ball?

A. Region a
B. Region b
C. Region c
D. Region d

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

Q6. Which region represents the set of persons who play all the three games?

A. Region b
B. Region c
C. Region f
D. Region g

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

Q7. Hemant said to Naitik, “That boy playing with the football is the younger of the two son of the daughter of my father’s wife. “How is the boy playing football related to Hemant?

A. Son
B. Brother
C. Cousin
D. Nephew

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

Q8. Which of the following is not an output device?

A. Plotter
B. Speaker
C. Printer
D. Scanner

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

Q9. _____ was the first satellite launched by the U.S in 1958.

A. Sputnik 1
B. Apollo 11
C. GSAT
D. Explorer 1

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

Q10. Two pipes, A & B can fill a tank in 12 & 16 minutes respectively. Both pipes are together, but 4 minutes before the tank is full, pipe A is closed. In how many minutes will the tank be full?

A. 9 minutes 8 seconds
B. 10 minutes 9 seconds
C. 11 minutes 19 seconds
D. 11 minutes 29 seconds

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

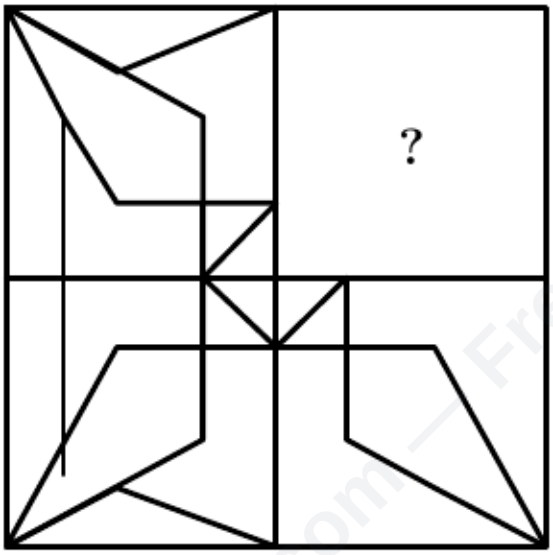
Q11. Name the monument which signifies the “seat of the holy Buddha” where it is believed that Lord Buddha delivered his first sermon.

A. Dhamekh Stupa, Sarnath
B. Sanchi Stupa, Sanchi
C. Shingardar, Stupa, Swat valley
D. Do-Drul, Chorten, Gangtok

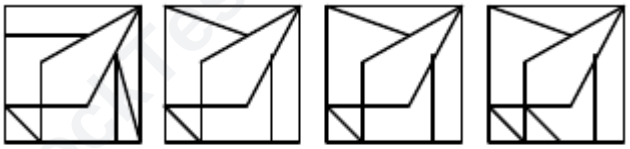
(a) D
(b) C
(c) B
(d) A

Q12. Complete the Figure X from the given alternatives 1, 2, 3, 4

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(X)



(1) (2) (3) (4)

A. 1
B. 2
C. 3
D. 4

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

Directions

Direction: Based on the below given information, answer the questions:

In an Exhibition, seven air conditioners of different companies-LG, Carrier, Samsung, Godrej, Whirlpool, Hitachi and Videocon are kept facing east in the following order:

LG is next to right of Videocon.

Videocon is fourth to the right of Samsung.

Godrej air conditioner is between air conditioner Carrier and Hitachi.

Sumsung, which is third to the left of air conditioner Carrier, is at one end.

Q13. Which one of the following statements is correct?

A. Videocon air conditioner is in between air conditioner Carrier and Samsung
B. LG is next left to Whirlpool air conditioner.
C. Videocon is next right of LG.
D. Godrej is fourth right of Whirlpool.

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

Q14. Which of the following groups of air conditioners is to the right of air conditioner Carrier?

A. LG, Videocon and Godrej

B. Whirlpool,LG, and Videocon.

C. Godrej, Hitachi and Samsung

D. Hitachi, LG and Videocon.

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

Q15. Which of the following statements is correct?

A. Godrej is next left of air conditioner Carrier.

B. Hitachi is next left of Samsung.

C. Hitachi is at one end.

D. Samsung is next second to the right of Godrej.

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

Q16. Abdur Rahman and British Raj representative Mr. Mortimer signed an agreement establishing_____.

A. Radcliffe Line

B. Durand Line

C. Mortimer Line

D. Macmohan Line

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

Q17. Four words are given below out of which three are alike in some manner and one is different. Which one is different from the rest?

A. Tower.

B. Sea.

C. Valley.

D. Mountain.

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

Q18. Name the committee, appointed to identify the creamy layer among the OBCs, which submitted its report in 1993 and was accepted?

A. Dr. K M Munshi Committee

B. G V Mavalankar Committee.

C. Ram Nandan Committee.

D. Swaran Singh Committee

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

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Q19. What is the cause of biomagnification (or bio-accumulation)?

A. Ozone.

B. Organo-chlorines.

C. Lichens.

D. Proteins.

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

Q20. Which of the following powerhouses is /are associated with the Damodar Valley Project?

I. Durgapur.

II. Chandrapura.

III. Maithon.

IV. Hampi.

Choose the right option.

A. Only I and II.

B. Only II and III.

C. I, II, and III.

D. I, II, III, and IV.

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

Q21. Construction of the Qutub Minar, the world's tallest brick minaret commenced in 1193, under the orders of _____ the founder of the Delhi Sultanate.

A. Firoz Shah Tughlaq.

B. Qutub-ud-din Aibak.

C. Iltutmish.

D. Quli Qutub Shah.

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

Q22. Krishnanattam is a famous dance of which of the following states?

A. Andhra Pradesh.

B. Karnataka.

C. Kerala.

D. Tamilnadu.

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

Q23. What is the minimum qualification fixed for candidates Passed by Haryana Panchyati Raj (Amendment) Bill, 2015?

A. Higher Secondary

B. Matriculation

C. No educational qualification only minimum age at 21 years

D. Graduation

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

Q24. Who among the following musicians who lived between 1253 and 1325 AD, was traditionally considered as the inventor of tabla and sitar?

A. Tansen
B. Amir Khusro
C. Swami Shastri
D. Baiju Bawra

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

Q25. A thief is 400 m ahead of a policeman. The thief started running and policemen started chasing simultaneously. Assuming the speed of thief be 10 km/h & policemen be 15 km/h, calculate the distance (in metres) covered by the thief before the policemen caught the thief?

A. 750 m
B. 800 m
C. 850 m
D. 900 m

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

Q26. Oil zapper technology to remove oil spills in the ocean, is developed by?

A. IIT
B. TERI
C. CSE
D. ISRO

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

Q27. The Union Government has released a commemorative postage stamp to mark the Centenary year of _____ is the apex institution on fauna taxonomy in India.

A. Zoological Survey of India.
B. Archaeological Survey of India.
C. National Animal Species Survey of India.
D. National Sample Survey Organization.

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

Q28. Which Bank launched India's first contactless mobile payment solution?

A. Axis
B. SBI
C. ICICI

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D. HDFC

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

Q29. The presence of ozone in the _____ prevents Sun's Harmful ultraviolet (UV) radiations from reaching the Earth's surface.

A. Troposphere
B. Mesosphere
C. Stratosphere
D. Thermosphere

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

Q30. If √5 = 2.236; then √5/√2 is:

A. 1.581
B. 1.851
C. 2.236
D. 1.782

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

Q31. The HCF of two numbers is 16 and their difference is 16. Find the numbers.

A. 64, 80
B. 72, 88
C. 80, 100
D. 96, 120

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

Q32. In 2001, the production of sugar was 1584 million kgs which is 20% more than that in 1991. Find the production (in million kgs) of sugar in 1991.

A. 1980
B. 1280
C. 1300
D. 1320

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

Q33. Who has been selected to the board of governors of the World Water Council (WWC) for 2016-18 in the 7^(th) general assembly of WWC held at Marseille, France?

A. Chaudhary Birender Singh
B. Ram Kripal Yadav

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C. Sanwar Lal Jat

D. Prithvi Raj Singh

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

Q34. There are over _____ capillaries in our lungs.

A. 100 million

B. 200 million

C. 400 million

D. 300 million

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

Q35. In a certain code language, if MOBILE is coded as 713694 and TABLET is coded as 253942, then BALLET will be coded as?

A. 329954

B. 359942

C. 395942

D. 359429

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

Q36. A & B can finish a work in 12 days, B & C in 15 days and A & C in 20 days. In how many days would A alone finish the work?

A. 20

B. 30

C. 40

D. 60

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

Q37. _____ is the first indigenous aircraft of India designed and built by HAL.

A. HF 25 MKI

B. HT 2

C. HT 3 MKI

D. HF 28

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

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Q38. A tennis player won 18 games out of 27 games played. Calculate the games won in terms of the decimal.

A. 0.667

B. 0.067

C. 0.50

D. 0.0333

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

Q39. The value of tan45° is:

A. √3

B. √3/2

C. 1/√3

D. 1

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

Q40. The expenses of a person increase by Rs. 5000 for every month in February and March. If his expenses in January was Rs. 5000, Calculate his average expenditure (in Rs.) from January to March.

A. 10000

B. 15000

C. 7500

D. 5000

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

Q41. If Rahul walks at 4 km/h, he reaches office late by 10 minutes of the scheduled time. If he walks at 5 km/h he reaches office 5 minutes early of the scheduled time. Calculate the distance of his office from his home.

A. 4 km

B. 6 km

C. 5 km

D. 8 km

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

Q42. Why is it remarked that the “pocket of the Indian President is bigger than that of the American President” in reference to Pocket Vetro Power of the president?

A. The power of the Indian President not to take any action (either positive or negative) on the bill for an indefinite period.

B. The President of the USA has to return the bill for reconsideration within 10 days, as against 30 days for the Indian President.

C. The President of the USA has to return the bill for reconsideration within 10 days, as against 20 days for the Indian President.

D. The President of the USA can't return the bill for reconsideration if he kept it for more than 10 days, while that is not the case with the Indian President.

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

Q43. A straight angle is equal to?

A. 90°
B. 180°
C. 270°
D. 360°

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

Q44. Pointing to the lady in the metro, Twinkle said, “She is the sister of the father of my mother’s son. “Who is the lady to Twinkle?

A. Mother
B. Sister
C. Aunt
D. Niece

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

Q45. Read the statements and select a conclusion from the given alternatives:

Statements:
Some doors are shelves.
All the shelves are windows.
Conclusions:
1. Some doors are windows.
2. No shelves is door

A. Only (1) conclusion follows
B. Only (2) conclusion follows
C. Either (1) or (2) follows
D. Neither (1) nor (2) follows

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

Q46. If the average age of 40 students in class I is 10 years and the average age of 30 students in Class II is 12 years, find the average age (in years) for all students.

A. 11
B. 10.54
C. 10.58
D. 10.85

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

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Q47. Pointing to a person, Arnav said to Preeti, “His mother is the only daughter of your father”. How was Preeti related to that person?

A. Aunt

B. Mother

C. Wife

D. Daughter

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

Q48. Fill in the blanks with suitable option:

A/An ____ turns blue litmus red and a/an _ turns ____ litmus blue.

