RRB NTPC CBT-I Official Paper (Held On: 22 Jan 2021 Shift 2) (Previous Year Paper)

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

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Q1. In which of the following cities was India's first bio-refinery plant inaugurated?

(a) Ahmedabad
(b) Valsad
(c) Pune
(d) Hyderabad

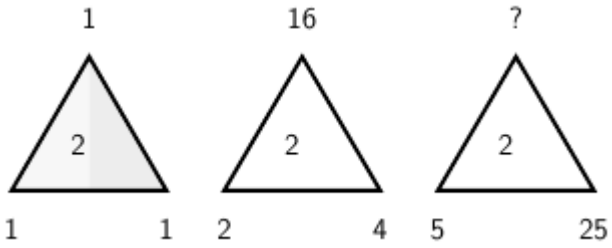
Q2. Which fundamental right is violated if a group of people are NOT given permission to open a Telugu-medium school in Kerala?

(a) Right to Equality
(b) Cultural and Educational Rights
(c) Right to Freedom of Religion
(d) Right to Freedom

Q3. Looking at a woman walking in the park, a man said, "This woman is the daughter of the sister of my father". How is the woman related to the man?

(a) Aunt
(b) Sister
(c) Niece
(d) Cousin

Q4. Study the given pattern carefully and select the number from the given options that can replace the question mark (?).



(a) 625
(b) 5
(c) 25
(d) 125

Q5. Out of the four letter-clusters listed, three are a like in some manner and one is different. Select the odd one.

(a) SUWY
(b) JLMP
(c) BDFH
(d) MOQS

Q6. Name the scheme that the Government of India announced in Budget 2019, which will provide a guaranteed income of Rs. 6,000 per year to small and marginal farmers.

(a) Pradhan Mantri Fasal Bima Yojana
(b) Pradhan Mantri Krishi Sinchai Yojana
(c) Paramparagat Krishi Vikas Yojana
(d) Pradhan Mantri Kisan Samman Nidhi

Q7. If a + b = 5, and ab = 13, then what will be the value of $a^3 + b^3$?

(a) 12
(b) –70
(c) 60
(d) 30

Q8. Select the combination of letters that when sequentially placed in the blanks will create a logical pattern.

abc _ _d cde d _ _ e _ b

(a) b; c; e; a; a
(b) d; e; a; b; c
(c) c; d; e; a; c
(d) b; c; e; a; c

Q9. Which organisation with its headquarters in Kolkata and 16 regional stations is responsible for surveying the faunal resources of India?

(a) Zoological Survey of India
(b) Botanical Survey of India
(c) Animal Welfare Board of India
(d) National Institute of Animal Welfare

Q10. Which Constitutional Amendment led to inclusion of Sikkim in the Indian Union?

(a) 34^(th) Amendment
(b) 37^(th) Amendment
(c) 33^(rd)Amendment
(d) 36^(th) Amendment

Q11. Which of the following methods did Holt Mackenzie develop for collecting revenue in India?

(a) Ryotwari system
(b) Zamindari system
(c) Permanent settlement system
(d) Mahalwari system

Q12. In which city, on the ghats of the Shipra river, is the Kumbh Mela organised?

(a) Prayagraj
(b) Haridwar
(c) Nashik
(d) Ujjain

Q13. The LCM of 63, 36 and x is 252. Which of the following options CANNOT be a value of x?

(a) 42
(b) 56
(c) 14
(d) 28

Q14. If 20% of 160 + 10% of 50 = x – 1, then what will be the value of x?

(a) 38
(b) 36
(c) 19

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(d) – 38

Q15. The value of

3 ÷ 1 – 2 + 3 is:

(a) – 3
(b) – 1
(c) 4
(d) 7

Q16. How many prime numbers are there that are less than 50?

(a) 14
(b) 16
(c) 15
(d) 13

Q17. An article is purchased for Rs. 200 and sold for Rs. 350. The percentage gain will be:

(a) 50%
(b) 75%
(c) 100%
(d) 25%

Q18. 15% of a number is 165. Find the number.

(a) 1350
(b) 1200
(c) 1100
(d) 1500

Q19. Which of the following are present only in plant cells?

(a) Golgi apparatus
(b) Nucleus
(c) Plastids
(d) Mitochondrion

Q20. Silver ornaments become black after some time when exposed to air because:

(a) Silver reacts with carbon in the air to form silver carbide.
(b) Silver reacts with sulphur in the air to form silver sulphide.
(c) Silver reacts with nitrogen in the air to form silver nitride.
(d) Silver reacts with hydrogen in the air to form silver hydride.

Q21. MS DOS is an operating system that has a/an:

(a) Command Line Interface
(b) Voice Line Interface
(c) Graphical User Interface
(d) Open Source Origin

Q22. With which country's Ministry of Road Transport and Highways, has India signed a MoU in March, 2019 on Technology Co-operation in the road infrastructure sector?

(a) Australia
(b) Austria
(c) Canada
(d) France

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Q23. If (cos A)/(1 - sin A) + (cos A)/(1 + sin A) = 4, then what will be the value of A?

(a) 60°
(b) 30°
(c) 45°
(d) 90°

Q24. Which of the following dates is commemorated as National Technology Day in India?

(a) May 1
(b) May 2
(c) May 7
(d) May 11

Q25. The value of

5 + 5 × 2 ÷ 5 is:

(a) 3
(b) 10
(c) 1
(d) 7

Q26. Name the scheme initiated to protect elderly persons aged 60 years and above against a future fall in their interest income due to the uncertain market conditions.

(a) Atal Pension Yojana (APY)
(b) Varishtha Pension Bima Yojana 2003
(c) Varishtha Pension Bima Yojana 2014 (VPBY-2014)
(d) Pradhan Mantri Vaya Vandana Yojana

Q27. Read the given statement and conclusions carefully and decide which of the conclusions logically follow(s) from the statement.

Statement:

The book ‘P’ emphasizes only on population of India and its related problems during 2001-2015.

Conclusions:

I. Increasing population is the biggest problem in India.

II. The book 'P' is the only book which deals with the problem of population in India.

(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Both I and II conclusion follow
(d) Neither I nor II conclusion follows

Q28. A can complete a task in 20 days while B can complete it in 30 days. In how many days can A and B working together complete it?

(a) 4 days
(b) 12 days
(c) 6 days
(d) 8 days

Q29. Which ministry launched the website e-Sahaj that allows organizations/firms/companies/individuals to apply for security clearance from anywhere over the internet?

(a) Ministry of Electronics and Information Technology
(b) Ministry of Home Affairs
(c) Ministry of External Affairs
(d) Ministry of Corporate Affairs

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Q30. The value of ((sin 29°)/(cos 61°) - 4(cos²31° + cos²59°) + 1/(√3)tan 27° sin 60° tan 63°) is:

(a) 10
(b) 1/2
(c) –5
(d) • 5/2

Q31. As of October 2020, name the head of Instagram who oversees all functions of the business including engineering, production and operations.

(a) Adam Mosseri
(b) Ronald Wayne
(c) Steve Wozniak
(d) Mark Zuckerberg

Q32. According to the time on Rajni's watch, it is quarter to 6. If the hour hand points towards the south, then in which direction does the minute hand point?

(a) East
(b) North
(c) South
×
duplicate options found. English Question 1 options 3,4
(d) West

Q33. The 'Animal Welfare Board of India' established in the year 1962, under Section 4 of the 'Prevention of Cruelty to Animals Act, 1960', is a statutory advisory body, formed for advising the Government of India, on animal welfare laws, falls under which ministry?

(a) Ministry of law and justice
(b) Ministry of earth sciences
(c) Ministry of environment and forest and climate change
(d) Ministry of food and agriculture

Q34. Which of the following is an animal hormone?

(a) Cytokinins
(b) Insulin
(c) Auxin
(d) Gibberellins

Q35. Which of the following options is equal to √(2 - √3)

(a) (√6 - √2)/2
(b) (√6 - √3)/2
(c) (2 - √3)/2
(d) (√2 - √3)/2

Q36. Name the campaign launched in January 2018 by the Union Minister for the environment, forest and climate change, which lauds small positive actions performed by individuals or organisations to strengthen the cause of environmental protection.

(a) Green Good Deeds
(b) Green Skill Development Programme
(c) Clean Air Campaign
(d) Champions of the Earth

Q37. Lala Lajpat Rai died protesting which British government decision?

(a) Morley-Minto Reforms
(b) Government of India Act, 1919
(c) Simon Commission
(d) Rowlatt Act

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Q38. Name the Governor-General under whom a new policy of ‘paramountcy’ was initiated.

(a) Lord Dalhousie
(b) Lord Hasting
(c) Lord Wellesley
(d) Lord Cornwallis

Q39. In which year did AR Rahman win two Oscars?

(a) 2011
(b) 2010
(c) 2017
(d) 2009

Q40. Who was the first Vice-President of India to be elected as President by second preference count of votes in the presidential elections?

(a) KR Narayanan
(b) Ramaswami Venkataraman
(c) Shankar Dayal Sharma
(d) VV Giri

Q41. How many times does the second hand of a clock meet 12 in 6 hours?

(a) 240
(b) 360
(c) 120
(d) 60

Q42. If $x = a\operatorname{cosec}\theta + b\cot\theta$, $y = b\operatorname{cosec}\theta + a\cot\theta$, then what will be the value of $x^2 – y^2$?–

(a) $a + b$
(b) 0
(c) $a^2 – b^2$
(d) $a^2 + b^2$

Q43. The secret code for ‘TREE GOES UNDER THE FLOOR MAT’ is ‘ASEE JKEZ VMCES ATE DRKKS NQA’. What will the code for ‘DRAGON’ be?

(a) BSQJKM
(b) CSQJKM
(c) JSQCMN
(d) CSOVRElicate options found. English Question 1 options 3,4

Q44. Name the scheme which provides risk coverage of Rs. 2 lakhs for accidental death or full disability and Rs. 1 lakh for partial disability to people in the age group 18 to 70 years.

(a) Pradhan Mantri Mudra Yojana
(b) Atal Pension Yojana
(c) Pradhan Mantri Jeevan Jyoti Bima Yojana
(d) Pradhan Mantri Suraksha Bima Yojana

Q45. PETA India started in the year _____.

(a) 2003
(b) 2002
(c) 2000
(d) 2001

Q46. Read the given statement and conclusions carefully and decide which of the conclusions logically follows from the statement.

Statement:

The patient who was brought to the emergency during the last night would have survived if the surgery was done

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sometime before.

Conclusions:

I. Surgery was the only option for survival.

II. Patient was brought to the hospital late.

(a) Neither I nor II conclusion follows
(b) Both I and II conclusion follow
(c) Only conclusion II follows
(d) Only conclusion I follows

Q47. Which battle laid the foundation of British colonialism in India?

(a) Battle of Plassey
(b) Second Anglo-Sikh war
(c) Battle of Buxar
(d) Siege of Srirangapatna

Q48. If a : b = 5 : 3 and b : c = 3 : 7, then what will be the value of a : c?

(a) 3/7
(b) 25/7
(c) 15/7
(d) 5/7

Q49. Out of the four memorials listed, three are alike in some manner and one is different. Select the odd one.

(a) Shantivan
(b) Kisan Ghat
(c) Smriti Sthal
(d) Raj Ghat

Q50. Study the given pattern carefully and select the number that represents the value of x.

36	**25**	**16**	**9**	**4**
361	x	289	256	225

(a) 298
(b) 324
(c) 316
(d) 336

Q51. Name the first month of the national calendar of India based on the Saka Era which was adopted from 22 March 1957 along with the Gregorian calendar for the official purposes.

(a) Chaitra
(b) Vaishakha
(c) Magha
(d) Phalguna

Q52. Which was the last Indian movie to have received a nomination for the Oscars in the best foreign language film category?

(a) Salaam Bombay
(b) Lagaan
(c) Village Rockstars
(d) Mother India

Q53. Who among the following scientists received the Nobel Prize for physiology and medicine for the discovery of a bacterium, Helicobacter Pylori which was responsible for peptic ulcers?