A. Base, acid, red

B. Acid, base, green

C. Base, acid, pink

D. Acid, base, red

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

Q49. Which city hosted the first ‘India International Science Festival, 2015?

A. Kolkata

B. Bangalore

C. New Delhi

D. Chennai

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

Q50. In a fruit basket, the ratio of number of apples to bananas is A and the ratio of bananas to apples is B; then A + B is:

A. exactly 1

B. less than one

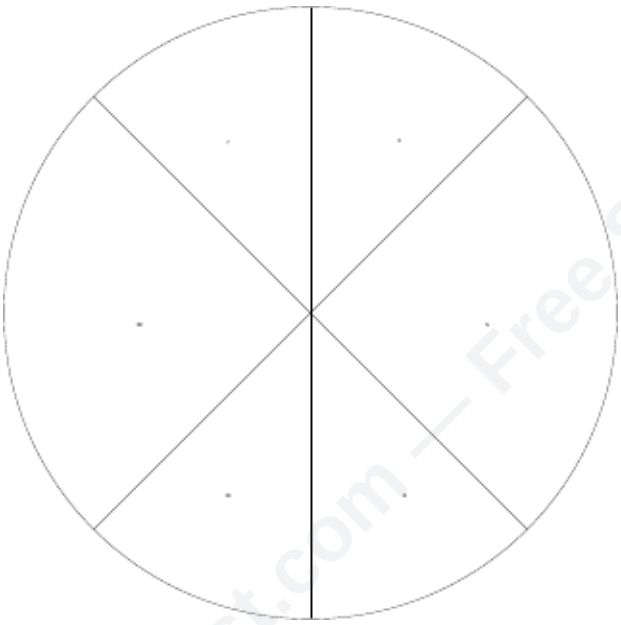
C. more than one

D. zero

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

Q51. Insert the missing character in?

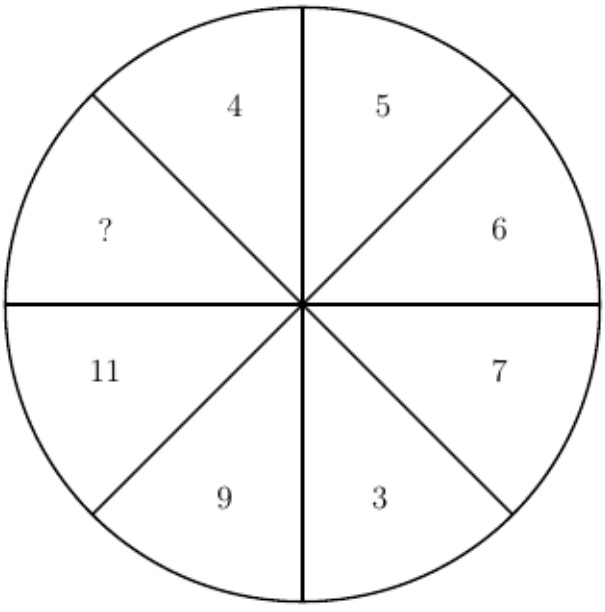
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(a) 45
(b) 29
(c) 39
(d) 37

Q52. When was the GSLV used in India for the first time?
(a) 1980
(b) 1987
(c) 1994
(d) 2001

Q53. Insert the missing character in?



(a) 13
(b) 14
(c) 12
(d) 15

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Q54. Which fraction of 2 hours is 18 seconds?

A) 1/200

B) 1/300

C) 1/400

D) 1/600

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

Q55. Gitesh took a loan for 6 years at 5% Simple Interest. If the total interest paid was Rs. 615, calculate the principal.

A) Rs. 2000

B) Rs. 2050

C) Rs. 2100

D) Rs. 2150

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

Q56. Read the statement and select a conclusion from the given alternative:

Statements: The national norm is 100 classrooms per thousand population, but in this state, 150 classrooms per thousand are available in the schools.

Conclusions:

I. Our national norm is appropriate

II. This state's education system is taking adequate care in this regard.

Choose the right option.

(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Either I or II follows
(d) Neither I nor II follows

Q57. If $40x^2 = 734^2 - 234^2$, then find the value of x.

A) 110

B) 121

C) 11

D) 144

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

Q58. Consider the following statements & choose the correct option.

I. Formation of blood cells in the bone marrow by a process called hematopoiesis.

II. Detoxification or removal of certain poisonous substances.

(a) Both I and II are functions of the skeleton.
(b) Both I and II are functions of kidney
(c) II is the function of the kidney and I of the skeleton.
(d) I is the function of joints and II of skeleton

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Q59. A blue, violet, or red flavonoid pigment found in plants is due to the presence of

(a) Carotene
(b) Anthocyanin
(c) Xanthophylls
(d) Chlorophylls

Q60. Which of the following chemical reactions is always endothermic in nature?

(a) Combustion reaction
(b) Decomposition
(c) Displacement reaction
(d) Combination reaction

Q61. Who is the author of the famous autobiography “Dreaming Big: My Journey to Connect India”?

(a) Abdul Kalam
(b) Sam Pitroda
(c) Nandan Nilekani
(d) Azim Premji

Q62. If $4\sin\theta - 3\cos\theta = 0$, then $\sec\theta.\operatorname{cosec}\theta$ is:

A) 5/12
B) 25/12
C) 13/12
D) 12/5

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

Q63. If in a certain language, STAR is coded as TSRA, how is MOON coded in that code?

(a) OMNO
(b) OOMN
(c) NMOO
(d) OMON

Q64. Who became the 1^(st)player to win ATP (Association of Tennis Professionals) World Tour Finals for the 4^(th) consecutive time?

(a) Novak Djokovic
(b) Rafael Nadal
(c) Serena Williams
(d) Roger Federer

Q65. Match the following correctly:

Inventions/Discovery	**Inventions/Discovery**
P) Dynamite	a. J.J Thomson
Q) Dynamo	b. Michael Faraday
R) Electron	c. Alfred Nobel
S) Proton	d. Rutherford

(a) P-b, Q-c, R-a, S-d
(b) P-c, Q-b, R-d, S-a
(c) P-c, Q-b, R-a, S-d
(d) P-d, Q-c, R-b, S-a

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Q66. Increase in carbon dioxide in the atmosphere is caused by which of the following reasons?

I) Excessive use of fossil fuels

II) Deforestation

III) Increased number of vehicles

IV) Excessive use of solar heaters

(a) I and II

(b) I, II and IV

(c) I, II and III

(d) I, II, III and IV

Q67. Calculate the amount if Rs. 400 is invested on compound interest at the rate of 5% per annum for 2 years.

A) 440

B) 441

C) 445

D) 480

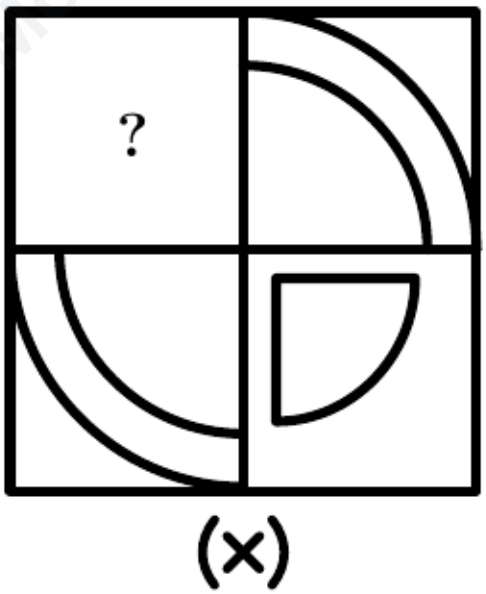
(a) A

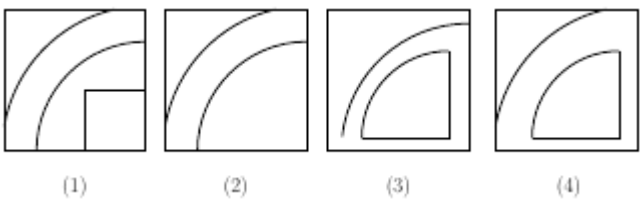
(b) B

(c) D

(d) C

Q68. Complete the Figure X from the 4 alternatives 1, 2, 3, 4





(a) 1

(b) 2

(c) 3

(d) 4

Q69. Which among the following network topologies has the highest transmission speed?

A) LAN

B) WAN

C) MAN

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D) Both LAN and WAN have equal transmission speeds.

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

Q70. On dividing $15y^3 – 30y^2 + 12y – 12$ by $3y – 6$, the remainder is:

A) 6
B) 36
C) 30
D) 12

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

Q71. Read the statements and select a conclusion from the given alternatives:

Statements :
Some benches are autos.
All the boxes are autos.
All the pens are benches.
Conclusions:
(A) Some benches are boxes.
(B) No pen is auto
(C) Some boxes are benches.

(a) None of these
(b) Only (A) and (B)
(c) Only (A) and (C)
(d) Only (B) and (C)

Q72. India has the largest area under _____ crop in the World.

(a) Oil Seeds
(b) Sugarcane
(c) Wheat
(d) Apple

Q73. The longest chord in a circle is:

A) Radius
B) Diameter
C)Sector
D)Segment

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

Q74. Read the statements and select a conclusion from the given alternatives:

Statement: Good health is a luxury in country ‘X’ where the rate of mortality due to hunger, malnutrition, and unhygienic conditions is very high as compared to other nations of that region.

Conclusions:

I. People in country ‘X’ can’t afford to have many luxuries in life

II. Good health is a gift of nature.

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(a) only conclusion I follows.
(b) only conclusion II follows.
(c) either I or II follows.
(d) neither I nor II follows.

Q75. Which mirror is preferred as a rear-view (wing) mirror in vehicles because of its wider field of view?
(a) Convex
(b) Plane
(c) Concave
(d) Concave convex

Q76. The main objectives of the Indian space program are:
I. Mass Communication and education via satellite.
II. Survey and management of natural resources through remote sensing technology, environmental monitoring and meteorological forecasting.
III. Development of indigenous satellite and satellite launch vehicles.
(a) Only I
(b) Only II
(c) 1 & 3 both
(d) 1, 2 and 3

Q77. Four pair of words are given below out of which three are alike in some manner and one pair is different. Which is different from the rest?
(a) Hard : Soft
(b) Long : High
(c) Sweet : Sour
(d) Pointed : Blunt

Q78. Read the statements and select a conclusion from the given alternatives:
Statements:
All the wires are books.
All the plates are books.
Some wallets are plates.
Conclusions:
I. Some wires are plates.
II. Some books are wires.
III. Some books are wallets.
(a) Only I.
(b) Only II and III
(c) Only I and II
(d) Only I and III

Q79. Four pair of words are given below out of which three are alike in some manner and one pair is different. Which is different from the rest?
(a) Student : Scholar
(b) Paddy : Husk
(c) Soldier : Warrior
(d) Politician : Leader

Q80. If the selling price is Rs. 84 and Gain percentage = 20%, Calculate the cost price.
A) Rs. 70
B) Rs. 68
C) Rs. 71

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D) Rs. 69

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

Directions

Direction: Based on the table below answer the following questions:

The table given below shows the percentage distribution of the total expenditures of a company Zeta Interactive Services under various expense heads during 2003.

Infrastructure	**20**
Transport	12.5
Advertisement	15
Taxes	10
R & D	5
Salaries	20
Interest on Loans	17.5

Q81. If the interest on loan amounted to Rs. 2.45 crores, then the total amount of expenditure on advertisement taxes and research and development of Zeta Interactive Services is

A) Rs. 7 crores
B) Rs. 5.4 crores
C) Rs. 4.2 crores
D) Rs. 3 crores

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

Q82. What is the ratio of the total expenditure on infrastructure and transport to the total expenditure on taxes interest on loans of Zeta Interactive Services?

A) 5 : 4
B) 8 : 7
C) 9 : 7
D) 13 : 11

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

Q83. If the expenditure of Zeta Interactive Services on advertisement is 2.10 crores then the difference between the expenditure on transport and taxes is?

A) Rs. 1.25 crores
B) Rs. 95 lakhs
C) Rs. 65 lakhs
D) Rs. 35 lakhs

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

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(d) B

Q84. A shopkeeper purchased a stereo system of marked price Rs. 2000, at successive discounts of 10% & 15% respectively. He then spent Rs. 70 on the packaging and sold it at Rs. 2000. Calculate the gain percentage.

A) No Gain

B) 25%

C) 30%

D) 35%

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

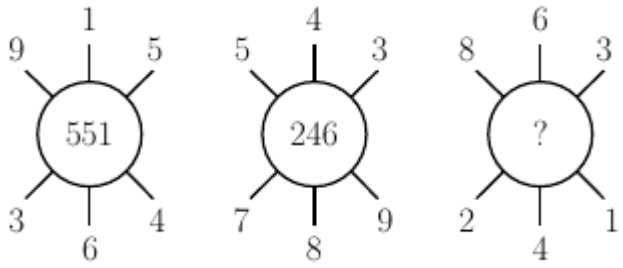
Q85. Who among the following is/was not associated with Cricket?

(a) Farhaan Behardien
(b) Aaron Phangiso
(c) Vernon Philander
(d) Stan Wawrinka

Q86. Which of the following is the outermost part of human skin?

(a) Epidermis
(b) Dermis
(c) Hypodermis
(d) Nerve Fiber

Q87. Insert the missing character in?



(a) 262
(b) 622
(c) 631
(d) 824

Q88. Indian National Army formed by _____

(a) Mohan Singh
(b) Subhash Chandra Bose
(c) Chandrasekhar Azad
(d) Ras Bihari

Q89. Factors of $x^2 - 6x + 8$ are:

A) $(x - 4)(x - 2)$

B) $(x + 4)(x + 2)$

C) $(x + 8)(x - 2)$

D) $(x - 4)(x + 2)$

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

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Q90. Find the least number that must be subtracted from 87375, to get a number exactly divisible by 698.

A) 120
B) 125
C) 250
D) 375

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

Q91. Which company developed the Android OS, a mobile operating system Software in 2007?

(a) Microsoft Corp.
(b) Google Corp.
(c) Intel
(d) Apple Corp.

Q92. In a certain code language, if HISTORY is coded as 7326845 and CIVICS is coded as 135312, then VISITOR will be coded as?

(a) 5323684
(b) 6843532
(c) 8463352
(d) 5323648

Q93. A man buys 20 pencils for Rs. 6 and sells 16 pencils for Rs. 6. Calculate his gain or loss percentage.

A) 20
B) 25
C) 27
D) 30

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

Q94. Three clocks are designed to alarm once every hour, every two hours and every three hours respectively. If they all alarmed together now, after how many hours they will together alarm next?

A) 3 hours
B) 6 hours
C) 4 hours
D) 12 hours

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

Q95. If a/b = 1/3; b/c = 1/2 and a = 2 then the value of c is:

A) 8
B) 10
C) 12
D) 16

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

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Q96. If a certain language, SINK is coded as ISKN, how is MINT coded in that code?

(a) TMNI
(b) IMTN
(c) INMT
(d) TINM

Q97. To take revenge for the Jallianwala Bagh Massacre, who killed General O'Dwyer in London?

(a) Sardar Bhagat Singh
(b) Sardar Udham Singh
(c) Sardar Ajit Singh
(d) Raj Guru

Q98. Read the statements and select a conclusion from the given alternatives:

Statements: Our equity investments carry market risk. Consult your investment advisor or agent before investing.

Conclusions:

I. One should not invest in equity

II. The investment advisor calculates the market risk with certainty.

(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Either I or II follows
(d) Neither I nor II follows

Q99. In a right-angled triangle, the hypotenuse is 2 cm longer than the perpendicular which is 2 cm longer than the base. Calculate the length of the base.

A) 6 cm

B) 9 cm

C) 10 cm

D) 8 cm

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

Q100. Who among the following is famously known as "The Haryana Hurricane"?

(a) Mansoor Ali Khan Pataudi
(b) Kapil Dev
(c) Saina Nehwal
(d) Vijender Singh

ANSWER KEY

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

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SOLUTIONS

Q1. Answer: (b) A

The Correct Answer is Option 2 i.e A.

• Leukemia is a type of blood cancer caused by an increase in the number of white blood cells (WBC) in the body.

• WBCs protect our body from foreign substances.

• Some Vitamin deficiency diseases:

• Vitamins A deficiency causes blindness.

• Vitamins D deficiency causes Rickets (Bone abnormalities).

• Vitamin E deficiency causes Neurological problems.

• Vitamin K deficiency causes Blood clotting problems.

• Amyloidosis is a disease that occurs due to abnormal intake of proteins.

• Fatigue and weakness, shortness of breath are common symptoms of this disease.

Additional Information

• White blood cells play a crucial role in the immune system. They fight infections and protect the body from disease.

• In leukemia, the bone marrow produces abnormal white blood cells. These cells are not functional and can crowd out healthy blood cells, leading to various health problems.

• Leukemia can be acute or chronic. Acute leukemia progresses rapidly, while chronic leukemia develops more slowly.

• There are several types of leukemia, each with different characteristics and treatments.

Here's why the other options are incorrect:

• B. caused by a deficiency of vitamins: Vitamin deficiencies can weaken the immune system and increase the risk of infection, but they are not directly related to leukemia.

• C. cancer in the brain: While some cancers can spread to the brain, including leukemia, it is not primarily a brain cancer.

• D. caused by an overdose of proteins: An overdose of proteins can have negative health consequences, but it is not a known cause of leukemia.

Q2. Answer: (d) D

√ (.00000625/25)

=> √((625 × 10^(- 8))/25)

=> 25 × 10^(- 4) ÷ 5

=> 5 × 10^(-4)

=> 0.0005

Q3. Answer: (a) C

Let, average price of a pen = Rs x

According to the question,

=> 30x + 75 × 2 = 390

=> 30x = 390 – 150

=> 30x = 240

=> x = 8

Therefore Average price of a pen = Rs. 8

Q4. Answer: (c) D

The given figure is,

Here, b and c is the intersection region who play Football and Basket Ball.

We need to find the set of persons who play Football and Basket Ball but not Cricket. So, is eliminated as c is a region that plays cricket also.

So, the region "b" is those who play Football and Basket Ball but not Cricket, as shown below:

Hence, ‘Region b’ is the correct answer.

Q5. Answer: (b) A

The set of persons who play Football but neither Cricket not Basket Ball is represented by the intersection region of football that is not cricket or basketball, as shown below:

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Q6. Answer: (d) B

The given figure is,

The region c lies in the middle and represents the set of persons who play all three games, as shown below:

Hence, ‘Region c’ is the correct answer.

The question is which region represent the persons who play all the three games and just below the question they have provided some answers,

A. Region b

B. Region c

C. Region f

D. Region g

The answer to the question is Region C. So, it is present in option B. Hence option B is the answer.

Note: Here the regions are represented with small letters and the options are in capital letters.

Q7. Answer: (d) D

Hence, is the boy playing football is the nephew of Hemant..

Q8. Answer: (d) D

The Correct Answer is Option 4 i.e D.

• Plotter: A plotter is an output device as it is a type of printer which is used to make line drawings on paper with one or more automated pens using the commands from a computer.

• Speaker: Speakers are one of the most common output devices as it produces audio output in the form of sound waves.

• Speaker is a device that converts electrical energy into sound energy.

• Printer: It is an output device as it takes the input command from the user and gives the output in the form of a texted document.

• Scanner: A scanner is an input device as it is only able to send information to the computer.

Q9. Answer: (d) D

The Correct Answer is Option 4 i.e D.

• Explorer 1:

• Explorer 1 was the first U.S. satellite and the first satellite to carry science instruments.

• The satellite was launched on Jan. 31, 1958.

• The primary science instrument on Explorer 1 was a cosmic ray detector designed to measure the radiation environment in Earth orbit.

• Sputnik 1:

• Sputnik 1 was the world’s first artificial satellite.

• On Oct. 4, 1957, Sputnik 1 successfully launched and entered Earth's orbit.

• It was the Soviet Union’s first successful satellite.

• Apollo 11:

• It was the first manned mission to land on the Moon.

• It was launched from Cape Kennedy on July 16, 1969.

• The Commander of this spaceflight is Neil Armstrong.

• It was this space flight that landed humans on the moon for the first time.

• GSAT:

• GSAT satellites are ISRO’s indigenously developed communication satellites.

• GSAT series of satellites are geosynchronous satellites.

Q10. Answer: (b) A

Let, the tank will be full in x minutes

According to the questions,

=> (x – 4)/12 + x/16 = 1

=> [4(x – 4) + 3x]/48 = 1

=> 7x – 16 = 48

=> 7x = 64

=> x = 64/7

=> x = 91/7

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Therefore In 91/7 mins = 9 minutes 8 seconds the tank will be full

Q11. Answer: (d) A

The Correct Answer is Option 4 i.e A.

• Dhamekh Stupa:

• Dhamekh Stupa bears special significance among all the Buddhist stupas as it is believed to be the "seat of the holy Buddha", where Lord Buddha had preached his first sermon after attaining enlightenment at Bodhgaya.

• Dhamek Stupa is located at Sarnath, in the state of Uttar Pradesh.

• It was built in 249 B.C.E. by the great Mauryan king Ashoka.

• Sanchi Stupa:

• It is the oldest stone structure of India, Located at Sanchi Town, Madhya Pradesh.

• It was originally commissioned by Emperor Ashoka in the third century BCE.

• Shingardar stupa:

• The stupa of Shingardar, one of the important Buddhist monuments is situated about 3 km to the northeast of Brikot village in Swat Valley, Pakistan.

• It was built by King Uttarasena.

• Do-Drul Chorten:

• The Do-Drul Chorten or Stupa was built in 1945 by the Venerable Trulshi Rimpoche, head of the Nyingma order of Tibetan Buddhism.

• The Chorten Stupa is marked by a golden top dome.

• It is located in Gangtok, Sikkim.

Q12. Answer: (a) C

The option figure that will complete the pattern is shown below:

Hence, option 1 is the correct answer.

Q13. Answer: (b) B

In an Exhibition, seven air conditioners of different companies-LG, Carrier, Samsung, Godrej, Whirlpool, Hitachi and Videocon are kept facing east in the following order:

LG is next to right of Videocon.