(a) James P. Allison and Tasuku Honjo
(b) Bruce A. Beutler and Jules A. Hoffmann

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(c) Robin Warren and Barry Marshall
(d) Wlliam C. Campbell and Satoshi Omura

Q54. Name the scheme started by the Department of Science and Technology that provides a platform to women scientists and technologists for pursuing research in basic or applied sciences in the frontier areas of science and engineering.
(a) Mobility Scheme
(b) Women Scientists Scheme-A (WOS-A)
(c) Women Scientists Scheme-B (WOS-B)
(d) Women Scientists Scheme-C (WOS-C)

Q55. In a certain code 2307 means 'See you on Monday',638 means 'Monday is working' and 4079 as 'Meet you on Sunday', 697 means 'You working class', What number represents the word 'working'?
(a) 6
(b) 3
(c) 7
(d) 9

Q56. 25.12 × 37.5 = 942. What is the value of 2512 × 0.00375?
(a) 9.42
(b) 0.0942
(c) 0.942
(d) 94.2

Q57. Select the word pair that shares a similar relationship as the word pair shown below.
Word : Book
(a) Sleep : Bed
(b) Sweet : Sugar
(c) Song : Musicte options found. English Question 1 options 2,3
(d) Leaf : Tree

Q58. Area of a square is equal to ten times the area of a rectangle of edge 5 cm × 8 cm. What is the perimeter of the square?
(a) 80 cm
(b) 60 cm
(c) 40 cm
(d) 120 cm

Q59. Who received the Padma Bhushan for Arts in the year 2020?
(a) Guru Shashadhar Acharya
(b) Chhannulal Mishra
(c) Ajoy Chakravorty
(d) Venu Srinivasan

Q60. Considering India's global leadership in environmental protection and climate change sectors, which organisation had chosen India as the global host for World Environment Day (WED) on 5^(th) June 2018?
(a) European Environment Agency
(b) Global Green Growth Institute
(c) United Nations Environment Programme
(d) Internation Union for Conservation of Nature

Q61. Bardo Chham is folk dance of:
(a) Sikkim
(b) West Bengal
(c) Uttarakhand

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(d) Arunachal Pradesh

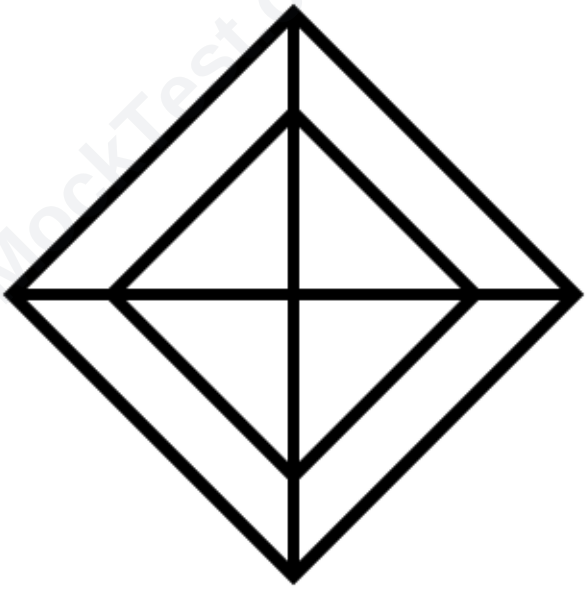
Q62. When you reverse the digits of the number 14, the number increases by 27, How many other two-digit numbers increase by 27 when their digits are reversed?

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

Q63. If 10% of 980 – x% of 450 = 5% of 160, then what will be the value of x?

(a) 22
(b) 15
(c) 20
(d) 25

Q64. Find the total number of triangles in the following figure.



(a) 16
(b) 8
(c) 12
(d) 20

Q65. 50% of a number added to 20% of 40 gives a sum of 20. What is the number?

(a) 40
(b) 32
(c) 20
(d) 24

Q66. Which of the following causes kala-azar?

(a) Fungi
(b) Virus
(c) Bacteria
(d) Protozoa

Q67. If $(\sqrt{5} + \sqrt{2})/(\sqrt{5} - \sqrt{2}) = a + b\sqrt{10}$, then which of the following is correct?

(a) a = 1/3, b = 2/3
(b) a = b = 1/3
(c) a = 7/3, b = 2/3
(d) a = 7/3, b = 1/3

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Q68. A and B together can complete a task in 20 days while B alone can complete the same task in 60 days. A alone will be able to complete the same task in:

(a) 45 days
(b) 15 days
(c) 20 days
(d) 30 days

Q69. What was the previous name of the Department of AYUSH?

(a) Department of Health and Family Welfare
(b) Department of Indian System of Medicine and Homeopathy
(c) Department of Pharmaceuticals
(d) Department of Health Science

Q70. UN World Wildlife day is celebrated on _____.

(a) 7^(th) July
(b) 11^(th) November
(c) 5^(th) June
(d) 3^(rd) March

Q71. To complete a task, A and B take 24 days, B and C take 12 days and A, B and C take 6 days. A and C will take:

(a) 2 days
(b) 24 days
(c) 4 days
(d) 24/5 days

Q72. Under which ministry was the National Mission for Manuscripts established in February 2003?

(a) Ministry of Tourism and Culture
(b) Ministry of Tribal Affairs
(c) Ministry of Human Resource Development
(d) Ministry of Finance

Q73. Tsangpo and Dihang are other names of which river?

(a) Yamuna
(b) Indus
(c) Ganga
(d) Brahmaputra

Q74. In a transaction, profit percentage is 20% of the cost. If the cost increases by 5% but selling price remains the same, So what is the percentage profit now?

(a) 14%
(b) 7%
(c) 8%
(d) 14.2%

Q75. If a : b = 2 : 7, then what will be the value of (3a + 2b) : (5a – 2b)?

(a) 0
(b) 1/7
(c) –5
(d) 5

Q76. What is the positive difference between 5/16 and its reciprocal?

(a) 261/80
(b) 269/80
(c) 273/80
(d) 271/80

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Q77. Which was the first social media site?

(a) Friendster
(b) Six Degrees
(c) LinkedIn
(d) Myspace

Q78. If the sides of a triangle are 5 cm, 4 cm and 3 cm, what will be its area?

(a) 6 cm^2
(b) 12 cm2
(c) 3 cm2
(d) 2 cm2

Q79. Who among the following musicians won the 'Best Contemporary World Music Album – Global Drum Project' in the year 2008?

(a) Zakir Hussain
(b) Ranjit Barot
(c) Sivamani
(d) Allah Rakha

Q80. What will be 412/3 % of Rs. 84?

(a) Rs. 35
(b) Rs. 40
(c) Rs. 25
(d) Rs. 45

Q81. If acot θ = b, then what will be the value of (bcos θ - asin θ)/(bcos θ + asin θ) ?

(a) $b^2 + a^2$
(b) $(b^2 - a^2)/(b^2 + a^2)$
(c) 0
(d) $(b^2 + a^2)/(b^2 - a^2)$

Q82. What is the value of $(1 - \tan^2 A)/(1 + \tan^2 A)$

(a) sin 2A
(b) cos 2A
(c) $\cos^2 A$
(d) 1

Q83. The practice of intercropping refers to:

(a) Growing one plant year after year
(b) Growing two or more crops in proximity
(c) Changing crops every time
(d) Growing different crops at different points of time

Q84. Select the option that is related to the third term in the same way as the second term is related to the first term.

Mother : Nurturing :: Doctor : ?

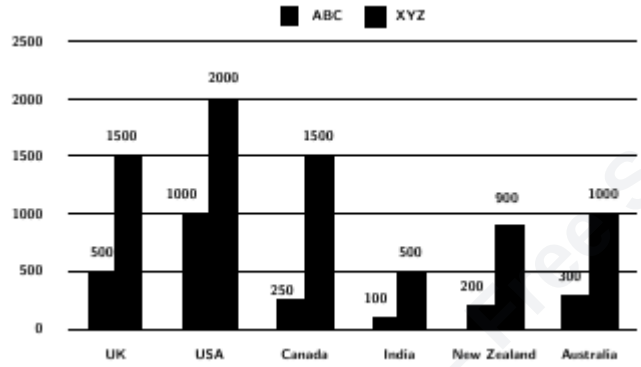
(a) Prescribing
(b) Diagnosing
(c) Curing
(d) Operating

Q85. What is the value of $\sqrt{(1 + \sin A)/(1 - \sin A)}$?

(a) sec A – tan A
(b) cos A + tan A
(c) sec A + tan A
(d) cos A + sin A

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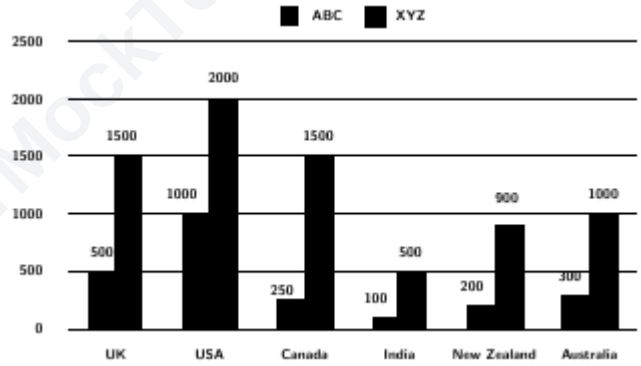
Q86. The given graph represents the sales (in thousand) of ABC and XYZ book in different countries in 2007.



Select the option that represents the ratio of sales in New Zealand to that in India for both the books.

(a) 9 : 5
(b) 6 : 11
(c) 11 : 6
(d) 2 : 1

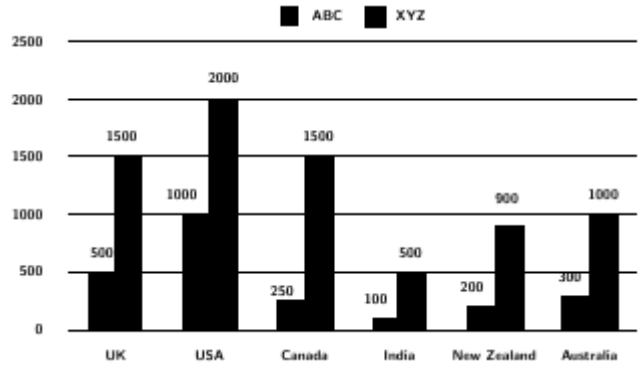
Q87. The given graph represents the sales (in thousand) of ABC and XYZ book in different countries in 2007.



Total sales for both books in Australia is what percentage of sales in UK?

(a) 0.65%
(b) 60%
(c) 6.5%
(d) 65%

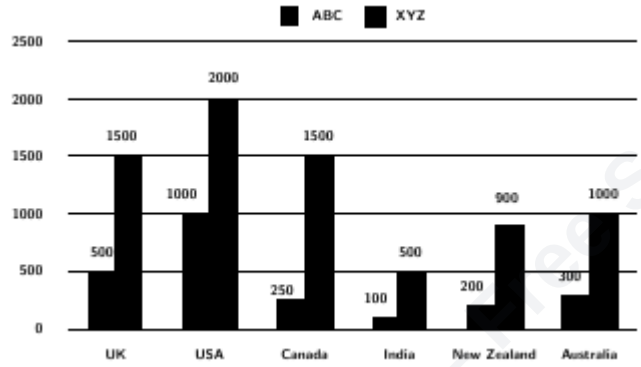
Q88. The given graph represents the sales (in thousand) of ABC and XYZ book in different countries in 2007.



What is the percentage sales of USA for ABC to rest of other countries except Canada.

(a) 90.9%
(b) 91%
(c) 110%
(d) 99.9%

Q89. The given graph represents the sales (in thousand) of ABC and XYZ book in different countries in 2007.



What is the approximate percentage share of Sales in USA to that Worldwide sales for Book XYZ?

(a) 43%
(b) 74%
(c) 37%
(d) 27%

Q90. Pointing to a photograph John said, “She is the only granddaughter of the husband of my mother’s sister. “How is the person in the photograph related to John.

(a) Niece
(b) Granddaughter
(c) Sister
(d) Daughter

Q91. Study the given pattern carefully and select the number from among the given options that can replace the question mark (?)

196	
5	8
6	2
2	3
5	?

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

Q92. John and Jenny stood at a point facing the north. John left Jenny in the morning and walked towards the west for 3 km, taking 15 minutes. Then he moved towards the south for 4 km, taking 25 minutes. What is the shortest distance Jenny needs to travel to meet John?

(a) 5 km
(b) 4 km
(c) 8 km
(d) 7 km

Q93. In a certain code language. If TREE is SQDD, which of the below options will be CUSHION?

(a) BTRGHNM
(b) BVQIPOM
(c) DVTIJPO
(d) BTRGJPM

Q94.

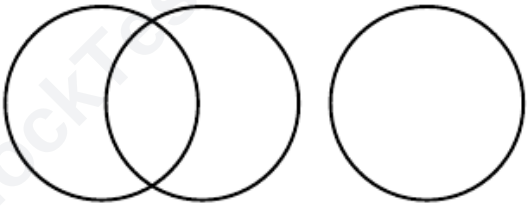
9	**3**	**27**	**36**
16	4	64	80
64	8	512	576
A	7	343	B

In the above table, which two numbers will replace alphabet A and B, respectively?

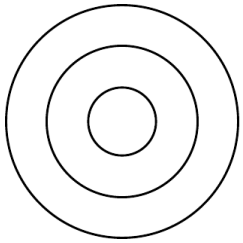
(a) 121 and 478
(b) 49 and 392
(c) 25 and 278
(d) 36 and 336

Q95. There is a shop that sells both burgers and sandwiches. Some customers want only a burger and some want only a sandwich. There are some customers who want neither a burger nor a sandwich. The rest of the customers want both a burger and a sandwich. Which of the following Venn diagrams correctly represents these situations?