Videocon is fourth to the right of Samsung.

Godrej air conditioner is between air conditioner Carrier and Hitachi.

Samsung, which is third to the left of air conditioner Carrier, is at one end.

A. Videocon air conditioner is in between air conditioner Carrier and Samsung → False

B. LG is next left to Whirlpool air conditioner. → True

C. Videocon is next right of LG. → False

D. Godrej is fourth right of Whirlpool. → False

Hence, statement B is correct.

Q14. Answer: (d) B

In an Exhibition, seven air conditioners of different companies-LG, Carrier, Samsung, Godrej, Whirlpool, Hitachi and Videocon are kept facing east in the following order:

LG is next to right of Videocon.

Videocon is fourth to the right of Samsung.

Godrej air conditioner is between air conditioner Carrier and Hitachi.

Samsung, which is third to the left of air conditioner Carrier, is at one end.

Whirlpool, LG, and Videocon are the air conditioners to the right of air conditioner Carrier.

Hence, option ‘4’ is the correct answer.

Q15. Answer: (c) A

In an Exhibition, seven air conditioners of different companies-LG, Carrier, Samsung, Godrej, Whirlpool, Hitachi and Videocon are kept facing east in the following order:

LG is next to right of Videocon.

Videocon is fourth to the right of Samsung.

Godrej air conditioner is between air conditioner Carrier and Hitachi.

Samsung, which is third to the left of air conditioner Carrier, is at one end.

A. Godrej is next left of air conditioner Carrier → True

B. Hitachi is next left of Samsung → False

C. Hitachi is at one end → False

D. Samsung is next second to the right of Godrej → False

Hence, statement A is correct.

Q16. Answer: (c) B

The Correct Answer is Option 3 i.e B.

• Durand line:

• Amir Abdur Rahman Khan, Amir of Afghanistan and Sir Henry Mortimer Durand, Foreign Secretary to the Government of India, representing the Government of India signed an agreement establishing the Durand line in 1893.

• It is the borderline between Afghanistan and Pakistan.

• Radcliffe Line:

• Radcliffe Line was declared as the boundary between India and Pakistan on 17th August 1947, following the Partition of India.

• The line is named after Sir Cyril Radcliffe.

• McMohan Line:

• It is the boundary line between China and India.

• The line is named after Sir Arthur Henry McMahon.

Q17. Answer: (c) A

All options except ‘tower’ are naturally found, while tower is a man-made.

Hence, ‘tower’ is the odd one out.

Q18. Answer: (c) C

The Correct Answer is Option 3 i.e C.

• K.M.Munshi:

• He was the chairman of the Order of Business Committee.

• K. M. Munshi was on the ad hoc Flag Committee that selected the Flag of India in August 1947.

• He was also on the committee which drafted the Constitution of India under the chairmanship of B. R. Ambedkar.

• G.V. Mavlankar:

• He was the chairman of Committee on the Functions of the Constituent Assembly

• He was the first Speaker of the Lok Sabha.

• Ram Nandan committee: It is related to identify the creamy layer among the OBCs.

• Swaran Singh committee: It recommended fundamental duties in the Indian constitution.

Q19. Answer: (c) B

The Correct Answer is Option 3 i.e B.

• Bioaccumulation: It refers to an increase in the concentration of a pollutant from the environment to the first organism in a food chain.

• Biomagnification: It refers to an increase in the concentration of pollutants from one trophic level to another through the food chain.

• Examples include Industrial effluents and wastes from agriculture,

• Organochlorines: Organochlorines (OC), widely used as pesticides are a group of chlorinated compounds.

• DDT, Endosulfan, Chloropropylate are examples.

• Lichens: A lichen is not a single organism, but the result of a symbiotic relationship between a fungus and algae or cyanobacteria.

• Proteins:

• Proteins are large, complex molecules that are present in all living organisms.

• They are made up of hundreds or thousands of amino acids, attached to one another in long chains.

• They are required for the functioning and regulation of the body’s tissues and organs.

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Q20. Answer: (a) C

The Correct Answer is Option 1 i.e C.

• Damodar Valley Corporation (DVC):

• It is the first multipurpose river valley project of independent India.

• It is the only GOI organization generating power through three sources- coal, water, and liquid fuel.

• DVC operates thermal power stations at Bokaro, Chandrapura, Durgapur and Mejia.

• DVC controls the network of four dams - Tilaiya and Maithon on Barakar River, Panchet on Damodar river, and Konar on the Konar River.

• India's first underground hydro-electric power station set up at Maithon.

• Tungabhadra Dam, constructed across the Tungabhadra River, a tributary of the Krishna River is located near Hampi in Karnataka.

Q21. Answer: (c) B

The Correct Answer is Option 3 i.e B.

• Qutab-ud-din Aibak:

• Qutab Minar is a soaring, 73 m-high tower of victory, built-in 1193 by Qutab-ud-din Aibak immediately after the defeat of Delhi's last Hindu kingdom.

• The tower has five distinct storeys.

• The first three stories are made of red sandstone; the fourth and fifth storeys are of marble and sandstone.

• At the foot of the tower is the Quwwat-ul-Islam Mosque, the first mosque to be built in India.

• Qutab-ud-din Aibak was the first Muslim ruler of Delhi, ruled from 1206 to 1210 AD.

• Firoz Shah Tughlaq:

• He was the third ruler of the Tughlaq dynasty that ruled over Delhi from 1351 to 1388 AD.

• He established the Diwan-i-Khairat -- office for charity

• He established the Diwan-i-Bundagan -- department of slave

• He is known to establish four new towns, Firozabad, Fatehabad, Jaunpur and Hissar

• Iltutmish:

• He succeeded to the throne after Qutub-ud-din-Aibak.

• He was the third ruler of the Delhi Sultanate, belonging to the Mamluk dynasty.

• He constituted a corp of forty loyal slave Amirs known as Turkan-i-Chihalgani also called Chalisa.

• He completed the building of Qutab Minar.

• Quli Qutub Shah (1565-1612):

• He was the fifth sultan of the Qutb Shahi dynasty of Golkonda

• He founded the city of Hyderabad, in South-central India and built its architectural centerpiece, the Charminar.

• Muhammed Quli Qutub Shah had the distinction of being the first Saheb-e-dewan Urdu poet.

Q22. Answer: (d) C

The Correct Answer is Option 4 i.e C.

• Kerala:

• Krishnanattam is a famous dance of Kerala.

• The art form Krishnanattam (literally known as Dance of Krishna) was composed by King Manavedan of Kozhikode.

• Krishnanattam combines artistic elements of Ashtapadiyattam, a dance form evolved in Kerala based on Jayadeva's Gitagovinda.

• In Krishnanaattam the story of Krishna right from his birth to his ascent to heaven is presented in eight parts.

• Andhra Pradesh:

• Kuchipudi is a dance-drama performance art that originated in a village of Krishna district of Andhra Pradesh, India.

• Kuchipudi is not only a dance but a fine amalgamation of dance, gestures, speech, and song.

• Karnataka:

• Yakshagana is an Indian traditional theatre art form that originated in Karnataka.

• It is a temple art form that depicts mythological stories and Puranas.

• Tamil Nadu:

• Kummi is one of the most important and ancient forms of village dances of Tamil Nadu.

• It originated when there were no musical instruments, with the participants clapping their hands to keep time

• Bharatanatyam is an Indian classical dance that originated in Tamil Nadu.

• It is the first of India's traditional dances to be refashioned as a theatre art and to be exhibited widely both at home and abroad.

Q23. Answer: (c) B

The Correct Answer is Option 3 i.e B.

• Haryana Panchyati Raj (Amendment) Bill, 2015:

• The Bill fixes, matriculation as an essential qualification for general candidates contesting the Panchayat elections while the qualification for the women (general) and Scheduled Caste candidate will be middle standard (VIII).

• However, in the case of a woman candidate belonging to the SC category contesting election for the post of Panch, the minimum qualification shall be Vth pass.

• Further, the Bill makes it a mandatory requirement for all the candidates to have functional toilets at their residence which is an extension of the Swachh Bharat Abhiyan.

• Haryana has become the second State after Rajasthan to fix educational and other qualifications for the candidates contesting PRI elections.

Q24. Answer: (b) B

The Correct Answer is Option 2 i.e B.

• Tansen (1506 - 1586):

• He was born as Ramatanu.

• Tansen was the title given to him by Raja Vikramjit of Gwalior.

• Tansen was a court musician in the darbar of Raja Ramachandra of Bandavagarh (Rewa).

• He was one of the ‘Navratna’ (nine gems) at the court of the Mughal Emperor Akbar.

• The title ‘Miyan’ was conferred upon him by Akbar.

• Amir Khusrau (1253-1325):

• He was a disciple of famous Sufi saint Hazrat Nizamuddin Auliya.

• He is also credited with the invention of Sitar, Tabla, and many other musical instruments.

• Amir Khusrau is also remembered as a founder of the Ganga-Jamani Tehzeeb or the Indian culture “which is a synthesis of Muslim and Hindu elements.” Khayal and Tarana, two popular forms of Hindustani classical music, are believed to have been discovered by him.

• He is also regarded as the "father of Qawwali".

• Baiju Bawra (1542-1613):

• Baiju was one of the most prominent Dhrupad singers and composers in the medieval period.

• He was under the patronage of Raja Mansingh Tomar in Gwalior.

• Baiju learned Dhrupad music in Dagurvaani in Vrindavan under Swami Haridas (1512–1607).

• He was called Bawra (crazy) because he was insanely in love with a court dancer in Chanderi.

Q25. Answer: (a) B

As time is constant they cover distance according to their speed ratio

The speed of policemen - The speed of thief → Distance ahead

=> 15 − 10 → 400 m

=> 5 → 400 m

=> 1 → 80 m

The speed of thief = 10 km/h

=> 10 → 800 m

The distance (in metres) covered by the thief before the policemen caught the thief is 800m.

Alternate Method

Given:

A thief is 400 m ahead of a policeman. The thief started running and policemen started chasing simultaneously. The speed of thief be 10 km/h & policemen be 15 km/h

Calulation:

Let, distance covered by thief be x km

According to the question,

x/10 = (x + 0.4)/15

=> x/10 – x/15 = 4/150

=> (3x – 2x)/30 = 2/75

=> x/30 = 2/75

=> x = 4/5

=> x = 0.8

Therefore Distance covered by thief = 0.8 km = 0.8 × 1000 m = 800 m

Q26. Answer: (a) B

The Correct Answer is Option 1 i.e B.

• TERI:

• The Energy and Resources Institute: is a not-for-profit, policy research organization - working in the fields of energy, environment, and sustainable development.

• Oilzapper:

• Developed by TERI, partly supported by the DBT (Department of Biotechnology), Ministry of Science and Technology, Government of India.

• Oilzapper feeds on hydrocarbon compounds present in crude oil and oily sludge (a hazardous hydrocarbon waste generated by oil refineries) and converts them into harmless CO2 and water.

• Oilzapper's uniqueness lies in the bio-friendly manner in which it detoxifies oily sludges and cleans up oil slicks.

• Headquarters: Delhi

• IIT:

• Pandit Jawaharlal Nehru pioneered the establishment of the Indian Institutes of Technology to provide trained technical personnel of international class to the nation who would act as leaders in technology for the newly born independent India.

• CSE:

• Centre for Science and Environment (CSE) is a public interest research and advocacy organization based in New Delhi.

• CSE researches lobbies for and communicate the urgency of development that is both sustainable and equitable.

• Anil Kumar Agarwal was the founder-director of the Centre for Science and Environment, India’s leading environmental NGO.

• ISRO:

• Dr. Vikram Sarabhai is considered the founding father of the Indian space program.

• Its vision is to harness space technology for national development while pursuing space science research and planetary exploration.

• Dr. K Sivan is the present chairman of ISRO.

Q27. Answer: (c) A

The Correct Answer is Option 3 i.e A.

• Zoological Survey of India:

• The Union Government has released a commemorative postage stamp to mark the Centenary year of Zoological Survey of India to mark the centenary year of the Zoological Survey of India (ZSI) in 2015.

• Union Communication and IT Minister Ravi Shankar Prasad released the postage stamp in New Delhi.

• The Zoological Survey of India (ZSI) was established on 1st July 1916 to promote survey, exploration, and research leading to the advancement in our knowledge of various aspects of an exceptionally rich life of the erstwhile ´British Indian Empire´.

• The Zoological Survey of India (ZSI) is the premier taxonomic research organization in India.

• Dr. Kailash Chandra is the director of the Zoological Survey of India.

• Archaeological Survey of India:

• The Archaeological Survey of India, established in 1861 is an attached office under the Ministry of Culture dedicated to the protection, preservation, and conservation of the national monuments.

• National Sample Survey Organization (NSSO):

• National Sample Survey Organization (NSSO) conducts surveys on Household Consumer Expenditures on a thin sample of households and a quinquennial survey on a large sample of households.

• It is under the Ministry of Statistics and Programme Implementation (MoSPI).

Q28. Answer: (c) C

The Correct Answer is Option 3 i.e C.

• ICIC Bank:

• ICICI Bank launched the country’s first contactless mobile payment solution to enable its credit and debit customers to make in-store contactless payments by just waving their smartphones near an NFC-enabled merchant terminal.

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• ICICI Bank also became the first to enable its customers to make electronic payments by just waving the cards near the merchant terminal.
• ICICI Bank Chairman is Girish Chandra Chaturvedi.
• Tagline: Hum Hai Na, Khyal Apka.
• Headquarters: Mumbai.
• Axis Bank:
• It is the third-largest private sector bank in India.
• Rakesh Makhija is the chairman of Axis Bank.
• Tagline: Badhti Ka Naam Zindagi.
• Headquarters: Mumbai.
• HDFC Bank:
• It is India's leading private sector bank.
• CEO: Aditya Puri.
• Tagline: We Understand Your World.
• Headquarters: Mumbai.
• SBI Bank:
• It is the largest public sector banks in India.
• It began with the establishment of the Bank of Calcutta in Calcutta, on 2 June 1806.
• It was the first-ever joint-stock bank of British India, established under the sponsorship of the Government of Bengal.
• Rajnish Kumar is the chairman of SBI.
• Tagline: The banker to every Indian.

Q29. Answer: (a) C

The Correct Answer is Option 1 i.e C.
• Troposphere:
• The troposphere is the innermost layer of Earth’s atmosphere.
• Constantly changing and mixing up the gases takes place in this part of our atmosphere.
• This layer has the air we breathe and the clouds in the sky.
• Stratosphere:
• The stratosphere is located above the troposphere and below the mesosphere.
• There are no storms or turbulence here to mix up the air, so cold, heavy air is at the bottom and warm, light air is at the top.
• The ozone layer found in this stratosphere helps protect us from ultraviolet radiation (UV) from the sun by blocking UV radiations from reaching the Earth’s surface
• The ozone layer absorbs most of the UV radiation the sun sends to us.
• Mesosphere:
• This is the layer of the atmosphere in which the gases are all mixed up rather than being layered by their mass.
• Meteors burn up in this layer after entering Earth's atmosphere and before reaching Earth's surface.
• The meteors make it through the exosphere and thermosphere without much trouble because those layers don’t have much air.
• But when they hit the mesosphere, there are enough gases to cause friction and create heat.
• Thermosphere:
• The thermosphere is located above the mesosphere and below the exosphere.
• The thermosphere is home to the International Space Station as it orbits Earth.
• Exosphere:
• The exosphere is the outermost layer of Earth’s atmosphere.
• The exosphere has gases like hydrogen and helium, but they are very spread out.

Q30. Answer: (d) A

√5/√2
=> 2.236/1.414
=> 1.581

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Q31. Answer: (d) A

Let, the number are = 16x and 16y

According to the question,

=> 16x – 16y = 16

=> x – y = 1

Therefore Possible pairs whose difference is 1 are (1, 2), (2, 3), (3, 4), (4, 5) …… and so on

Therefore Required numbers are (16 × 4) = 64 and (16 × 5) = 80

Q32. Answer: (c) D

Given

In 2001, the production of sugar = 1584 million kgs

Calculation

Let in 1991 the production of sugar be x.

Hence, production of sugar in 2001 = 120% of x = 1.2x

According to question

1.2x = 1584

=> x = 1584 × (10/12) = 1320 million kgs.

Q33. Answer: (a) D

The Correct Answer is Option 1 i.e D.

• Prithvi Raj Singh:

• Prithvi Raj Singh has been selected to the board of governors of the World Water Council (WWC) for 2016-18 in the 7th general assembly of WWC held at Marseille, France.

• Mr. Prithvi Raj Singh is the Founder-Trustee of JBF.

• Jal Bhagirathi Foundation (JBF) was established as a nonprofit organization on 15 January 2002.

• He is also the Founder member and Managing Trustee of the Jal Marudhara Foundation, an organization involved in creating the availability of safe water and rural livelihoods.

• Sanwar Lal Jat:

• He served as Minister of State for Water Resources in the Narendra Modi government.

• He also served as the chairman of Rajasthan Kisan Aayog.

• He passed away in the year 2017.

• Ram Kripal Yadav:

• He's the Union Minister of State, Ministry of Rural Development.

• He won 2014 and 2019 Lok Sabha General elections as a member of BJP from Pataliputra

• Chaudhary Birender Singh:

• Chaudhary Birender Singh is a prominent Jat leader of Haryana.

• In 2016, he was shifted to Steel Ministry from the Ministry of Rural Development, Panchayati Raj and Drinking Water and Sanitation.

Q34. Answer: (b) D

The Correct Answer is Option 2 i.e D.

• The lungs are composed of more than 300 million small air sacs called alveoli which have a very thin wall covered with pulmonary capillaries.

• The oxygen that gets into the lungs during inspiration moves from the alveoli to the capillaries. In the opposite direction, carbon dioxide (CO_2) moves from the capillaries to the alveoli and it is eliminated during expiration.

• The lungs are located in the chest region, protected by the ribs in the rib cage.

• Lung disease refers to many disorders affecting the lungs, such as asthma, COPD, infections like influenza, pneumonia and tuberculosis, lung cancer, and many other breathing problems.

Q35. Answer: (a) B

The logic is:

M	O	B	I	L	E
7	1	3	6	9	4

T	A	B	L	E	T
2	5	3	9	4	2

Similarly,

B	A	L	L	E	T
3	5	9	9	4	2

Hence, '359942' is the correct answer.

Q36. Answer: (b) B

Let, efficiency of A = x/day

Efficiency of B = y/day

Efficiency of C = z/day

According to the question,

=> 12(x + y) = 1

=> x + y = 1/12 …… (1)

According to the question,

=> 15(y + z) = 1

=> y + z = 1/15 …… (2)

According to the question,

=> 20(x + z) = 1

=> x + z = 1/20 …… (3)

From (1) + (2) + (3) we get,

=> 2(x + y + z) = 1/12 + 1/15 + 1/20

=> 2(x + y + z) = (5 + 4 + 3)/60

=> x + y + z = 12/120

=> x + y + z = 1/10 …… (4)

From (4) – (2) we get,

=> x = 1/10 – 1/15

=> x = (3 – 2)/30

=> x = 1/30

Therefore A alone will finish the work in = 30 days

Q37. Answer: (a) B

The Correct Answer is Option 1 i.e B.

• HT-2:

• In August 1951, the HT-2 Trainer aircraft, designed and produced by the HAL under the able leadership of Dr. V.M.Ghatge.

• It is the first indigenous aircraft of India designed and built by HAL.

• HF-24:

• HAL-made HF-24 Marut was India's first developed and homemade fighter jet.

• HF-24 Marut was also the first Asian jet fighter to go past the test phase and was on active duty for almost 25 years.

• Hindustan Fighter 24, is a twin-engine, low wing, transonic fighter-bomber designed by Kurt Tank for HAL. Kurt Tank was a renowned German aircraft designer, who is known for designing the famous WWII Fighter Aircraft

• HAL:

• Hindustan Aeronautics Limited (HAL) came into existence on 1st October 1964. The Company was formed by the merger of Hindustan Aircraft Limited with Aeronautics India Limited.

• R. Madhavan was the Chairman and Managing Director of HAL Company.

• It is governed under the management of the Indian Ministry of Defence.

Q38. Answer: (c) A

GIVEN:

Games won by tennis player = 18

Total games played = 27

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FORMULAE USED:

Required Decimal = Games won by tennis player/Total games played

CALCULATION:

Required Decimal = 18/27 = 0.667

Q39. Answer: (b) D

In the above figure we see that, triangle is isosceles as both the base angles are 45° as said by the question,

Thus, Perpendicular = Base ----(1)

We know that,

tan θ = perpendicular/Base

So, by equation (1)

tan 45°= base/base

Therefore Value of tan45° = 1

Alternate Method

tan θ = sin θ/cos θ

tan 45° = sin 45°/cos 45°

tan 45° = sin 45°/sin (90° - 45°) = sin 45°/sin 45° = 1

Q40. Answer: (a) A

His expense in January = Rs 5000

His expense in February = Rs (5000 + 5000) = Rs 10000

His expense in March = Rs (10000 + 5000) = Rs 15000

His average expenditure = Rs (5000 + 10000 + 15000) × 1/3 = Rs 10000

Q41. Answer: (a) C

Given:

If Rahul walks at 4 km/h, he reaches office late by 10 minutes of the scheduled time.

If he walks at 5 km/h he reaches office 5 minutes early of the scheduled time.

Formula used:

Distance = speed × time

Calculation:

Let, the distance of his office from his home = x km

According to the question,

=> x/4 – x/5 = (10 + 5)/60

=> (5x – 4x)/20 = 1/4

=> x = 20/4 = 5

Therefore The distance of his office from his home = 5 km

Q42. Answer: (d) A

Option 4 i.e A is the correct answer: Pocket of the Indian President is bigger than that of the American President because Indian President can withhold his assent for an indefinite period whereas the President of USA has to return the bill within 10 days for reconsideration.

• A bill passed by the parliament becomes a law only after it gets assent of the President.

• But the President can use his veto power and withhold his assent to the bill according to article 111 of the Indian Constitution.