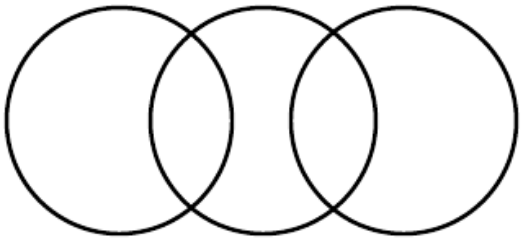
(a)



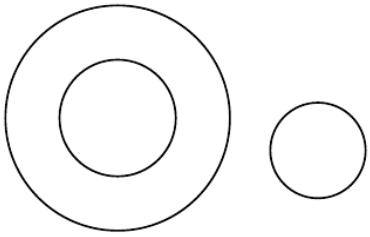
(b)



(c)

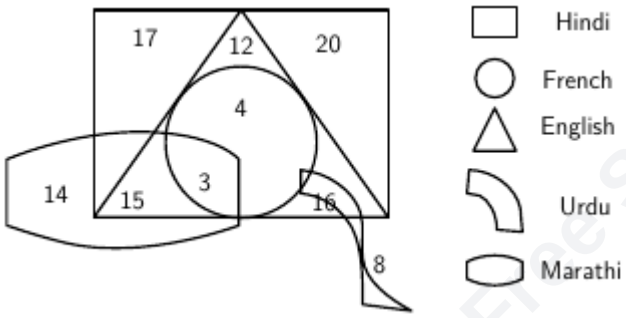


(d)



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Q96.

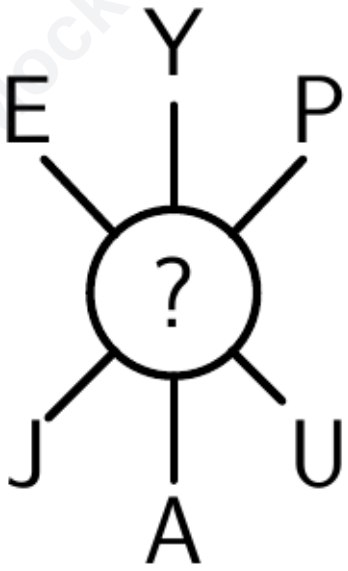


The diagram represents the number of students in a school, who can speak different languages.

How many students can speak French?

(a) 15
(b) 12
(c) 4
(d) 7

Q97. From the given options, replace the (?) with the option that represents some relationship between the alphabets given in the image?



(a) Z
(b) X
(c) B
(d) O

Q98. Out of the musical instruments listed, three are alike in some manner and one is different. Select the odd one.

(a) Violin
(b) Sitar
(c) Piano
(d) Guitar

Q99. Select the correct option that can fill in the blank in the below series.

96, 86, 106, 76, _____, 106, 56, 46, 106

(a) 66
(b) 106
(c) 46
(d) 56

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Q100. Out of the four numbers listed, three are alike in some manner and one is different. Select the odd one.

118, 146, 182, 226

(a) 182
(b) 146
(c) 118
(d) 226

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) Pune

The correct answer is Pune.

Key Points

• Nitin Gadkari, the Union Minister for Road Transport, Highways and Shipping, has opened India's First Integrated Biorefinery for Renewable Fuels and Chemicals, which will produce ethanol from a range of biomass.

• Rahu is in Maharashtra's Pune district, and the facility is located there. Praj Industries constructed the demonstration plant.

• The newly opened Biorefinery plant can produce one million litres of ethanol per year by processing a range of biomass such as rice and wheat straw, cotton stalks, bagasse, cane waste, maize cobs, and stover with better product yields.

• The government asked Oil Marketing Companies (OMCs) in 2015 to aim for a 10% ethanol blend in as many states as feasible.

• The fuel doping scheme, which mandated the addition of 5% ethanol to gasoline, began in November 2012.

• On January 2, 2013, it was notified under the Motor Spirits Act.

• The government has also permitted OMCs to purchase ethanol made from non-food feedstocks such as cellulosic and lignocellulosic materials, as well as ethanol produced through the petrochemical route.

Q2. Answer: (b) Cultural and Educational Rights

The correct answer is Cultural and Educational Rights.

Key Points

• Cultural and educational rights would be violated if a group of people were denied permission to open a Telugu medium school in Kerala.

• According to the constitution, all religious and linguistic minorities have the right to establish their own educational institution in order to maintain and develop their culture.

• Cultural and Educational Rights:

• Fundamental rights protect citizens from the state's use of coercion and absolute authority. As a result, the Constitution protects individuals' rights both against the government and against other people.

• The Constitution says that all religious, linguistic, or minority groups have the freedom to establish their own educational institutions in order to maintain and develop their own culture.

Important Points

• The right to equality guarantees that everyone is treated equally before the law, that discrimination on numerous grounds is prohibited, that everyone is treated equally in terms of public employment, and that untouchability and titles are abolished.

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• "All persons have an equal right to freedom of conscience and the right to freely profess, practise, and spread religion subject to public order, morality, and health," according to Article 25.

• The right to freedom grants citizens basic freedoms such as freedom of speech and expression, the ability to form associations, personal liberty, and the ability to live a dignified life.

Q3. Answer: (d) Cousin

The family chart is as follows:

Given:

Looking at the woman in the park, a man said “This woman is the daughter of the sister of my father”.

• This means Man's father and the woman's mother are the brothers and the sister.

• Thus it is clear that woman and man are the cousins.

The family Tree is as follows:

Hence, the woman is the cousin of the man.

Q4. Answer: (a) 625

Given:

The logic followed here is:

Step 1:

• The middle number in the triangle is neglected and not considered as in all of them 2 is constant.

Step 2:

• From the left corner of the vertex of the triangle, numbers are taken and the square of it is done.

Figure (1) : $1 \rightarrow 1^2 = 1 \rightarrow 1^2 = 1$

Figure (2) : $2 \rightarrow 2^2 = 4 \rightarrow 4^2 = 16$

Figure (3) : $5 \rightarrow 5^2 = 25 \rightarrow 25^2 = 625$

Therefore, ? = 625

Hence, 625 is the correct answer.

Q5. Answer: (b) JLMP

The pattern followed is:

Checking by Options:

(1) SUWY

(2) JLMP

(3) BDFH

(4) MOQS

Here we can see, that instead of Option 2 all the other options follow a common pattern of +2 whereas Option 2 does not follow this pattern.

Hence, JLMP is the odd one out.

Q6. Answer: (d) Pradhan Mantri Kisan Samman Nidhi

The correct answer is Pradhan Mantri Kisan Samman Nidhi.

Key Points

• The government of India's Pradhan Mantri Kisan Samman Nidhi programme provides all farmers with basic income support of up to 6,000 rupees per year.

• Piyush Goyal announced the plan at India's 2019 Interim Union Budget on February 1, 2019.

• The plan, which costs 75,000 crores per year, went into operation in December 2018.

• Each qualifying farmer will get $6,000 per year in three instalments, sent straight into their bank accounts.

Important Points

• Prime Minister Narendra Modi announced the Pradhan Mantri Fasal Bima Yojana on February 18, 2016, as a yield insurance programme for farmers.

• Pradhan Mantri Krishi Sinchai Yojana is a national initiative aimed at increasing farm output and better utilising the country's resources. This scheme has been given a budget of 53 billion dollars for the 2015-2016 fiscal year.

• The "Paramparagat Krishi Vikas Yojna (PKVY)," a sub-component of the National Mission of Sustainable Agriculture's (NMSA) Soil Health Management(SHM) scheme, aims to develop sustainable organic farming models using a mix of traditional wisdom and modern science to ensure long-term soil fertility, resource conservation, and climate change adaptation and mitigation.

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Q7. Answer: (b) –70

Given:

a + b = 5

ab = 13

Formula Used:

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

Calculation:

=> $a^3 + b^3 = (5)^3 - 3 \times 13 \times 5$

=> $a^3 + b^3 = 125 - 195$

=> $a^3 + b^3 = -70$

Therefore, the correct option is 2.

Q8. Answer: (a) b; c; e; a; a

Given: abc _ _ d cde d _ _ e _ b

By substituting options in the given series:

1) abc - b cd - cde - dea - eab (Pattern formed)

• Here it is observed that the first two letters are constant and the third letter is changing in each group.

• abc - b cd - cde - dea - eab

2) abc - ded - cde - dab - ecb (No pattern formed)

3) abc - cdd - cde - dea - ecb (No pattern formed)

4) abc - bcd - cde - dea - ecb (No pattern formed)

Hence - 'Option 1' is the correct answer.

Q9. Answer: (a) Zoological Survey of India

The correct answer is Zoological Survey of India.

Key Points

• The Zoological Survey of India (ZSI) is in charge of surveying India's faunal resources, with headquarters in Kolkata and 16 regional stations.

• India's 92,037 species of fauna, of which 61,375 are insects, reflect the country's diverse climate and physical circumstances.

• In India alone, it is predicted that approximately twice that many species are yet to be discovered.

• The Asiatic Society of Bengal was founded by Sir William Jones on 15 January 1784.

• Not only was the Asiatic Society of Bengal the mother institution of the Indian Museum (1875), but also of the Zoological Survey of India and the Geological Survey of India.

Important Points

• Botanical Survey of India (BSI) is a government organization based in Kolkata, West Bengal, India. On February 13, 1890, it was established.

• The Animal Welfare Board of India, based in Ballabhgarh, Haryana, is a statutory advisory body that advises the Ministry of Fisheries, Animal Husbandry, and Dairy in India. The AWBI's previous headquarters were in Chennai.

• The National Institute of Animal Welfare (NIAW) is part of India's Ministry of Fisheries, Animal Husbandry and Dairy (Department of Animal Husbandry and Dairy). It's in the Haryana town of Ballabgarh.

Q10. Answer: (d) 36^(th) Amendment

The correct answer is 36th Amendment.

Key Points

• The Constitution(36th Amendment) Act of 1975 made Sikkim the 22nd state of India.

• The Act stipulates that the Legislative Assembly of Sikkim must have at least 32 members and that the Assembly of Sikkim formed as a result of the elections held in Sikkim in April 1974, with 32 members elected (hereinafter referred to as the sitting members), shall be deemed to be the legislative Assembly of the State of Sikkim duly constituted under the Constitution."

• Sikkim is located in the northeastern part of the country, with a land area of 7096 km and a population of 5 lakhs and 40 thousand people.

Important Points

• On April 26, 1975, Parliament approved the Constitution (37th Amendment) Act, 1975, which established a Legislative Assembly and a Council of Ministers in Arunachal Pradesh, the country's north-easternmost Union Territory.

• 34th Amendment Act, 1974 included twenty more land tenure and land reforms acts of various states in the Ninth Schedule.

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Q11. Answer: (d) Mahalwari system

The correct answer is Mahalwari system.

Key Points

• In India, the Mahalwari system is utilised to safeguard local autonomy.

• Holt Mackenzie was the first to introduce it in 1822. Mahal, which means house, district, neighbourhood, or sector in Hindi, is the source of the name "Mahalwari."

• Landlords or Nambardars were designated to represent villages or groups of villages in Mahalwari.

• The landlords were jointly responsible for the payment of taxes to the village communities. In sections of Uttar Pradesh, the North-Western province, Central India, and Punjab, this system was dominant.

• Holt Mackenzie was a British colonial administrator in India.

• In July 1807, he was hired as an East India Company writer and advanced quickly through the ranks until he retired to England in 1831.

• He was influential in the establishment of the Mahalwari system of land revenue in India.

Important Points

• The Ryotwari system, instituted by Thomas Munro in British India, allowed the government to deal directly with the cultivator ('ryot') for revenue collection and granted peasants the freedom to relinquish or purchase more land for cultivation.

• Under his Permanent Settlement Act, Lord Cornwallis, who was governor-general of India from 1786 to 1793, instituted the Zamindari System.

• The East India Company, led by Governor-General Lord Cornwallis, implemented the Permanent Settlement of Bengal in 1793.

Q12. Answer: (d) Ujjain

The correct answer is Ujjain.

Key Points

• The sacred city of Ujjain is located on the east bank of the Shipra River.

• On the city's ornate riverbank ghats, the Sinhastha fair (Kumbh Mela) takes place every 12 years, as do yearly celebrations of the river goddess Kshipra. Along the Shipra River's banks, there are hundreds of Hindu shrines.

• The Kumbh Mela is a water festival. Every 12 years, millions of people flock to the banks of a river in four ancient cities: Ujjain (Shipra), Nashik (Godavari), Allahabad, and Haridwar (Ganga) for a dip in the water that promises redemption.

• The Shipra, sometimes known as the Kshipra, is a river in central India's Madhya Pradesh state.

• The river begins in the Dhar district and runs north across the Malwa Plateau, eventually joining the Chambal River near the MP-Rajasthan border in Mandsaur.

Important Points

• Ujjain is an ancient city in Madhya Pradesh, India, located along the Kshipra River. The centuries-old Mahakaleshwar Temple, a towering edifice with a strikingly decorated roof, is an important Hindu pilgrimage destination.

• Prayagraj was previously known as Allahabad. The Prayag Kumbh Mela and the Indira Marathon are two cultural and sporting events that have taken place in Allahabad.

• Haridwar is an important Hindu pilgrimage place in Uttarakhand, India's northernmost state, where the Ganges River emerges from the Himalayan foothills.

• Nashik is a historic holy city in Maharashtra, a western Indian state.

Q13. Answer: (b) 56

Given:

LCM of 63, 36, and x = 252

Formula Used:

LCM (Least Common Multiple) of numbers is the smallest number that is a multiple of each of the given numbers.

Calculation:

We can write,

=> 63 = 7 × 32

=> 36 = 22 × 32

=> 252 = 22 × 32 × 7

Because LCM of the numbers is the product of the highest powers of all the factors

Now check from options

(i) 42 = 2 × 3 × 7 (possible as highest power of factor is less 1)

(ii) 56 = 2^3 × 7 (not possible as highest power of factor is is 3)

(iii) 14 = 2 × 7 (possible as highest power of factor is less 1)
(iv) 28 = 2^2 × 7 (possible as highest power of factor is less 1)
Hence, the number which cannot be a value of 'x' = 56
Therefore Option 2 is the correct answer.

Q14. Answer: (a) 38

Given:
20% of 160 + 10% of 50 = x - 1
Formula Used:
Percentage = (Value / Total Value) × 100
Calculation:
=> 20% of 160 = (20 / 100) × 160 = 32
=> 10% of 50 = (10 / 100) × 50 = 5
=> 32 + 5 = x - 1
=> x = 32 + 5 + 1
=> x = 38
Therefore, the correct option is 1.

Q15. Answer: (c) 4

Given:
3 ÷ (1 – 2 + 3)
Concept used:
Calculation:
=> 3 ÷ 1 – 2 + 3
=> 3 + 1
=> 4
Therefore Option 3 is the correct answer.

Q16. Answer: (c) 15

Calculation:
The prime numbers less than 50 are: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47.
=> There are 15 prime numbers less than 50.
Therefore Option 3 is the correct answer.

Q17. Answer: (b) 75%

Given
Cost price of the article = Rs. 200
Selling price of the article = Rs. 350
Formula Used
Percentage gain = [(Selling price - Cost price) / Cost price] × 100
Calculation
=> Percentage gain = [(350 - 200) / 200] × 100
=> Percentage gain = [150 / 200] × 100
=> Percentage gain = 0.75 × 100
=> Percentage gain = 75%
Therefore, the percentage gain is 75%.

Q18. Answer: (c) 1100

Given:
15% of the number is 165.
Formula Used:
Number = (Percentage × 100) / Percentage
Calculation:
=> Number = (15 × 100) / 15

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=> Number = 100

=> Number = 1100

Therefore Option 3 is the correct answer.

Q19. Answer: (c) Plastids

The correct answer is Plastids.

Key Points

• Plant and algal cells contain plastids, which are double-membrane organelles.

• Plastids are in charge of food production and storage. These frequently contain photosynthetic pigments as well as other pigments that can modify the colour of the cell.

• Many plants are descended from plastids from a single parent.

• Many gymnosperms inherit plastids from male pollen, whereas angiosperms inherit plastids from female gametes.

• Only one parent provides plastids to algae. Plastid DNA appears to be completely uniparental in inheritance.

• The inheritance of plastid appears to be more irregular during hybridization.

Important Points

• Plant cells are eukaryotic cells that differ from other eukaryotic organisms in numerous fundamental ways.

• The Golgi apparatus is in charge of transporting, altering, and packaging proteins and lipids into vesicles so that they can be delivered to specific locations.

• A nucleus is a structure in all plant cells that stores DNA and serves as the cell's command centre.

• The mitochondrion is around to oval-shaped organelle found in nearly all eukaryotic organisms' cells.

Q20. Answer: (b) Silver reacts with sulphur in the air to form silver sulphide.

The correct answer is Silver reacts with sulphur in the air to form silver sulphide.

Key Points

• Silver ornaments become black after some time when exposed to air because silver reacts with sulphur in the air to form silver sulphide (Ag2S).

• Silver reacts with sulphur compounds in the air, such as hydrogen sulphide (H2S).

• 4Ag (polished silver) + 2H2S + O2 → 2Ag2S (Tarnished silver) + 2H2O

• Corrosion is a chemical reaction that also goes by the name "Tarnishing of Silver."

• Because Silver Sulphide (Ag2S) is black, it darkens the silver.

Q21. Answer: (a) Command Line Interface

The correct answer is Command Line Interface.

Key Points

• MS-DOS is an operating system that has a Command Line Interface.

• It is a Microsoft-developed operating system for x86-based personal computers.

• It's rebranded as IBM PC DOS and a few operating systems that attempt to be compatible with MS-DOS are referred to as "DOS" together (which is also the generic acronym for disc operating system).

• During the 1980s, MS-DOS was the primary operating system for IBM PC compatibles, until it was gradually replaced by operating systems with a graphical user interface (GUI), such as the graphical Microsoft Windows operating system.

• A user is connected to a computer application or operating system via a command-line interface. Users interact with a system or programme by typing text into the CLI (commands). Following a visual prompt from the computer, the command is written on a specific line.

Important Points

• A voice user interface (VUI) allows people to communicate with computers by employing speech recognition to interpret instructions and respond to questions, as well as text-to-speech to playback responses.

• A graphical user interface (GUI) is a computer application that lets you connect with a computer using symbols, visual metaphors, and pointing devices.

• The Debian Free Software Guidelines were the inspiration for the Open Source Definition.

Q22. Answer: (b) Austria

The correct answer is Austria.

Key Points

• The Ministry of Road Transport and Highways (MoRTH) and the Federal Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology of the Republic of Austria signed a Memorandum of Understanding (MoU) on Technology

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Cooperation in the Road Infrastructure Sector.

• The MoU boosts links between the two countries fosters long-standing bilateral relations, and improves trade and regional integration.

• The MoU intends to provide a framework for bilateral collaboration in road transportation, road/highway infrastructure development, management and administration, road safety, and intelligent transportation systems.

• Through this MoU in the transport sector, Indo-Austria bilateral collaboration in the road transport sector will be advantageous both in terms of improved road safety and attractive financing options for the sector, thus encouraging and intensifying the already good relations between the two countries.

Important Points

• Austria:

• Capital and largest city: Vienna

• Official language: German

• Government: Federal parliamentary republic

• President: Alexander Van der Bellen

Q23. Answer: (a) 60°

Given:

(cos A)/(1 - sin A) + (cos A)/(1 + sin A) = 4

Calculation:

(cos A)/(1 - sin A) + (cos A)/(1 + sin A) = 4

=> (cos A(1 + sin A)+cos A(1-sinA))/(1 - sin^2 A) = 4

=> (cos A + cosAsinA+cos A-cosAsinA)/(cos^2A) = 4

=> (2cos A)/(cos^2A) = 4

=> 1/cosA = 2

=> cosA =1/2

=> cos A = cos 60°

=> A = 60°

Therefore Option 1 is the correct answer.

Q24. Answer: (d) May 11

The correct answer is May 11.

Key Points

• In India, National Technology Day is celebrated on the 11th of May each year.

• It is a day set aside to honour the accomplishments and contributions of scientists, researchers, engineers, and educators.

• National Technology Day serves to remind the people of the country's scientific achievements.

• It is a day to honour all of those who have contributed to the advancement of science.

Important Points

• In the year 1999, National Technology Day was first observed on May 11th.

• The main goal of the day was to honour scientific and technological achievements.

• National Technology Day was marked by the scientific community on May 11, 2022, as it is every year.

• Everyone will gather to lavishly celebrate the occasion and recognise the achievements. On the 11th of May, India commemorates the Pokhran Nuclear Tests of 1998 by celebrating National Technology Day.

Q25. Answer: (d) 7

Given:

5 + 5 × 2 ÷ 5

Concept used:

Calculation:

=> 5 + 5 × 2 ÷ 5

=> 5 + 10 ÷ 5

=> 5 + 2

=> 7

Therefore Option 4 is the correct answer.

Q26. Answer: (d) Pradhan Mantri Vaya Vandana Yojana

The correct answer is Pradhan Mantri Vaya Vandana Yojana.

Key Points

• The Pradhan Mantri Vaya Vandana Yojana (PMVVY) is a Government of India-sponsored pension scheme for older adults aged 60 and up, which was available from May 4, 2017, until March 31, 2020.

• The plan has been extended for another three years beyond March 31, 2020, to March 31, 2023.

• The scheme offers an initial guaranteed rate of return of 7.40 percent per year for the years 2020-21, with the rate reset every year after that.

• The Scheme would give an assured monthly pension of 7.40 percent for the Financial Year 2021-22.

• This guaranteed rate of pension will be paid for the whole ten-year insurance period for all policies purchased until March 31, 2022.

• After three policy years, a loan facility is available. The maximum loan amount that can be given is 75% of the purchase price.

Important Points

• The Atal Pension Yojana, formerly known as the Swavalamban Yojana, is an Indian government-sponsored pension system aimed primarily at the informal sector. Finance Minister Arun Jaitley noted it in his Budget speech for 2015.

• The Varishtha Pension Bima Yojana was established to provide pension coverage to seniors over 55.

• LIC Varishtha Pension Bima Yojana is a government-sponsored senior citizen pension scheme administered by LIC.

Q27. Answer: (d) Neither I nor II conclusion follows

The logic followed here is:

Given statements:

The book ‘P’ emphasizes only on population of India and its related problems during 2001-2015 → The statement is talking about the book 'P' which emphasizes only on population of India and its related problems during 2001-2015.

Conclusions:

I. Increasing population is the biggest problem in India → Not Follows (as from the given statement we can say that population is one of the problems in India but we can not conclude that is the biggest problem in India).

II. The book 'P' is the only book which deals with the problem of population in India → Not Follows (as from the given statement we can say that book 'P' is one among the books that emphasizes on the population of India and not the only book to do so).

Hence, neither I nor II conclusion follows.

Important PointsIf definitive words like all, always, at least, only, exactly, and so on are used, then such words make the conclusion invalid.

Additional Information

• If there are two or more sentences that are used to frame a statement, then, the sentences must be interrelated, and mutual contradiction should be there.

• Do not look for truthful notions. The information provided in the statement is the only requirement for a student to answer the question. No assumptions must be made.

• Read the statement carefully and look for keywords that are common between the statement and the conclusions.

• If there is more than one conclusion that is applicable to the statement, students must ensure that the conclusions they opt for have some relation with each other.

Q28. Answer: (b) 12 days

Given:

A can complete a task in 20 days.

B can complete the same task in 30 days.

Formula Used:

Time taken to complete a task by working together = (1 / (1 / A's time) + 1 / (B's time)) days

Calculation:

LCM of 20 and 30 is 60.

A's rate = 60 / 20 = 3 (units per day)

B's rate = 60 / 30 = 2 (units per day)

=> Combined rate = A's rate + B's rate => 3 + 2 = 5 units per day

=> Time = Total Work / Combined Rate

=> Time = 60 / 5

=> Time = 12 days

So, A and B working together can complete the task in 12 days.

Q29. Answer: (b) Ministry of Home Affairs

The correct answer is Ministry of Home Affairs.

Key Points

• The Union Ministry of Home Affairs (MHA) has created the e-Sahaj platform to make it easier for individuals and private organisations to obtain security clearance for establishing businesses in critical industries.

• The platform intends to increase transparency when it comes to granting security clearances to business proposals involving sensitive industries and locations.

• Before the administrative ministry issues corporations, bidders, and people with licences, permits, permissions, and contracts, the home ministry is the focal body for giving security clearances in some sensitive areas.

• Before approving investment and project proposals in important industries, national security clearance evaluates potential security threats, including economic threats, and provides risk assessments.

Important Points

Ministries	Ministers
Ministry of Home Affairs	Amit Shah
Ministry of Electronics and Information Technology	Ashwini Vaishnaw
Ministry of External Affairs	Subrahmanyam Jaishankar
Ministry of Corporate Affairs	Nirmala Sitaraman

Q30. Answer: (d) • 5/2

Given:

((sin 29°)/(cos 61°) - 4(cos²31° + cos²59°) + 1/(√3)tan 27° sin 60° tan 63°)

Concept Used:

=> sin(90 - θ) = cosθ

cos(90 - θ) = sinθ

tan(90 - θ) = cotθ

=> sin2θ + cos2θ = 1

cotθ = 1/tanθ

Calculation:

((sin 29°)/(cos 61°) - 4(cos²31° + cos²59°) + 1/(√3)tan 27° sin 60° tan 63°)

=> ((sin (90 - 61)°)/(cos 61°) - 4(cos²(90 - 59)° + cos²59°) + 1/(√3)tan 27° sin 60° tan (90 - 27)°)

=> ((cos 61°)/(cos 61°) - 4(sin²59° + cos²59°) + 1/(√3)tan 27° sin 60° cot 27°)

=> (1 - 4(1) + 1/(√3)sin 60°)

=> 1- 4 + 1/(√3)× √3/2

=> -3 + 1/2

=> - 5/2

Q31. Answer: (a) Adam Mosseri

The correct answer is Adam Mosseri.