• There are four types of veto power enjoyed the President:

• Absolute Veto: When the President holds his assent to a private member bill. Another instance when the President uses this power is when the cabinet resigns and the new cabinet advises the President to hold his assent.

• Suspensive Veto: Using this veto, the President returns the bill back to the Parliament for reconsideration. But after that, the President is bound to give his assent to the bill.

• Pocket Veto: When the President holds his assent for an indefinite period of time.

• Qualified Veto is not exercised by the Indian President.

• But the President cannot use his veto power in case of Constitutional Amendment Bills. He has to compulsorily give assent to the Constitutional Amendment Bill, a provision that was added by the 24th Amendment Act.

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Q43. Answer: (a) B

When the arms of the angle lie in the opposite direction, they form a straight angle,

Examples:

A straight angle is exactly half of a revolution.

Because Full revolution is 360° Therefore Half a revolution = 180°

A straight angle can also be formed by adding two right angles i.e. 90° + 90° = 180°

Therefore Value of a straight angle = 180°

Q44. Answer: (b) C

Hence, the lady is ‘aunt’ of Twinkle.

Q45. Answer: (d) A

The least possible venn diagram is:

1. Some doors are windows. → True

2. No shelves is door → False

Hence, only (1) conclusion follows.

Q46. Answer: (c) D

Sum of ages of 40 students in class I = 10 × 40 = 400 years

Sum of ages of 30 students in class II = 12 × 30 = 360 years

Therefore Average age for all students = (400 + 360)/(40 + 30) = 760/70 = 10.85 years

Q47. Answer: (a) B

Hence, Preeti is mother of that person.

Q48. Answer: (c) D

Option 3 is the correct answer: An acid turns blue litmus red and a base turns red litmus blue.

• Litmus solutions are the indicators which when added to a chemical, tells about its acidic or basic nature.

• These indicators change their color when a base or an acid is added to them.

• pH paper: It is a paper treated with a suitable indicator, is also a pH indicator.

• pH paper can turn into various colors depending upon the strength of acid or base.

• A scale ranging from 0-14 corresponding to the color changes in pH paper is used as a reference scale.

• On the scale values from 0-6 are for acid, 7 depicts neutral and beyond 7 indicates a base.

• The dyes used in these indicators are obtained from Lichens.

• Phenolphthalein, Methyl orange, Bromothymol blue are other commonly used indicators.

Q49. Answer: (d) C

Option 4 is the correct answer: New Delhi hosted the first ‘India International Science Festival (IISF), 2015’.

• The first edition of the Indian International Science Festival was held fro 4th to 8th December 2015 at IIT New Delhi.

• The fest was organized by the Ministry of Science and Technology and Ministry of Earth Sciences.

• Technology Information, Forecasting, and Assessment Council was the nodal agency that collaborated with Vijnana Bharti to hold the event.

• Providing platform to young scientists, instilling scientific temper an exposing the fruits of science to masses, and showcasing the contribution of Indians to the field of science were the major objectives.

• It also aimed at supporting flagship programs of the government like Make in India, Digital India, smart villages, etc.

• Various conclave, conferences, Lab demos, and exhibitions were held.

IISF 2019:

• The fifth edition of IISF will be held from 5th to 8th December 2019 at Science City, Kolkata.

• Theme: RISEN (Research, Innovation, and Science Empowering the Nation)

• Indian Science Literature Fest 'Vigyanika' was also held.

• Various science and technology-related Ministries, departments, institutes, and organizations collaborate to organize the event.

Q50. Answer: (a) C

In a fruit basket, the ratio of number of apples to bananas is A.

Let A = 1 : 2

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The ratio of bananas to apples is B

Then, B = 2 : 1

Then A + B = 1/2 + 2/1 = 2 > 1

Hence, 'more than one' is the correct answer.

Q51. Answer: (c) 39

The logic is:

Hence, '39' is the correct answer.

Q52. Answer: (d) 2001

Geo-synchronous Space Launch Vehicle was used for the first time on April 18, 2001, but the flight was a failure.

• The first GSLV developed by India was GSLV Mk I (2001) and was developed using Russian cryogenic engines.

• The second variant was GSLV MkII developed using ISRO designed and indigenously built cryogenic engines.

• The most recent variant GSLV Mk III is a three-stage heavy launch vehicle.

• The first stage consists of solid-fuel boosters whereas second and third stage uses liquid propellant.

• It is capable of placing 4000 kg satellite in Geo Transfer Orbits (GTO) and 10 tonnes satellite in Low Earth Orbit.

• The first launch using GSLV Mk III placed GSAT 19 in GTO on June 5, 2017.

• Chandrayaan II was also placed in Earth Parking Orbit by GSLV MkII-M1 on July 22, 2019.

• It will be further used in the upcoming extraterrestrial mission of ISRO like Gaganyaan or Chandrayaan III.

Q53. Answer: (d) 15

The logic is:

11 + 9 + 3 + 7 = 30

Similarly,

? + 4 + 5 + 6 = 30

→ ? = 30 – 15

→ ? = 15

Hence, '15' is the correct answer.

Q54. Answer: (d) C

2 hours = 2 × 60 × 60 sec = 7200 seconds

Therefore Required Fraction = 18/7200 = 1/400

Q55. Answer: (c) B

Let, the principal = Rs. 100x

According to the question,

=> 100x × 6 × 5/100 = 615

=> 30x = 615

=> x = 20.5

Therefore The principal = Rs 100 × 20.5 = Rs 2050

Q56. Answer: (b) Only conclusion II follows

Statements: The national norm is 100 classrooms per thousand population, but in this state, 150 classrooms per thousand are available in the schools.

Conclusions:

I. Our national norm is appropriate → False

It is not appropriate as 100 classrooms per thousand population is the national norm while 150 classrooms per thousand are available in the schools.

II. This state's education system is taking adequate care in this regard.→ True

As the number should be 100 but instead of 100 it is 150 i.e, 50 more than the national norm, which is definitely a good sign and hence it justifies the above given conclusion.

Hence, only conclusion II follows.

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Q57. Answer: (d) A

=> $40x^2 = 734^2 – 234^2$

=> $40x^2 = (734 + 234) (734 – 234)$

=> $40x^2 = 968 \times 500$

=> $x^2 = 968 \times 12.5 = 12100$

=> $x = 110$

Q58. Answer: (c) II is the function of the kidney and I of the skeleton.

Haemopoiesis:

• The myeloid tissue (red bone marrow) produces hematopoietic stem cells.

• These hematopoietic stem cells transform into all types of blood cells viz. RBCs, WBCs, and platelets.

• The immature cells are confined inside the bone marrow by blood vessels.

• They are released into the bloodstream only when they are mature.

• The bone marrow is present inside the bones, therefore hemopoiesis is a function of the skeleton.

• Yellow bone marrow produces mesenchymal stem cells that transform into fat, cartilage, and bone.

Detoxification:

• The removal of poisonous substances basically is a function of the Liver.

• Kidneys also play an important role in detoxification.

• Glomerulus in Kidneys filter the fluids in our body and then minerals and waste material are separated in the tubule.

• Minerals are sent back to the body for absorption and waste produced in eliminated.

Therefore I is the function of Skeleton and II is the function of kidneys.

Q59. Answer: (b) Anthocyanin

Option 2 is the correct answer: Anthocyanin is the blue, violet, or red flavonoid pigment found in plants.

• These are the water-soluble pigments that give blue, black, red, or violet color to parts of the plant.

• In addition, Anthocyanin attracts pollens and helps in reproduction.

• It also helps plants to standout environmental stress.

• Anthocyanins are the glycosides found in the cell vacuole.

• Rasp berry, Black rice, Eggplant, Purple pepper, Fig are rich in Anthocyanins.

Carotene

• These pigments provide yellow, orange, or red color to the parts of the plant.

• These have antioxidant properties.

• They are broadly classified into Carotenes and Xanthophylls.

Xanthophylls

• These are the accessory light-harvesting pigments.

Chlorophylls

• Chlorophylls are the core photosynthetic pigments.

• They provide green color to the parts of plants.

• Magnesium is the chelating metal ion in it.

Q60. Answer: (b) Decomposition

Option 2 is the correct answer: Decomposition reactions are always endothermic in nature.

• In a decomposition reaction, a chemical compound is broken into its constituent components.

• The process takes place through the breaking of bonds between the constituent atoms of the compound.

• The reaction in which heat or light energy is absorbed during the process, are called endothermic reactions.

• In decomposition reactions, the energy is required to break the chemical bonds. therefore they are aways endothermic in nature.

• Combustion reaction - Combustion means reaction with oxygen, hence combustion reactions are generally oxidation reactions (Exothermic).

• Displacement reaction - One constituent component is replaced by some other component (Spontaneous and exothermic).

• Combination reaction - Two or more elements or compounds combine. New bonds are formed and energy is released (Exothermic).

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Q61. Answer: (b) Sam Pitroda

Option 2 is the correct answer: “Dreaming Big: My Journey to Connect India” is the autobiography of Sam Pitroda.

• Sam Pitroda was born in 1942 at Titlagarh, Odisha.

• He has played a key role in revolutionizing Indian telecommunication sectors during the 1980s.

• In 1987 he was appointed as advisor to Prime Minister Rajiv Gandhi and he led the technology missions related to telecommunications, water, literacy, immunization, dairy productions, and oilseeds.

• He founded and became 1st chairman of India's Telecom Commission.

• He also headed India's National Knowledge Commission in 2005 during 2nd phase of the telecom revolution in India.

Abdul Kalam

• Full Name: Avul Pakir Jainulabdeem Abdul Kalam.

• Missile Man of India.

• 11th President of India (July 2002-2007).

Nandan Nilekani

• Became CEO of Infosys in 2002.

• Served as the chairman of the Unique Identification Authority of India (UIDAI).

Azim Premji

• CEO of Wipro.

Q62. Answer: (a) B

=> $4\sin\theta - 3\cos\theta = 0$

=> $4\sin\theta = 3\cos\theta$

=> $\tan\theta = 3/4$

Therefore $\sec\theta = \sqrt{(1 + \tan^2\theta)} = \sqrt{(1 + 9/16)} = \sqrt{(25/16)} = 5/4$

Therefore $\cos\theta = 1/\sec\theta = 4/5$

Therefore $\sin\theta = \sqrt{(1 - \cos^2\theta)} = \sqrt{(1 - 16/25)} = \sqrt{(9/25)} = 3/5$

Therefore $\text{cosec}\theta = 1/\sin\theta = 5/3$

Therefore $\sec\theta.\text{cosec}\theta = 5/4 \times 5/3 = 25/12$

Q63. Answer: (a) OMNO

The logic is:

Similarly,

Hence, ‘OMNO’ is the correct answer.

Q64. Answer: (a) Novak Djokovic

Option 1 is the correct answer: Novak Djokovic became the 1st player to win ATP (Association of Tennis Professionals) World Tour Finals for the 4th consecutive time.

• Novak Djokovic is a Serbian Tennis Player.

• He is currently at number three in terms of Grandslam titles with 17 titles to his name after Roger Federer (20 Grand slams) and Rafael Nadal (19).

• He has been ranked number one in ATP rankings for more than 280 weeks.

• He held rank 1 during 2011-16, 2018-2020 for a total of 10 seasons.