Key Points

• Adam Mosseri is the head of Instagram, where he is in charge of engineering, product, and operations.

• Adam is known for combining sharp design thinking with careful product strategy to build experiences that bring people together and inspire genuine connections.

• He worked as a design director for Facebook's mobile apps before moving into product management and leading the News Feed product and technical teams for several years.

• Prior to joining Instagram, he was the Head of News Feed, where he supervised products until eventually becoming the CEO.

Important Points

• Ronald Gerald Wayne is a retired businessman from the electronics industry in the United States. On April 1, 1976, he co-founded Apple Computer Company with Steve Wozniak and Steve Jobs, providing administrative control and paperwork for the fledgling company.

• Stephen Gary Wozniak co-founded Apple Inc. in 1976 with business partner Steve Jobs, which went on to become the world's

largest information technology company by revenue and the world's largest company by market capitalization.

• Mark Elliot Zuckerberg, the chairman, chief executive officer, and controlling shareholder of Facebook, is most known for co-founding the social networking website Facebook and its parent company Meta Platforms.

Q32. Answer: (d) West

According to the time on Rajni's watch,

It is quarter to 6 → 5:45

Now, if hour hand points toward the south, then

Hence, west is the correct answer.

Q33. Answer: (c) Ministry of environment and forest and climate change

The correct answer is Ministry of environment and forest and climate change.

Key Points

• The Animal Welfare Board of India was founded in 1962 under Section 4 of the Animal Cruelty Prevention Act of 1960.

• Rukmini Devi Arundale, a well-known humanitarian, was essential in the formation of the board and served as its first chair.

• The Board is made up of 28 members who serve for three years.

• Its headquarters were previously located in Chennai, but in early 2018, it relocated to Ballabhgarh in the Faridabad region of Haryana.

• Originally, the board was under the Ministry of Food and Agriculture of the Indian government.

• The issue of Animal Cruelty Prevention was transferred to the Ministry of Environment, Forests, and Climate Change in 1990, and it presently resides there.

Important Points

Ministries	Ministers
Ministry of environment and forest and climate change	Bhupender Yadav
Ministry of law and justice	Kiren Rijiju
Ministry of earth sciences	Dr. Jitendra Singh
Ministry of Agriculture and Farmers' Welfare	Narendra Singh Tomar

Q34. Answer: (b) Insulin

The correct answer is Insulin.

Key Points

• Insulin was originally produced from cow and pig pancreases. Animal-sourced insulin is manufactured from beef or hog pancreas preparations and has been used to manage diabetes safely for many years.

• Insulin is a hormone that regulates many aspects of growth and development by signalling nutritional conditions to grow tissues.

• It is most typically connected with glucose metabolism in vertebrates.

Important Points

• Plant hormones called cytokinins induce cell division, or cytokinesis, in plant roots and shoots. They play a role in cell proliferation and differentiation, as well as apical dominance, axillary bud development, and leaf senescence.

• Auxins are a group of plant hormones (or plant growth regulators) that resemble morphogens.

• Gibberellin (GA) is a plant hormone that controls a variety of processes such as plant growth, organ development, and environmental responses.

Q35. Answer: (a) (√6 - √2)/2

Given:

√(2 - √3)

Formula Used:

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

Calculation:

=> √(2 - √3) = √(4(2 - √3))/4

=> √(8 - 4√3)/4

=> √(8 - 2×2√3)/4

=> √(8 - 2√(4× 3)/4

=> √((8 - 2√12)/4

=> √((2+6 - 2√2√6)/4

=> √((√6-√2)²)/4

=> (√6-√2)/2

Correct Option: 1

Q36. Answer: (a) Green Good Deeds

The correct answer is Green Good Deeds.

Key Points

• Green Good Deeds was launched in January 2018 by the Union Minister for the environment, forest and climate change, which lauds small positive actions performed by individuals or organisations to strengthen the cause of environmental protection.

• "Green Good Deeds" is a concept for raising environmental awareness and getting people involved.

• The campaign, which was officially launched in January 2018, recognises tiny, good actions taken by individuals or organisations to advance the cause of environmental protection.

• To fulfil their Green Social Responsibility, the Ministry has compiled a list of over 600 Green Good Deeds and requested people to change their behaviour to Green Good Behaviour.

Important Points

• The Ministry of Environment, Forest and Climate Change's (MoEF&CC) Green Skill Development Programme (GSDP) is a skill development initiative in the environment and forest sector designed to help India's young find gainful work and/or self-employment.

• On May 5, 2015, Blueair started the Clean Air India Movement (CLAIM) in India. Blueair, a premium air purifier brand, spearheaded the campaign, with Vijay Kannan, the company's India director, playing a crucial role.

• Champions of the Earth was developed by the United Nations Environment Programme in 2005 as an annual awards programme to honour outstanding environmental leaders from the public and corporate sectors, as well as from civil society.

Q37. Answer: (c) Simon Commission

The correct answer is Simon Commission.

Key Points

• Lala Lajpat Rai died a few weeks after suffering serious injuries during a police baton charge while leading a nonviolent protest march against the all-British Simon Commission, which was established by the United Kingdom to alter Indian constitutional law.

• He was a key figure in the Indian independence struggle. Punjab Kesari was his popular moniker.

• He was one of the Lal Bal Pal triumvirate's three members.

• In 1894, he was also involved in the early phases of the Punjab National Bank and the Lakshmi Insurance Company.

Important Points

• The Indian Statutory Commission, commonly known as the Simon Commission, was a panel of seven Members of Parliament led by Sir John Simon. In 1928, the group travelled to British India to research constitutional reform in the country's largest and most important property.

• The Morley-Minto Reforms were enacted as the Indian Councils Act in 1909. The importance of the expanded Councils was to guarantee that Indian MPs were given the opportunity to express their views.

• The Government of India Act of 1919 established a system for categorising central and provincial topics. The Act preserved income tax as a revenue stream for the federal government.

• The Imperial Legislative Council, British India's legislature, passed the Rowlatt Act in February 1919.

Q38. Answer: (b) Lord Hasting

The correct answer is Lord Hasting.

Key Points

• Lord Hastings instituted the policy of paramountcy. From 1813 until 1823, he served as Governor-General of India.

• The corporation became the supreme law, the supreme power, and to defend its interests, it justified the conquest of any Indian country under this policy.

• When the British attempted to conquer the minor states of Karnataka during this process, Rani Channamma led an anti-British resistance movement.

• Lord Hastings or Lord Moira was Governor-General of India for ten years, from 1813 to 1823.

• His administration is remembered for its interventionist and war policies.

Important Points

• On April 22, 1812, Lord Dalhousie, Governor-General of India from 1848 to 1856, was born. He instituted the Doctrine of Lapse

policy, which was one of the key causes of the 1857 Revolt.

• From 1798 to 1805, Lord Wellesley served as Governor-General of Fort Williams. During his reign, the Fourth and final Anglo-Mysore war was fought, in which Tipu was killed.

• Charles Cornwallis, 1st Marquess Cornwallis was appointed Governor-General of Fort William (Bengal) and Commander-in-Chief of British India on September 12, 1786.

Q39. Answer: (d) 2009

The correct answer is 2009.

Key Points

• AR Rahman made history when he became the first Indian to win two Academy Awards in 2009.

• The popular music director dubbed the "Madras Mozart," won two Academy Awards, one for the original score for "Slumdog Millionaire" and the other for the film's massively popular global song "Jai Ho."

• AR Rahman is an Indian film composer, record producer, vocalist, and songwriter who primarily works in Indian cinema (especially Tamil and Hindi films) and occasionally international movies.

• The Padma Bhushan, India's third-highest civilian award, was bestowed upon him by the Indian government in 2010.

• Six National Film Awards, two Academy Awards, two Grammy Awards, a BAFTA Award, a Golden Globe Award, fifteen Filmfare Awards, and seventeen Filmfare Awards South are among Rahman's achievements.

Additional Information

• A. R. Rahman composed the song "Jai Ho" for the 2008 film Slumdog Millionaire.

• The song was nominated for two Academy Awards: Best Original Song and Best Song Written for a Motion Picture, Television, or Other Visual Media.

• Slumdog Millionaire was nominated for ten Academy Awards in 2009, winning eight of them, including Best Picture, Best Director, and Best Adapted Screenplay, the most of any 2008 film.

• It was nominated for seven BAFTA Awards, including Best Film, as well as five Critics' Choice Awards and four Golden Globes.

Q40. Answer: (d) VV Giri

The correct answer is VV Giri.

Key Points

• Varahagiri Venkata Giri was the first Vice-President of India to be elected as President by second preference count of votes in the presidential elections.

• He was an Indian politician and activist who served as India's fourth president from August 24, 1969, to August 24, 1974, and as the country's third vice president from May 13, 1967, to May 3, 1969.

• He was the first and only president elected as an independent candidate.

• In 1974, Fakhruddin Ali Ahmed took over as president. Giri was awarded the Bharat Ratna by the Indian government in 1975 after serving his full tenure.

• On May 13, 1967, Giri was elected India's third vice president, a position he maintained for over two years, until May 3, 1969.

• Giri was the third vice president to be elected to the President and the first vice president to not complete his entire term in office due to being raised to the presidency.

Important Points

• Kocheril Raman Narayanan was India's tenth president and ninth vice president.

• Ramaswamy Venkataraman was an Indian lawyer, political activist, and Union Minister who served as India's eighth president.

• From 1992 to 1997, Shankar Dayal Sharma was India's ninth president.

Q41. Answer: (b) 360

The logic followed is:

1 hour = 60 minutes,

1 minute = 60 seconds

Thus, in 1 minute the second hand of a clock meets 12 → 1 time.

In 60 minutes (1 hour) it meets → 60 times.

Therefore, in 6 hours it meets → 6 × 60 → 360 times

Hence, 360 is the correct answer.

Q42. Answer: (c) $a^2 - b^2$

Given:

$x = a\operatorname{cosec}\theta + b\cot\theta$

y = b cosec θ + a cot θ

Formula Used:

$\text{cosec}^2\theta - \cot^2\theta = 1$

Calculation:

$\Rightarrow x^2 - y^2$

$= (a\,\text{cosec}\,\theta + b\cot\theta)^2 - (b\,\text{cosec}\,\theta + a\cot\theta)^2$

$= a^2\text{cosec}^2\theta + b^2\cot^2\theta + 2ab\,\text{cosec}\,\theta\cot\theta - (b^2\text{cosec}^2\theta + a^2\cot^2\theta + 2ab\,\text{cosec}\,\theta\cot\theta)$

$= a^2\text{cosec}^2\theta + b^2\cot^2\theta + 2ab\,\text{cosec}\,\theta\cot\theta - b^2\text{cosec}^2\theta - a^2\cot^2\theta - 2ab\,\text{cosec}\,\theta\cot\theta$

$= a^2\text{cosec}^2\theta - b^2\text{cosec}^2\theta + b^2\cot^2\theta - a^2\cot^2\theta$

$= (a^2 - b^2) \times (\text{cosec}^2\theta - \cot^2\theta)$

$= (a^2 - b^2) \times 1$

$= a^2 - b^2$

Therefore Option 3 is the correct answer.

Q43. Answer: (b) CSQJKM

The logic follows here is:

As the secret code for ‘TREE GOES UNDER THE FLOOR MAT’ is ‘ASEE JKEZ VMCES ATE DRKKS NQA’.

Drawing the code chart using the above information we get:

Letter	Code
T	A
R	S
E	E
E	E

Letter	Code
G	J
O	K
E	E
S	Z

Letter	Code
U	V
N	M
D	C
E	E
R	S

Letter	Code
T	A
H	T
E	E

Letter	Code
F	D
L	R
O	K

O	K
R	S

Letter	Code
M	N
A	Q
T	A

Assigning corresponding numbers to the given letter we get:

Letter	Code
D	C
R	S
A	Q
G	J
O	K
N	M

Thus the code for "DRAGON" will be "CSQJKM".

Hence, the correct answer is "CSQJKM".

Q44. Answer: (d) Pradhan Mantri Suraksha Bima Yojana

The correct answer is Pradhan Mantri Suraksha Bima Yojana.

Key Points

• In India, the Pradhan Mantri Suraksha Bima Yojana is a government-sponsored accident insurance programme.

• Finance Minister Late Arun Jaitley first addressed it in his 2015 Budget speech in February 2015. Prime Minister Narendra Modi publicly launched it on May 8 in Kolkata.

• People between the ages of 18 and 70 who have bank accounts are eligible for the Pradhan Mantri Suraksha Bima Yojana. It has a 12.5% annual premium.

• The GST is not applicable to the Pradhan Mantri Suraksha Bima Yojana.

• This insurance plan, which is available through banks, provides one-year coverage from June 1 to May 31.

• It is managed by general insurance companies in the public sector.

Important Points

• The Hon'ble Prime Minister inaugurated the Pradhan Mantri MUDRA Yojana (PMMY) on April 8, 2015, to provide loans up to ten lakh to non-corporate, non-farm small/micro-enterprises.

• The Atal Pension Yojana, formerly known as the Swavalamban Yojana, is an Indian government-sponsored pension system aimed primarily at the informal sector. Finance Minister Arun Jaitley noted it in his Budget speech for 2015.

• Pradhan Mantri Jeevan Jyoti Bima Yojana is a government-sponsored life insurance scheme. It was first referenced in Finance Minister Arun Jaitley's 2015 Budget speech in February 2015.

Q45. Answer: (c) 2000

The correct answer is 2000.

Key Points

• People for the Ethical Treatment of Animals (PETA) India was founded in 2000 with the simple belief that animals are not ours to eat, wear, experiment on, or use for entertainment.

• PETA India has greatly improved the quality of life for many animals and saved the lives of countless more through investigative and legislative work, public education, animal rescues, eye-catching demonstrations, celebrity involvement, and outreach with our youth division, PETA Youth.

• PETA India is a not-for-profit business incorporated under Section 25 of the Companies Act, 1956.

Important Points

• Ingrid Newkirk, the international president of People for the Ethical Treatment of Animals, is an American animal rights group based in Norfolk, Virginia.

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• PETA claims to have more than 9 million members and sympathisers around the world. "Animals are not ours to experiment on, eat, wear, exploit for entertainment, or harm in any other manner," the organization's slogan says.

• Ingrid Newkirk and fellow animal rights activist Alex Pacheco founded the organisation in March 1980, and it first gained national prominence in the summer of 1981 during the Silver Spring monkeys case.

Q46. Answer: (d) Only conclusion I follows

The logic followed here is:

Given statements:

The patient who was brought to the emergency during the last night would have survived if the surgery was done sometime before → The statement is talking about the past event which already has happened. It talks about the patient who was brought to the emergency during the last night would have survived if the surgery was done sometime before.

Conclusions:

I. Surgery was the only option for survival → Follows (as according to the given statement if the surgery wa done sometime before, he would have survived, therefore surgery was the only option)

II. Patient was brought to the hospital late → Not Follows (as according to the given statement he would have survived if the surgery was done sometime before therefore patient was not brought to the hospital late but the surgery was done late)

Hence, Only conclusion I follows.

Q47. Answer: (a) Battle of Plassey

The correct answer is Battle of Plassey.

Key Points

• The battle of Plassey laid the foundation of British colonialism in India.

• The Battle of Plassey marked the beginning of nearly two centuries of British dominance in India for the British East India Company.

• It was a remarkably underwhelming military confrontation for an event of such historical significance, with the fall of the Nawab of Bengal owing largely to treason.

• The British East India Company, which had been granted a royal charter in 1600 to pursue trade in the East Indies, including the ability to organise its own army, represented Britain in India. A similar mission was assigned to the French East India Company.

• Siraj ud-Daulah took over as Nawab of Bengal in 1755 and embraced a pro-French attitude.

Important Points

• The Second Anglo-Sikh War was a military struggle in 1848 and 1849 between the Sikh Empire and the British East India Company.

• The Battle of Buxar took place on October 22, 1764, between the forces of the British East India Company, led by Hector Munro, and the combined armies of Mir Qasim, Nawab of Bengal until 1764; Shuja-ud-Daula, Nawab of Awadh; and Shah Alam II, Mughal Emperor.

• The siege of Seringapatam, which took place at the end of the Third Anglo-Mysore War in 1792, was a battle and siege of the Mysorean capital city of Seringapatam.

Q48. Answer: (d) 5/7

Given:

a : b = 5 : 3

b : c = 3 : 7

Calculation:

a : b = 5 : 3

b : c = 3 : 7

Here b is same, So the ratio of a : c.

=> a : c = 5 : 7

Therefore Option 4 is the correct answer.

Q49. Answer: (c) Smriti Sthal

By checking options:

(1) Shantivan → Shantivan, or the Forest of Peace, is the Samadhi, or cremation spot of India's first Prime Minister, Jawaharlal Nehru.

(2) Kisan Ghat → Kisan Ghat is the memorial of Chaudhary Charan Singh, a renowned farmer leader. “Kisan” means “farmer.”

(3) Smriti Sthal → It is the designated spot for the last rites of presidents, vice-presidents, and prime ministers. The Smriti Sthal is a common memorial site that was proposed following concerns over shrinking land resources in the capital.

(4) Raj Ghat → Raj Ghat is a memorial dedicated to Mahatma Gandhi in Delhi, India.

S.No.	Memorials	Importance
1	Shantivan	Jawaharlal Nehru
2	Kisan Ghat	Chaudhary Charan Singh
3	Smriti Sthal	Common Memorial Site
4	Raj Ghat	Mahatma Gandhi

Hence, Smriti Sthal is the odd one out.

Q50. Answer: (b) 324

Calculation:

Logic followed in row 1 is,

$36 = 6^2$

$25 = 5^2$

$16 = 4^2$

$9 = 3^2$

$4 = 2^2$

Similarly

Logic followed in row 2 is,

$361 = 19^2$

$x = 324 = 18^2$

$289 = 17^2$

$256 = 16^2$

$225 = 15^2$

Therefore Option 2 is the correct answer.

Q51. Answer: (a) Chaitra

The correct answer is Chaitra.

Key Points

• For the following official purposes, the national calendar based on the Saka Era, with Chaitra as its first month and a regular year of 365 days, was adopted on March 22, 1957, alongside the Gregorian calendar:

• Gazette of India.

• News broadcast by All India Radio.

• Calendars are issued by the Government of India.

• Government communications are addressed to the public.

• Chaitra is the Hindu calendar month. Chaitra is the first month of the year in both the Hindu calendar and the Indian civil calendar. Choitro is the Bengali name for the last month of the calendar.

Important Points

• The month of Phalguna is on the Hindu calendar. Phalguna is the twelfth month of the year in India's national civil calendar and corresponds to February/March in the Gregorian calendar.

• Magha is the Hindu calendar month. It is the eleventh month of the year in India's national civil calendar, corresponding to January/February in the Gregorian calendar.

• Vaisakha is a Hindu month that corresponds to the months of April and May in the Gregorian calendar. Vaisakha is the second month of the year in the Indian national calendar.

Q52. Answer: (b) Lagaan

The correct answer is Lagaan.

Key Points

• Lagaan(2001) was the last Indian movie to have received a nomination for the Oscars in the best foreign-language film category.

• Only three Indian films have been nominated for the award as of 2022: Mother India (1957), Salaam Bombay! (1988), and Lagaan (2001).

• The 58th National Film Awards jury recommended that the Best Film winners at the annual National Film Awards be chosen as the official entry in 2011.

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• Since 1957, when the category was created, India has submitted pictures for the Academy Award for Best International Feature Film (previously Academy Award for Best Foreign Language Film).

• The United States Academy of Motion Picture Arts and Sciences honours a feature-length motion picture produced outside the United States with mostly non-English dialogue every year.

Important Points

• Lagaan is a 2001 Indian Hindi-language epic musical sports film written and directed by Ashutosh Gowariker. It was distributed globally as Lagaan: Once Upon a Time in India.

• Mira Nair directed, co-wrote, and co-produced Salaam Bombay!, a 1988 Indian Hindi-language drama film. This was Nair's debut feature picture as a director.

• Mother India, directed by Mehboob Khan and starring Nargis, Raaj Kumar, Rajendra Kumar, and Sunil Dutt, is a 1957 Indian epic drama film.

• Rima Das, a self-taught filmmaker, wrote, edited, co-produced, and directed Village Rockstars, a 2017 Indian Assamese language coming-of-age drama film.

Additional Information

• The Academy Awards, also known as the Oscars, are cinema industry awards for creative and technical merit. Many consider them to be the most prestigious and important awards in the entertainment industry.

• The Academy of Motion Picture Arts and Sciences (AMPAS) awards are an international acknowledgment of excellence in cinematic achievements as determined by the voting membership of the Academy.

Q53. Answer: (c) Robin Warren and Barry Marshall

The correct answer is Robin Warren and Barry Marshall.

Key Points

• The Nobel Assembly at Karolinska Institute jointly awarded Barry Marshall and Robin Warren the Nobel Prize in Physiology or Medicine for their discovery of the bacterium Helicobacter pylori and its significance in gastritis and peptic ulcer disease. Peptic ulcer disease is no longer a chronic, often crippling ailment, but rather a disease that can be treated completely.

• John Robin Warren AC is an Australian pathologist, Nobel Laureate, and researcher who, alongside Barry Marshall, is credited with re-discovering the bacteria Helicobacter pylori in 1979.

• Professor of Clinical Microbiology and Co-Director of the Marshall Centre at the University of Western Australia, Barry James Marshall is an Australian physician and Nobel Laureate in Physiology or Medicine.

Important Points

• James P. Allison and Tasuku Honjo were jointly awarded the 2018 Nobel Prize in Physiology or Medicine by the Nobel Assembly at Karolinska Institute for their discovery of cancer therapy through inhibition of negative immunological regulation.

• In 2011, Bruce Beutler and Jules Hoffmann were honoured for their research on Toll and Toll-like receptor activation in fruit flies and mammals.

• The Nobel Assembly at Karolinska Institute awarded William Campbell and Satoshi Mura half of the 2015 Nobel Prize in Physiology or Medicine for their discoveries about a novel therapy against infections caused by roundworm parasites, and the other half for their discoveries about a novel therapy against Malaria.

Q54. Answer: (b) Women Scientists Scheme-A (WOS-A)

The correct answer is Women Scientists Scheme-A (WOS-A).

• Women Scientists Scheme-A (WOS-A) provides a platform for female scientists and technicians to pursue research in basic or applied sciences in science and engineering frontier areas.

• The programme is important for gender mainstreaming since it not only avoids brain drain from the S&T sector but also trains and retains women.

• The programme will initially provide opportunities to work as bench scientists and will eventually lead to permanent positions in Science and Technology.

• WOS-B (Women Scientist Scheme-B) focuses on initiatives involving science and technology interventions for societal benefit.

• This type of project proposal should address a well-defined social problem and provide potential solutions through the creation of feasible technologies/techniques and/or lab-to-land technology transfer, adaptation, and scaling up.

• The Patent Facilitating Centre of Technology Information Forecasting & Assessment Council(TIFAC) is implementing the Women Scientist Scheme-C (WOS-C).

• The plan seeks to teach women with degrees in science, engineering, medicine, or related fields for a year in the field of intellectual property rights (IPRs) and management in order to build a pool of women scientists capable of generating, defending, and administering intellectual property in India.

Q55. Answer: (a) 6

According to the given information,

Hence, 6 is the correct answer.

Q56. Answer: (a) 9.42

Given:

25.12 × 37.5 = 942

Concept used:

Calculation:

=> 2512 × 0.00375 = (25.12 × 100) × (37.5 × 1/10000)

=> (25.12 × 37.5) × 10² × 10^(-4)

=> 942 × 10^(-2)

=> 942 × 0.01

=> 9.42

Therefore Option 1 is the correct answer.

Q57. Answer: (d) Leaf : Tree

Given: Word : Book

The logic followed here is:

A book contains words.

Similarly,

A tree contains leaves.

Hence, Leaf : Tree is the correct answer.

Q58. Answer: (a) 80 cm

Given:

Area of square = 10 × Area of rectangle

Edge of rectangle = 5 cm

Length of rectangle = 8 cm

Formula Used:

Area of rectangle = Length × Edge

Calculation:

=> Area of rectangle = 5 cm × 8 cm

=> Area of rectangle = 40 cm²

=> Area of square = 10 × 40 cm²

=> Area of square = 400 cm²

=> Side of square = √400 cm²

=> Side of square = 20 cm

=> Perimeter of square = 4 × Side of square

=> Perimeter of square = 4 × 20 cm

=> Perimeter of square = 80 cm

Therefore Option 1 is the correct answer.

Q59. Answer: (c) Ajoy Chakravorty

The correct answer is Ajoy Chakravorty.

Key Points

• In 2020, Ajoy Chakravorty received the Padma Bhushan for Arts.

• Pandit Ajoy Chakrabarty is a Patiala-Kasur Gharana Hindustani classical vocalist, composer, lyricist, and Gurudev.

• He is regarded as one of Indian classical music's legendary figures.

• He has also dominated several major Indian classical genres, including Delhi, Jaipur, Gwalior, Agra, Kirana, Rampur, and even South Indian Carnatic music.

• He has received the Padma Shri (2011) and the Sangeet Natak Akademi Award (Delhi, 1999–2000), as well as the National Film Award for Best Male Playback Singer in 1989 for the Bengali film "Chhandaneer." He was the first Indian classical performer to be invited to the Golden Jubilee Celebrations of India's Independence by Pakistan, China, and the BBC.

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Important Points

• Shashadhar Acharya was awarded the Padma Shri honour by the Indian government in 2020 for his contributions to the arts.

• Pandit Chhannulal Mishra is a well-known Hindustani classical vocalist from Banaras, who is known for his work in the Kirana Gharana (school) of Hindustani classical music, particularly the Khayal and the 'Purab Ang' – Thumri.