• The Serb player has won nine tournaments of Masters 1000.

• He also fetched bronze medal at Beijing Olympics, 2008 in Singles events.

Rafael Nadal:

• Nadal is a tennis player from Spain.

• He has 19 Grandlslams to his name, second-highest for any male player.

• He also secured Gold medals at both the Beijing Olympics 2008 and Rio Olympics 2016.

Serena Williams:

• This tennis player from the USA has won 23 Grand slams highest for any player male or female.

• She has won four Gold medals in total at Sydney (2000), Beijing (2008) and London (2012)(1 in singles, other in doubles at London) Olympics.

Roger Federer:

• Federer is a Swiss tennis player having the 20 Grand slams to his name, highest for any player.

• He also holds the record of leading the ATP rankings for maximum (310) weeks.
• He won Gold in Beijing, 2008, and silver at London, 2012 Olympics.

Q65. Answer: (c) P-c, Q-b, R-a, S-d

Option 3 is the correct answer:

Dynamite:

• Dynamite was invented by Alfred Nobel in 1867.
• The explosive power of Nitroglycerin in 1864, after the explosion in the factory of Nobels.
• But in 1867 Alfred Nobel discovered the role of sedimentary rock in absorbing the nitroglycerin.
• Thus, away towards the controlled explosions using Nitroglycerin was paved.

Dynamo:

• It is a device that converts mechanical energy into electrical energy.
• Dynamo was invented by Michael Faraday, an English Scientist.
• Working Principle: Whenever the magnetic field linked to a coil change, Electromotive Force (EMF) is induced by the coil.

Electron:

• The negatively charged particles orbiting the nucleus are called electrons.
• It was discovered by JJ Thompson in 1897, but at that time he did not think of electrons to be revolving around the nucleus.

Proton:

• The positively charged particles present inside the nucleus is called the proton.
• It was discovered by Ernest Rutherford in 1917.
• He proved that the nucleus of Hydrogen (a proton) is present in the nuclei of all the elements.

Q66. Answer: (c) I, II and III

Option 3 is the correct answer: Excessive use of fossil fuels, Deforestation, and an increased number of vehicles has to lead to an increase in amounts of carbon dioxide in the atmosphere.

Excessive use of fossil fuels:

• Carbon, Nitrogen, Hydrogen, Sulphur, and Oxygen are the primary constituents of most of the fossil fuels.
• Therefore after the burning of fossil fuels Sulphur oxides, Carbon mono and dioxide, Nitrogen oxides Volatile Organic Compounds, and Hydrocarbons are released into the air.
• Post industrialization period the use of fossil fuels has increased tremendously and so has the amounts of Carbon dioxide in the atmosphere.

Deforestation:

• Forests act as a sink for Carbon dioxide by taking them in and releasing oxygen.
• Due to deforestation, the forest area has decreased and the amount of CO_2 has therefore increased in the atmosphere.
• According to a study in journal Nature, around 46% of trees have been cut down since the process of deforestation was started.

Increased number of vehicles:

• Since most of the vehicles run on fossil fuels their excessive use also leads to an increase in amounts of CO_2.

Q67. Answer: (b) B

Principal, P = Rs. 400

Rate of interest, r = 5%

Number of years, n = 2

Therefore Amount = $P(1 + r/100)^n = 400 \times (1 + 5/100)^2 = 400 \times (21/20)^2 = 400 \times 441/400$ = Rs. 441

Q68. Answer: (d) 4

The option figure that will complete the pattern is shown below:

Hence, option D is the correct answer.

Q69. Answer: (a) A

Option 1 is the correct answer: Local Area Network (LAN) has the highest transmission speed.

Network type	Features

Local Area Network (LAN)	• The coverage area may be limited to a room or a building or a group of buildings. - For eg.: Devices at your home or office connected to each other or with a common router. - Connections can be established either through Ethernet cables or radio waves.
Metropolitan Area Network (MAN)	• It interconnects the computers/users located in a bigger geographical area as compared to a LAN. - For eg.: A chain of emergency response teams across a big city.
Wide Area Network (WAN)	• It covers the largest area as compared to LAN and MAN. It can cover the whole country. - The Internet is the best example of WAN.

Q70. Answer: (a) D

Let, $f(y) = 15y^3 – 30y^2 + 12y$

Now, => $3y – 6 = 0$

=> $y = 2$

Putting $y = 2$ in $f(y)$ we get,

=> $f(2) = 15 \times 2^3 – 30 \times 2^2 + 12 \times 2 – 12 = 15 \times 8 – 30 \times 4 + 24 – 12 = 120 – 120 + 24 – 12 = 12$

Q71. Answer: (a) None of these

The least possible venn diagram is:

(A) Some benches are boxes. → False

(B) No pen is auto → False

(C) Some boxes are benches. → False

None of the conclusion follows.

Hence, ‘none of these’ is the correct answer.

Q72. Answer: (b) Sugarcane

Option 2 India has the largest area under Sugarcane crop in the World.

• India leads in both, in the area under cultivation of sugarcane and its production among all the sugarcane cultivating countries in the world.

• Sugarcane is cultivated in tropical and subtropical countries.

• India surpassed Brazil in terms of Sugar production in 2018-19 after Brazil diverted the use of sugarcane for ethanol production.

• Sugarcane is a Kharif crop grown in around June and July and its growth is favored under a temperature range of 27ºC- 35ºC.

• In India, Uttar Pradesh produces the largest amount of sugarcane whereas Tamil Nadu leads in terms of productivity (tonnes/hectare).

Oilseeds:

• Soyabean, Rapeseed, Mustard, Sunflower, Safflower, Groundnut, and sesame are the major oilseeds.

• The USA is the leading producer of oilseeds in the world followed by China, Brazil, and India.

• In India, Soybean is the most grown oilseed.

Wheat:

• Wheat is Rabi crop sown in the months of October and November.

• Worldwide China is the largest producer of Wheat followed by India, Russia, and the USA.

• Uttar Pradesh leads the production of Wheat in India.

Apple:

• In India apple is grown mostly in the hilly states of J&K, Himachal Pradesh, Arunachal Pradesh, and Nagaland.

• J&K contributes around 60% of the total Apple production in India.

Q73. Answer: (a) B

In the above diagram,

AB = Diameter

OC = radius

BOD = sector (shaded)

As the diameter of the circle passes through the centre of the circle and is the longest straight line that can be drawn inside the circle.

All chords are smaller than it.

Longest chord of a circle is diameter.

Q74. Answer: (a) only conclusion I follows.

Statement: Good health is a luxury in country 'X' where rate of mortality due to hunger, malnutrition and unhygienic conditions is very high as compared to other nations of the region.

Conclusions:

I. People in country 'X' can't afford to have many luxuries in life → True

Good health is a luxury in country 'X'. The word luxury means something that can't be afforded or a very comfortable and enjoyable situation. Hence, conclusion I follows.

II. Good health is a gift of nature. → False

A gift of nature is something that is available to everyone free of cost, but according to statement good health is a luxury. So, the above conclusion cannot be concluded from the statement.

Hence, only conclusion I follows.

Q75. Answer: (a) Convex

Option 1 is the correct answer: Convex mirror is used as a rearview mirror in the vehicle.

CONCEPT:

• Plane mirror: This mirror is straight without any inward or outward curve.

• It forms a virtual image and upright image which is of size as same as the object.

• The bathroom mirrors are an example.

• Concave mirror: The mirrors curved inside on the reflecting side are called concave mirrors.

• These mirrors produce a real, inverted, and magnified image of the object.

• Thes are used in reflecting telescopes, shaving mirrors, and ophthalmoscope.

• Convex mirror: It is an outward curved mirror that produces a diminished image.

• Convex mirrors either diverge a parallel beam of light into all directions or gather light from all directions and produce a parallel beam out of it.

EXPLANATION:

• Following are the reasons as to why a convex mirror is used as a rearview mirror in the vehicle

• The image formed by the convex mirror is virtual and erect in contrast to that of the real but inverted image of the concave mirror.

• It gathers light from all directions and aligns it as a parallel beam so that it provides a wider view to the viewer. That's why the convex mirror is used as a rear-view mirror in vehicles. So option 1 is correct.

Q76. Answer: (d) 1, 2 and 3

Option 4 is the correct answer: All the statements I, II, and III are the objectives of the Indian Space Programme.

• Foundation of Indian Space Programme by Vikram Sarabhai and Dr. Ramanathan by establishing the Indian National Committee for Space Research (INCOSPAR) in 1962.

• Indian Space Research Organisation (ISRO) was formed later in 1969 with the objective of development & application of space technology for national needs.

• India launched its first rocket (Nike- Apache) from Thumba launch station 1963.

• The first satellite launched by India was Aryabhatta using Kosmos-3M in 1975 with the help of the USSR.

• Rohini II was the first satellite launched from India (Sriharikota) using Space Launch Vehicle SLV 3.

• Indian National Satellite System (INSAT) series are used for communication, broadcasting and meteorology and IRS are remote sensing satellites.

• Polar Satellite Launch Vehicle (PSLV) and Geo-Synchronous Launch Vehicles (GSLV) are the launch vehicles used for various missions.

• Satish Dhawan Space Centre (SDSC), Sriharikota, and Thumba Equatorial Rocket Launch Station (TERLS), Thiruvananthpuram are the launch sites.

• Chandrayaan-1 (2008), Mars Orbiter Mission (2013), and Chandryaan II (2018) are the major extraterrestrial missions of ISRO.

• On February 15, 2017, ISRO created history by launching 104 satellites in one go and the mission was PSLV-C37.

• Aditya L1 (to sun), Gaganyaan, Mangalyaan-2, Shukrayaan are the upcoming missions of ISRO.

Q77. Answer: (b) Long : High

The relation is:

1) Hard : Soft → Antonyms

2) Long : High → Synonyms

3) Sweet : Sour → Antonyms

4) Pointed : Blunt → Antonyms

All pairs except 'Long : High' are antonyms of each other, while 'Long : High' are synonyms of each other.

Hence, 'Long : High' is the odd one out.

Q78. Answer: (b) Only II and III

The least possible venn diagram is:

I. Some wires are plates. → False

II. Some books are wires. → True

III. Some books are wallets. → True

Hence, only II and III follows.

Q79. Answer: (b) Paddy : Husk

The relation is:

1) Student : Scholar → A student can be described as a learner especially one enrolled in a school or college whereas a scholar denotes a learned person with profound knowledge of any specific subject.

2) Paddy : Husk → A paddy or a paddy field is a field that is kept flooded with water and is used for growing rice, while the dry outer covering of rice is called husk.

3) Soldier : Warrior → A warrior is (especially in former times) a brave or experienced soldier or fighter; a soldier is a person who serves in an army.

4) Politician : Leader → A politician is a person active in party politics. A leader is the person who leads or commands a group, organization, or country.

In all pairs except 'Paddy : Husk', one is the best version of another or we can say the second term is used in the most respectable way to denote the first term, while there is no such relation between 'Paddy : Husk'.

Hence, 'Paddy : Husk' is the odd one out.