• Venu Srinivasan is an Indian industrialist who was awarded the Padma Bhushan Award in January 2020, India's third-highest civilian honour.

Q60. Answer: (c) United Nations Environment Programme

The correct answer is United Nations Environment Programme.

• The United Nations Environment Programme(UNEP) picked India to host World Environment Day (WED) on June 5, 2018, because of India's global leadership in environmental protection and climate change sectors.

• The major event took place in Delhi and comprised a series of talks in Vigyan Bhawan, a giant exhibition in Rajpath Lawns behind Vigyan Bhawan, and a closing ceremony attended by the Hon'ble Prime Minister and UN leaders.

• The theme of World Environment Day 2021 was 'Ecosystem Restoration'.

• The United Nations Environment Programme (UNEP) is in charge of organising the UN system's response to environmental challenges.

• Maurice Strong, the organization's first director, founded it following the United Nations Conference on the Human Environment in Stockholm in June 1972.

• Its mission is to lead, offer science, and develop solutions on a variety of topics, including climate change, marine and terrestrial ecosystem management, and green economic growth.

Q61. Answer: (d) Arunachal Pradesh

The correct answer is Arunachal Pradesh.

Key Points

• The Arunachal Pradesh state's Bardo Chham dance is one of the country's oldest folk dance traditions.

• There was a tribe known as the Sherdupkens who immigrated and settled in the state of Arunachal Pradesh, where they developed their own culture.

• The Sherdupkens, a small group in the West Kammen district of the state of Arunachal Pradesh in India's north-east, perform the Bardo Chham dance, which is a well-known style of folk dance in the region.

• The state of Arunachal Pradesh has a vast range of traditions, and numerous tribes have settled in the state, each with their own culture and dance forms that are extensively performed in the region for amusement and socialising on various occasions.

• Bardo chham is an old dance that originated in the north-eastern state of Arunachal Pradesh and is still avidly danced among its inhabitants.

Q62. Answer: (b) 5

Given:

The digits of two-digit numbers are reversed, the number increases by 27

Calculation:

Let the first and second digits be x and y respectively.

Original number = (10y + x)

=> 10y + x – (10x + y) = 27

=> 9(y – x) = 27

=> y – x = 3

If y = 5 then x = 2

=> Two-digit number will be 52

If y = 6 then x = 3

=> Two-digit number will be 63

If y = 7 then x = 4

=> Two-digit number will be 74

If y = 8 then x = 5

=> Two-digit number will be 85

If y = 9 then x = 6

=> Two-digit number will be 96

Therefore There are such 5 two digits numbers.

Q63. Answer: (c) 20

Given:

10% of 980 - x% of 450 = 5% of 160

Formula Used:

Percentage = (Value × Percentage)/100

Calculation:

=> 10% of 980 - x% of 450 = 5% of 160

=> (980 × 10)/100 - (450 × x)/100 = (160 × 5)/100

=> 98 - 4.5x = 8

=> 4.5x = 90

=> x = 20

Therefore, the value of x is 20.

Q64. Answer: (a) 16

The logic followed is:

By counting the triangles,

Hence, 16 is the correct answer.

Q65. Answer: (d) 24

Given:

50% of a number added to 20% of 40 gives a sum of 20

Calculation:

50% of a number added to 20% of 40 gives a sum of 20

Let one number be 'x'

According to the statement,

=> 50% of x + 20% of 40 = 20

Solving the equation,

=> (50/100)x + 20/100 × 40 = 20

=> x/2 + 8 = 20

=> x/2 = 12

=> x = 24

Hence, the number is 24.

Q66. Answer: (d) Protozoa

The correct answer is Protozoa.

Key Points

• Visceral leishmaniasis (VL), often known as kala-azar, is the most severe type of leishmaniasis and is associated with a high death rate if not diagnosed and treated properly.

• The disease leishmaniasis is caused by protozoan parasites of the genus Leishmania.

• The parasite migrates to internal organs like the liver, spleen (thus the term "visceral"), and bone marrow, and if left untreated, the host will almost invariably die. Fever, weight loss, exhaustion, anaemia, and significant liver and spleen swelling are all signs and symptoms.

• The rising problem of HIV/VL co-infection, according to the World Health Organization (WHO), is of special concern.

• VL is the world's second-leading parasite killer (after malaria), causing an estimated 20,000 to 30,000 fatalities per year worldwide.

Important Points

• Protozoa are microscopic unicellular eukaryotes with a sophisticated internal structure and a wide range of metabolic activities.

• Any of the approximately 144,000 recognised species of creatures in the kingdom fungus, plural fungi, Yeasts, rusts, smuts, mildews, moulds, and mushrooms are examples of fungi.

• A virus is an infectious microorganism made up of a nucleic acid segment (DNA or RNA) encased in a protein coat.

• Bacteria are single-celled organisms that are tiny. Bacteria can be found practically everywhere on the globe and are essential to its ecosystems.

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Q67. Answer: (c) a = 7/3, b = 2/3

Given:

(√5 + √2)/(√5 - √2) = a + b√10

Concept used:

In such questions we use rationalization by multiplying appropriate quantity to both numerator and denominator.

Calculation:

In such questions, solving for the left-handed side (LHS),

LHS;

= (√5 + √2)/(√5 - √2)

= (√5 + √2)/(√5 - √2) × (√5 + √2)/(√5 + √2)

= ((√5 + √2)²)/((√5)² - (√2)²)

= (5 + 2+2√10)/(5 - 2)

= (7+2√10)/3

= 7/3+2√10/3 .... (1)

= a + b√10 .... (2)

Comparing (1) and (2),

a = 7/3 and b = 2/3.

Therefore Option 3 is the correct answer.

Q68. Answer: (d) 30 days

Given:

A and B together: 20 days

B alone: 60 days

Formula Used:

1/A + 1/B = 1/Together Time

Calculation:

LCM of 20 and 60 for total work which is 60 units.

A and B together complete 60 units in 20 days

=> Rate = 60 / 20 = 3 units/day

B alone completes 60 units in 60 days

=> Rate = 60 / 60 = 1 unit/day

Rate of A alone = Rate of A and B - Rate of B

=> 3 - 1 = 2 units/day

Time taken by A alone = Total work / Rate of A

=> 60 units / 2 units/day = 30 days

Therefore Option 4 is the correct answer.

Q69. Answer: (b) Department of Indian System of Medicine and Homeopathy

The correct answer is Department of Indian System of Medicine and Homeopathy.

Key Points

• The Department of Indian Medicine and Homeopathy (ISM & H) was established under the Union Ministry of Health and Family Welfare in 1995 with the goal of ensuring the optimal and focused growth of these systems.

• This department was renamed the Department of AYUSH in 2003. AYUSH stands for Ayurveda, Yoga & Naturopathy, Unani, Siddha, and Homeopathy, which are all medical systems practised in India.

• These systems are founded on specific medical philosophies and reflect a healthy way of life with well-established notions for disease prevention and health promotion.

• All of these systems take a holistic approach to health, disease, and treatment.

• Within the healthcare sector, successive Five-Year Plans of India (created by the Planning Commission of India and later the NITI Aayog) placed a strong emphasis on alternative, mainly indigenous, types of medicine.

• The Indian government established a series of committees for the development of the healthcare sector, including Bhore (1946), Mudaliar (1961), and Srivastava (1975), all of which emphasised the need to modernise traditional Indian medical systems.

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Q70. Answer: (d) 3^(rd) March

The correct answer is 3rd March.

Key Points

• The United Nations General Assembly (UNGA) declared 3 March, the international day of the adoption of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) on the planet raises awareness and benefits fauna and flora in 1973, as World Wildlife Day in its 68th session on December 20, 2013.

• Thailand proposed the celebration to honour and increase awareness of the world's wild wildlife and plants.

• The General Assembly reiterated the fundamental significance of wildlife and its numerous contributions to sustainable development and human well-being, including ecological, genetic, social, economic, scientific, educational, cultural, recreational, and aesthetic.

• The United Nations General Assembly asked the CITES Secretariat to help implement World Wildlife Day by working with other UN agencies.

Additional Information

• The United Nations is an intergovernmental organisation whose mission is to ensure international peace and security, foster cordial relations among nations, foster international collaboration, and serve as a focal point for coordinating national efforts.

Q71. Answer: (d) 24/5 days

Given:

A and B: 24 days

B and C: 12 days

A, B, and C: 6 days

Formula Used:

1/A + 1/B + 1/C = 1/Together Time

Calculation:

Total work (LCM of 24, 12, 6) = 24 units

A and B together => Rate = 24 units / 24 days = 1 unit/day

B and C together => Rate = 24 units / 12 days = 2 units/day

A, B, and C together => Rate = 24 units / 6 days = 4 units/day

Rate of A = Rate of A, B, and C - Rate of B and c

=> Rate of A = 4 - 2 = 2 units/day

Similarly Rate of C = 4 - 1 = 3 units/day

Time taken by A and C alone = Total work / Rate of A and C => 24 units /(3 + 2) units/day = 24/5 days

Therefore Option 4 is the correct answer.

Q72. Answer: (a) Ministry of Tourism and Culture

The correct answer is Ministry of Tourism and Culture.

Key Points

• The National Mission for Manuscripts (NAMAMI) is an autonomous organisation under the Ministry of Culture, Government of India, tasked with surveying, locating, and conserving Indian manuscripts in order to build a national resource base for manuscripts and improve access, awareness, and educational use.

• The Mission was launched in February 2003 by the Ministry of Tourism and Culture of the Government of India, with the Indira Gandhi National Centre for the Arts (IGNCA) serving as the project's coordinating agency.

• It compiles bibliographic databases of Indian manuscripts and assists in manuscript conservation and preservation.

• The organisation strives to encourage access and scholarship through study and publication on the subject of Indian manuscript restoration and conservation, as well as its digitalization.

Important Points

• The Ministry of Culture is an Indian government ministry responsible for preserving and promoting Indian art and culture. The current Minister of Culture is G. Kishan Reddy.

• The Ministry of Tourism is the top organisation for the formulation and administration of rules, regulations, and legislation relating to the development and promotion of tourism in India. It is a branch of the Indian government.

• The Ministry of Education (previously the Ministry of Human Resource Development) is the Indian government's ministry in charge of implementing the National Policy on Education.

• The Ministry of Finance is the Indian Treasury and is responsible for the country's economy.

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Q73. Answer: (d) Brahmaputra

The correct answer is Brahmaputra.

Key Points

• The Yarlung Tsangpo, commonly known as the Yarlung Zangbo, is a tributary of the Brahmaputra River in China's Tibet Autonomous Region.

• It is Tibet's longest river and China's sixth-longest river.

• The top section is also known as Dangque Zangbu, which translates to "Horse River."

• It begins at the Angsi Glacier in western Tibet, southeast of Mount Kailash and Lake Manasarovar, and flows through the South Tibet Valley and the Yarlung Tsangpo Grand Canyon before entering Arunachal Pradesh, India.

Important Points

• The Brahmaputra is a transboundary river that flows through Tibet, China, India, and Bangladesh.

• It is also known as the Yarlung Tsangpo in Tibet, the Siang/Dihang River in Arunachal Pradesh, and Luit in Assamese.

• It is also known as the Tsangpo-Brahmaputra and the Indian Red River (when referring to the whole river including the stretch within the Tibet Autonomous Region).

• It has the ninth biggest discharge and is the 15th longest river in the world.

• The Yarlung Tsangpo River originates in the Manasarovar Lake region, near Mount Kailash, on the northern side of the Himalayas in Burang County, Tibet, and flows through southern Tibet, breaking through the Himalayas in great gorges (including the Yarlung Tsangpo Grand Canyon), and into Arunachal Pradesh.

Q74. Answer: (d) 14.2%

Given:

Initial profit percentage = 20%

Cost increases by 5%

Calculation:

Let initial cost = 100

Initial profit = 20% of 100 = 20

Initial selling price (SP) = Cost + Profit = 100 + 20 = 120

After the cost increases by 5%:

New cost = 100 + 5% of 100 = 105

Since the selling price remains the same (120),

New profit = SP - New Cost = 120 - 105 = 15

New profit percentage = (New Profit / New Cost) × 100 = (15 / 105) × 100 = 14.29% (approx)

So, new percentage profit = 14.2%

Q75. Answer: (c) –5

Given:

a : b = 2 : 7

Calculation:

Let a = 2k and b = 7k, where k is a common multiplier.

Substitute the values of a and b:

(3a + 2b) : (5a - 2b)

= (3(2k) + 2(7k)) : (5(2k) - 2(7k))

= (6k + 14k) : (10k - 14k)

= 20k : -4k = -5 : 1

So the value of (3a + 2b) : (5a - 2b) is -5 : 1.

Therefore Option 3 is the correct answer.

Q76. Answer: (d) 271/80

Given

The number is 5/16

Calculation

5/16

=> Its reciprocal will be 16/5

=> Difference = 16/5 - 5/16

=> Difference = (256 - 25)/80

=> Difference = 231/80

=> Difference = 271/80

Therefore The difference of 5/16 and its reciprocal is 271/80.