Q80. Answer: (c) A

Selling price = Rs. 84

Gain percentage = 20%

Let, cost price = 100x

According to the question,

=> 100x + 100x × 20/100 = 84

=> 120x = 84

=> x = 0.7

Therefore Cost price = Rs 100 × 0.7 = Rs. 70

Short trick:

Given:

Selling price = Rs.84

Gain = 20%

Concept:

20% = 1/5

20% increase = 6/5

According to question

6units = Rs.84

1units = Rs.14

5units = Rs. 14 × 5 = 70

Therefore The required cost price = Rs.70

Q81. Answer: (b) C

Let, total expenditure = Rs. 100x

According to the question,

=> 17.5x = 24500000

=> x = 1400000

Therefore total amount of expenditure on advertisement taxes and research and development of Zeta Interactive Services = 1400000 × (15 + 10 + 5) = Rs 42000000 = Rs. 4.2 crores

Q82. Answer: (c) D

Required Ratio = (20 + 12.5) : (10 + 17.5) = 32.5 : 27.5 = 13 : 11

Q83. Answer: (c) D

Let, total expenditure = Rs. 100x

According to the question,

=> 15x = 21000000

=> x = 1400000

Therefore Expenditure on transport = Rs. 1400000 × 12.5 = Rs. 17500000 = Rs. 1.75 crores

Therefore Expenditure on taxes = Rs. 1400000 × 10 = Rs. 14000000 = Rs 1.4 crores

Therefore Required difference = Rs. (1.75 – 1.4) crores = 0.35 crores = 35 lakhs

Q84. Answer: (c) B

Cost price of the stereo = Rs. 2000 × 90/100 × 85/100 = Rs. 1530

Expenditure on packaging = Rs. 70

Total cost = Rs. (1530 + 70) = Rs. 1600

Therefore Gain percentage = (2000 – 1600)/1600 × 100% = 25%

Q85. Answer: (d) Stan Wawrinka

Option 4 is the correct answer: Stan Wawrinka is not associated with cricket.

Key Points

• Stan Wawrinka is a Swiss Tennis player who was born on March 28, 1985.
• His original name is Stanislas Wawrinka which was changed to Stan Wawrinka in 2014.
• He has three Grand Slams 2014 Australian Open, 2015 French Open, and 2016 US Open to his name.
• He also won a Gold medal at Beijing Olympics, 2008 in the doubles event.
• Owing to the success achieved in the later phase of his career he was described as 'Tennis' Great Latecomer'.
• He also played in the Davis Cup 2014 where he played a key role in the victory of the Swiss team.
• Farhaan Behardien is batsman from South Africa.
• Aaron Phangiso is a bowler from South Africa who is generally seen as a replacement for Imran Tahir.
• Vernon Daryl Philander is an allrounder cricket player from South Africa.

Q86. Answer: (a) Epidermis

Option 1 is the correct answer: Epidermis is the outermost part of human skin.

• Skin is a sensory organ that gives the sensation of touch.
• It is the largest external organ of the human body.
• It acts as a shield between internal organs and the outer world.
• It has been divided into three layers epidermis, dermis, and hypodermis.

Epidermis:

• It is the outermost layer of our skin.
• It contains melanocytes that produce the pigment called melanin.
• The thickness of the epidermis varies from 0.05mm to 1.5mm.

Dermis:

• Beneath the epidermis is located another layer called Dermis.
• It is the thickest layer of our skin (1.5mm to 4mm thick).
• It contains structures like hair follicles, blood vessels, lymph vessels, sweat glands, sebaceous glands, and nerve endings.
• It also contains two important proteins elastin and collagen.
• Collagen is found in connective tissues between internal organs, muscles, and skin.
• Elastin provides elasticity to the skin and brings back it to the original position after being pulled or stretched.

Hypodermis:

• This innermost layer of the skin is also known as a subcutis or subcutaneous layer.
• It is made up of fat cells and collagen.

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• It is the insulating layer of the skin and also acts as a shock absorber.

Nerve Fibre:

• It is a long thread-like cytoplasmic projection of a nerve cell in vertebrates.

• It conducts the electrochemical impulses or action potential away from the nerve cell.

Q87. Answer: (b) 622

The logic is:

915 – 364 = 551

543 – 789 = 246

Similarly,

863 – 241 = 622

Hence, '622' is the correct answer.

Q88. Answer: (a) Mohan Singh

The correct answer is Option 1 i.e. Mohan Singh.

• Indian National Army was formed during World War II by Mohan Singh.

• Mohan Singh was Battalion Captain of the British Indian Army (Sikh Regiment) employed at Malaya.

• Japan, which was at war with Britain and had occupied Malaya had undertaken many soldiers of the British Indian Army as Prisoners of War.

• Japan also tried to establish relations with Indian organizations formed by freedom activists exiled from India.

• In 1941, Japanese major Fujihara, accompanied by Pritam Singh approached Mohan Singh to form the India army from prisoners of war.

• Mohan Singh was convinced by the idea and recruited Indian volunteers from British Indian armies in south-east Asia.

• Therefore first Indian National Army was formed in 1942 under the leadership of Mohan Singh.

• But soon Mohan Singh was arrested by the Japanese army due to differences between the respective leaders and INA was disbanded.

• In 1943, Subhash Chandra Bose took the leadership and revived INA.

Q89. Answer: (a) A

$x^2 – 6x + 8$

$\Rightarrow x^2 – 4x – 2x + 8$

$\Rightarrow x(x – 4) – 2(x – 4)$

$\Rightarrow (x – 4)(x – 2)$

Q90. Answer: (d) B

87375 = 698 × 125 + 125

Therefore 125 must be subtracted from 87375, to get a number exactly divisible by 698.

Q91. Answer: (b) Google Corp.

Option 2 s the correct answer: Google Corp. developed the Android OS, a mobile operating system Software in 2007.

• The foundation of Android Incorporation was laid down by Andy Rubin in 2005, while Rich miner, Chris Whites and Nick Sears were the key employees.

• Android was the nickname of Andy Rubin given to him by his fellow employees.

• Android Inc was acquired by Google Corp. in 2005 and the development of Android OS was announced in 2007.

• Open Handset Alliance, a consortium of various tech companies is credited for the development Android OS.

• A year later, HTC launched the first mobile T- mobile G1 with Android as an operating system.

Android OS:

• Android is a modified version of LINUX Kernel.

• It is an Open source software and is available to everyone for experimenting and creating things.

• It is used mainly in touchscreen devices like mobiles, smartwatches etc.

• The code names for every major release of the Android version is named after a dessert starting from A (Aestro) to O (Oreo).

• But the latest release is named Android 10.

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Q92. Answer: (a) 5323684

The logic is:

H	I	S	T	O	R	Y
7	3	2	6	8	4	5

C	I	V	I	C	S
1	3	5	3	1	2

Similarly,

V	I	S	I	T	O	R
5	3	2	3	6	8	4

Hence, '5323684' is the correct answer.

Q93. Answer: (b) B

Cost price of 20 pencils = Rs 6

Therefore Cost price of 1 pencil = Rs 6/20 = Rs 3/10

Selling price of 16 pencil = Rs 6

Therefore Selling price of 1 pencil = Rs 6/16 = Rs 3/8

Therefore Gain percent = (3/8 - 3/10)/(3/10) × 100% = ((15 - 12)/40)/(3/10) × 100% = 3/40 × 10/3 × 100% = 25%

Q94. Answer: (c) B

LCM of 1 hour, 2 hour and 3 hours = 6 hours

Therefore All the clocks alarm together at interval of 6 hours.

They all alarmed together now.

Therefore They will again alarm together after 6 hours

Q95. Answer: (c) C

=> a/b × b/c = 1/3 × 1/2

=> a/c = 1/6

=> 2/c = 1/6

=> c = 12

Q96. Answer: (b) IMTN

The logic is:

Similarly,

Hence, 'IMTN' is the correct answer.

Q97. Answer: (b) Sardar Udham Singh

The correct answer is Sardar Udham Singh.

• Sardar Udham Singh assassinated General O'Dwyer in London.

Key Points

• Revenge took by Udham Singh:

• Udham Singh was born on December 26, 1899, in the Sangrur district of Punjab.

• He was present at Jallianwala Bagh when Massacre took place on April 13, 1919, and was deeply moved by the mishap.

• After that, he went to Africa to work as a laborer and from there moved to the USA.

• In the USA, he worked with the Ghadar Party.

• He returned back to India after being called by Bhagat Singh in 1927 but was arrested here because of being involved in the activities of the Ghadar Party.

• He was released in 1931, went to Germany and to England in 1933.

• On March 13, 1940, Michael O'Dwyer was attending a meeting of the East India Association and Central Asian Society, of which Udham Singh was also a part.

• As soon as the meeting concluded Udham Singh shot O'Dwyer dead.

Additional Information

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• Jallianwala Bagh Massacre:

• The incident happened in the backdrop of protests against the Rowlatt Act and the subsequent arrest of Dr. Satyapal and Saifuddin Kichlew.

• To control the violence that emerged out after the arrest of the two nationalists, restrictions were imposed on the movement of people and holding the demonstrations in Amritsar.

• But on the day of Baisakhi, April 13, 1919, thousands of people were unaware of the restrictions gathered at Jallianwala Bagh.

• General Dyer following the orders of Michael O'Dwyer (Lt. Governor of Punjab) directed the troops to surround the gathering and shoot the people without any warning.

• As a result, thousands of people were killed and injured.

• After this incident, Rabindra Nath Tagore renounced his Knighthood.

• Mahatma Gandhi gave up the title of Kaiser-i-Hind and withdrew the Satyagrah against Rowlatt act.

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Q98. Answer: (b) Only conclusion II follows

Statements: Our equity investments carry market risk. Consult your investment advisor or agent before investing.

Conclusions:

I. One should not invest in equity → False

It is risky to invest in equity but whether to invest or not to invest is not said in the given statement. So, the conclusion is not supported by the statement.

II. The investment advisor calculates the market risk with certainty. → True

This conclusion can be derived from the given statement, as it is stated to “consult your investment advisor or agent before investing”.

Hence, only conclusion II follows.

Q99. Answer: (c) A

Let, length of the base = x cm

Length of perpendicular = (x + 2) cm

Length of hypotenuse = (x + 4) cm

According to the questions,

$\Rightarrow x^2 + (x + 2)^2 = (x + 4)^2$

$\Rightarrow x^2 + x^2 + 4x + 4 = x^2 + 8x + 16$

$\Rightarrow x^2 – 4x – 12 = 0$

$\Rightarrow x^2 – 6x + 2x – 12 = 0$

$\Rightarrow x(x – 6) + 2(x – 6) = 0$

$\Rightarrow (x – 6) (x + 2) = 0$

$\Rightarrow x = 6$ or $– 2$

Therefore Length of the base = 6 cm

Q100. Answer: (b) Kapil Dev

Option 2 is the correct answer: Kapil Dev is famously known as “The Haryana Hurricane”.

Key Points

• He was a former allrounder cricketer from India.

• He was the captain of India's National cricket team that won the World Cup in 1983.

• Kapil Dev was inducted into ICC Cricket Hall of Fame in March 2010.

• He retired from cricket in 1994.

• He was honoured with Arjuna Award for 1979-80, Padma Shri in 1982, and Padma Bhushan in 1991.

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