Q77. Answer: (b) Six Degrees

The correct answer is Six Degrees.

Key Points

• SixDegrees.com was a social networking service website that ran from 1997 to 2000 and was based on the Web of Contacts premise.

• It was named after the six degrees of separation idea and allowed users to list both internal and exterior contacts; external contacts were encouraged to join the site.

• People who confirmed a relationship with an existing user but did not register with the site continued to get email updates and solicitations on a regular basis.

• Users could send messages and bulletin board articles to persons in their first, second, and third degrees, as well as check who they were connected to on the site.

Important Points

• Friendster was a social networking game established by Jonathan Abrams in Mountain View, California, and launched in March 2003.

• LinkedIn is a website and mobile app that focuses on business and jobs in the United States.

• Myspace is a popular social media platform located in the United States. The site was the first social network to reach a global audience, and it had a tremendous impact on technology, pop culture, and music when it was launched on August 1, 2003.

Additional Information

• Social media are interactive digital channels that allow people to share information, ideas, and other kinds of expression through virtual communities and networks.

• Users typically use web-based programmes on their computers or download services that provide social media capabilities to their mobile devices to access social media services (e.g., smartphones and tablets). Individuals, communities, and organisations can share, co-create, discuss, participate in, and edit user-generated or self-curated content uploaded online as a result of their interactions with various electronic services.

Q78. Answer: (a) 6 cm²

Given:

Sides of triangle: 5 cm, 4 cm, 3 cm

Formula Used:

Area of triangle = √(s(s - a)(s - b)(s - c))

where s = (a + b + c)/2

Calculation:

=> s = (5 + 4 + 3)/2

=> s = 6

=> Area of triangle = √(6(6 - 5)(6 - 4)(6 - 3))

=> Area of triangle = √(6 × 1 × 2 × 3)

=> Area of triangle = √36

=> Area of triangle = 6 cm²

Therefore Option 1 is the correct answer.

Q79. Answer: (a) Zakir Hussain

The correct answer is Zakir Hussain.

Key Points

• For his collaboration effort "Global Drum Project," tabla maestro Zakir Hussain won in the Contemporary World Music Album category.

• For the album, Hussain collaborated with Mickey Hart of the "Grateful Dead," Nigerian drummer Sikiru Adepoju, and Puerto Rican jazz percussionist Giovanni Hidalgo.

• "Global Drum Project" is Hart and Hussain's second collaboration, following their compilation "Planet Drum," which won the first-ever Grammy Award in the World Music category in 1991.

• The Grammy Award for Best Global Music Album is given to recording artists for globally influential music at the Grammy

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Awards, which were first held in 1958 and were originally known as the Gramophone Awards.

• Ustad Zakir Hussain is a tabla master, composer, percussionist, music producer, and film actor from India.

• President Abdul Kalam honoured him with the Padma Shri in 1988 and the Padma Bhushan in 2002 from the Government of India.

Important Points

• Sivamani is an Indian percussionist, music director, and professional drummer who goes by the stage name Drums Sivamani. In 2008 and 2010, he drummed during the IPL Championships.

• Ustad Allarakha Qureshi, also known as Alla Rakha, was a Hindustani classical music tabla musician from India.

Q80. Answer: (a) Rs. 35

Given:

Percentage = 412/3% = 41.67 %

Amount = Rs. 84

Formula Used:

Percentage = (Amount × Percentage) / 100

Calculation:

=> Amount = (84 × 41.67) / 100

=> Amount = 35

The correct answer is option 1.

Q81. Answer: (b) $(b^2 - a^2)/(b^2 + a^2)$

Given:

a cot θ = b

Concept Used:

cot θ = 1/tan θ

sin θ/cos θ = tan θ

Calculation:

a cot θ = b

tan θ = a/b

(bcos θ - asin θ)/(bcos θ + asin θ)

Divide by cos θ in numerator and denominator, we get

=> ((bcos θ)/cosθ- (asin θ)/cosθ)/((bcos θ)/cosθ + (asin θ)/cosθ)

=> (b - atan θ)/(b + atan θ)

=> (b - a× a/b)/(b + a× a/b)

=> $((b^2 - a^2)/b)/((b^2 + a^2)/b)$

=> $(b^2-a^2)/(b^2+a^2)$

Therefore Option 2 is the correct answer.

Q82. Answer: (b) cos 2A

Shortcut Trick

Identify the expression as a standard trigonometric identity.

The formula for cos 2A in terms of tan A is directly given by:

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

By comparing the given expression with the identity, we get the result cos 2A.

Therefore The correct answer is cos 2A.

Alternate Method

Given: The expression is $(1 − \tan^2A) / (1 + \tan^2A)$.

=> Substitute tan A = sin A / cos A into the expression:

=> Expression = $[1 − (\sin^2A / \cos^2A)] / [1 + (\sin^2A / \cos^2A)]$

=> Expression = $[(\cos^2A − \sin^2A) / \cos^2A] / [(\cos^2A + \sin^2A) / \cos^2A]$

=> Expression = $(\cos^2A − \sin^2A) / (\cos^2A + \sin^2A)$

=> We know the Pythagorean identity: $\cos^2A + \sin^2A = 1$

=> Expression = $(\cos^2A − \sin^2A) / 1$

=> Expression = cos 2A (Using the double angle identity for cosine)

Therefore The correct answer is cos 2A.

Additional Information

Sine Double Angle Identity

The value of sin 2A in terms of tan A is given by: 2 tan A / (1 + $\tan^2 A$).

Tangent Double Angle Identity

The value of tan 2A in terms of tan A is given by: 2 tan A / (1 − $\tan^2 A$).

Cosine Double Angle Variants

cos 2A can also be written as $\cos^2 A - \sin^2 A$, or $2\cos^2 A - 1$, or $1 - 2\sin^2 A$.

Secant Identity

The denominator $1 + \tan^2 A$ is equivalent to $\sec^2 A$ according to the Pythagorean identity.

Q83. Answer: (b) Growing two or more crops in proximity

The correct answer is Growing two or more crops in proximity.

Key Points

• Intercropping entails cultivating two or more crops on the same field at the same time.

• Cover crops are sometimes employed in intercropping alongside cash crops.

• Due to its excellent benefits on soil fertility and the nutrient cycle, this method has regained popularity globally, particularly in the tropics.

• Early research focused on increasing organic matter, creating and stabilising soil aggregates, decreasing soil compaction, enabling a richer and diverse soil biota, aerating the soil, improving water balance, and increasing phosphorus availability through mycorrhizal symbiosis, recovering nutrients by roots reaching deep soil layers, and so on.

• Intercropping may also aid in weed and insect control. Intercropping is a long-term strategy for increasing resource efficiency, such as nutrient and water utilisation while allowing for low-input farming practices.

Q84. Answer: (c) Curing

Given: Mother : Nurturing :: Doctor : ?

The logic followed here is:

A mother nurtures her child.

Similarly,

A doctor cures his patients.

Hence, curing is the correct answer.

Q85. Answer: (c) sec A + tan A

Calculation:

$\sqrt{(1 + \sin A)/(1 - \sin A)} = \sqrt{(1+\sin A)(1+\sin A)/(1-\sin A)}\ (1+\sin A)$

$=> \sqrt{((1+\sin A)^2)/(1-\sin^2 A)}$

$=> \sqrt{(1+\sin^2 A+2\sin A)/(\cos^2 A)}$

$=> \sqrt{(\sec^2 A+\tan^2 A+2\tan A\sec A)}$

$=> \sqrt{((\sec A+ \tan A)^2)}$

=> secA + tanA

Therefore Option 3 is the correct answer.

Q86. Answer: (c) 11 : 6

Calculation:

Sales of ABC books in New Zealand = 200

Sales of XYZ books in New Zealand = 900

Total books sales in New Zealand = 200 + 900 = 1100

Sales of ABC books in India = 100

Sales of XYZ books in India = 500

Total books sales in India = 100 + 500 = 600

Required ratio = 1100 : 600 = 11 : 6

Therefore Option 3 is the correct answer.

Q87. Answer: (d) 65%

Calculation:

Total sales of both book in Australia = 300 + 1000 = 1300

Total sales of both book in UK = 500 + 1500 = 2000

Therefore Required percentage = 1300/2000 × 100 = 65%

Therefore Option 4 is the correct answer.

Q88. Answer: (a) 90.9%

Solution:

Sales of USA for ABC = 1000

Sales for ABC to rest of other countries except Canada = 500 + 100 + 200 + 300 = 1100

Therefore Required percentage = 1000/1100 × 100 = 90.9%

Therefore Option 1 is the correct answer.

Q89. Answer: (d) 27%

Calculation:

Total number of sales of XYZ books in USA = 2000

Total number of worldwide sales for Book XYZ = 1500 + 2000 + 1500 + 500 + 900 + 1000 = 7400

Required percentage = 2000/7400 × 100 = 27% (approx)

Therefore Option 4 is the correct answer.

Q90. Answer: (a) Niece

From the given information,

She (the person in the photograph) is the only granddaughter of the husband of my (John) mother's sister. Thus, the following family tree,

Now, the girl in the photograph is the daughter of John's cousin which implies that she is his niece.

Hence, the person in the photograph is the niece of John.

Q91. Answer: (c) 3

The logic followed is:

Sum of all the numbers = Top Given number.

=> 58 + 62 + 23 + 5? = 196

=> 143 + 5? = 196

Checking options one by one we get:

Option 1: 4

=> 143 + 54 = 196

=> 197 ≠ 196

Option 2: 2

=> 143 + 52 = 196

=> 195 ≠ 196

Option 3: 3

=> 143 + 53 = 196

=> 196 = 196

Option 4: 1

=> 143 + 51 = 196

=> 194 ≠ 196

Thus we can see Option 3 is satisfying the given logic.

Hence, the correct answer is "Option 3".

Q92. Answer: (a) 5 km

According to the given information,

The shortest distance Jenny needs to travel to meet John is AC.

Now, using the Pythagorean theorem,

AC = $\sqrt{(4^2 + 3^2)}$

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AC = √(16 + 9)
AC = √25
AC = 5 km
Hence, 5 km is the correct answer.

Q93. Answer: (a) BTRGHNM

Given: TREE is SQDD
The logic followed here is:
Similarly,
Hence, BTRGHNM is the correct answer.

Q94. Answer: (b) 49 and 392

The logic followed here is: Row wise,
Row (1) → $3^2 = 9$, $3^3 = 27$, $3^2 \times (3 + 1) = 9 \times 4 = 36$
Row (2) → $4^2 = 16$, $4^3 = 64$, $4^2 \times (4 + 1) = 16 \times 5 = 80$
Row (3) → $8^2 = 64$, $8^3 = 512$, $8^2 \times (8 + 1) = 64 \times 9 = 576$
Similarly,
Row (4) → $7^2 = 49 = A$, $7^3 = 343$, $7^2 \times (7 + 1) = 49 \times 8 = 392 = B$
Hence, 49 and 392 is the correct answer.

Q95. Answer: (a) [figure]

The logic followed here is:
Hence, option (1) is the correct answer.

Q96. Answer: (d) 7

The logic followed here is:
Thus, the number of students who can speak French = 4 + 3
= 7
Hence, 7 is the correct answer.

Q97. Answer: (a) Z

The logic followed here is:
The sum of the positional value of the two opposite end letters = middle missing letter (?)
• Positional value of Y = 25
• Positional value of A = 1
• Positional value of P = 16
• Positional value of J = 10
• Positional value of E = 5
• Positional value of U = 21
=> ? = Positional value of (E) + Positional value of (U)
=> ? = 5 + 21
=> ? = 26 = Positional value of Z
Similarly,
=> ? = Positional value of (Y) + Positional value of (A)
=> ? = 25 + 1
=> ? = 26 = Positional value of Z
Similarly,
=> ? = Positional value of (P) + Positional value of (J)
=> ? = 16 + 10
=> ? = 26 = Positional value of Z
We can say the required missing letter is Z.
Hence, the correct answer is "Z".

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Q98. Answer: (c) Piano

By checking options:

The logic followed here is:

All Violin, Sitar, and Guitar are stringed musical instruments.

Whereas,

The piano is a keyboard musical instrument.

Hence, piano is the od one out.

Q99. Answer: (a) 66

Given: 96, 86, 106, 76, _____, 106, 56, 46, 106

The pattern followed here is:

Hence, the correct answer is "66".

Q100. Answer: (a) 182

Given: 118, 146, 182, 226

The logic followed here is:

The total number of factors in the given number is four except for option (1).

118 → The factors of 118 are 1, 2, 59, 118. Therefore, 118 has 4 factors.

146 → The factors of 146 are 1, 2, 73, 146. Therefore, 146 has 4 factors.

182 → The factors of 182 are 1, 2, 7, 13, 14, 26, 91 and 18. Therefore, 182 has 8 factors.

226 → The factors of 226 are 1, 2, 113, 226. Therefore, 226 has 4 factors.

Thus, we can say 182 is different from the rest given numbers.

Hence, the correct answer is "182"

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