SSC CHSL Previous Paper 7 (Held On: 3 Jul 2019 Shift 3) (Previous Year Paper)

SSC Combined Higher Secondary Level (CHSL) • 2019 • 100 questions • 60 minutes • Answer key and solutions

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ENGLISH LANGUAGE

Q1. Select the most appropriate meaning of the given idiom.

Mad as a hatter

(a) eccentric
(b) very upset
(c) old fashioned
(d) superstitious

Q2. Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.

A. At this speed the rocket soon attained the height of 190 miles above the earth.
B. At 9 am the great rocket lifted in the air with a mighty roar.
C. It rose smoothly at first, then quickened to a speed of 17,5 00 miles an hour.
D. Gagarin now pulled himself towards the window to look down.

(a) ADBC
(b) BADC
(c) BCAD
(d) CBAD

Q3. Select the most appropriate antonym of the given word.

INSTANT

(a) immediate
(b) current
(c) quick
(d) delayed

Q4. Select the word which means the same as the group of words given.

An instrument used for measuring atmospheric pressure

(a) altimeter
(b) thermometer
(c) barometer
(d) voltmeter

Q5. Select the word which means the same as the group of words given.

The study of human history and prehistory through the excavation of sites.

(a) anthropology
(b) psephology
(c) geology
(d) archaeology

Q6. Select the most appropriate synonym of the given word.

HANDY

(a) convenient
(b) useless
(c) clumsy
(d) hard

Q7. Select the wrongly spelt word.

(a) require
(b) reverse
(c) reproduce
(d) resembel

Q8. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select No improvement.

The Urban Art Commission has suggested that the landscape be developing by adding water fountains around the sculpture.

(a) be developed by
(b) be developed with
(c) being developed by
(d) No improvement

Q9. Select the correct passive form of the given sentence.

The new gardener looks after the plants well.

(a) The plants were looked after well by the new gardener.
(b) The new gardener is looked after well by the plants.
(c) The plants looked after well by the new gardener.
(d) The plants are looked after well by the new gardener.

Q10. Select the most appropriate word to fill in the blank.

The prisoner held up his fist in a defiant _____ as he was led out of the courtroom.

(a) token
(b) wave
(c) gesture
(d) salute

Q11. Select the most appropriate synonym of the given word.

THWART

(a) Face
(b) Support
(c) Impede
(d) Aid

Q12. In the sentence identify the segment which contains the grammatical error.

Mrs. Sangeeta Malik is one of the favourite teacher of most children in our school.

(a) Mrs. Sangeeta Malik is
(b) one of the favourite teacher
(c) in our school
(d) of most children

Q13. Select the correct indirect form of the given sentence.

Father said to me, "Are you going to keep me waiting all night?'

(a) Father told me that you are going to keep him waiting all night.
(b) Father asked me if I was going to keep him waiting all night.

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(c) Father asked me if you were going to keep him waiting all night.
(d) Father asked me are you going to keep me waiting all night.

Q14. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select No improvement.

The civic bodies in the capital have formed teams to crack down on coaching centres found violated a law.

(a) No improvement
(b) finding to violate the law
(c) found to violated a law
(d) found violating the law

Q15. Select the wrongly spelt word.

(a) nerveous
(b) neglect
(c) negative
(d) nerve

Q16. Select the most appropriate meaning of the given idiom.

Going over one's head

(a) unable to take a decision
(b) unable to function as one used to
(c) something one didn't expect
(d) beyond one's capacity to understand

Q17. Select the most appropriate word to fill in the blank.

In view of his transfer to a far off place, he had to _____ his promotion.

(a) assert
(b) resign
(c) forgo
(d) claim

Q18. In the sentence identify the segment which contains the grammatical error.

I expect to return from Singapore during about a week's time.

(a) from Singapore
(b) I expect to return
(c) during about
(d) a week's time

Q19. Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.

A. The subjects taught in the Gurukul varied from Sanskrit to Mathematics.
B. Indian education has its roots in the ancient ages.
C. However this system changed when the British ca me to India.
D. In those days the Gurukul system was followed.

(a) BDAC
(b) DCAB
(c) BCAD
(d) CBAD

Q20. Select the most appropriate antonym of the given word.

RESERVED

(a) placid
(b) communicative
(c) modest
(d) quiet

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Directions

In the following passage some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.

Every morning, nine-year old Khushi becomes guardian to her five-year old sister Ankita as (1) ____ hold hands and cross the railway tracks to (2) __ the school. The sisters leave home (3) __ 7 am with school bags larger (4) __ their torsos. The 2 km route they walk on foot to reach school (5) ____ includes walking past a railway crossing and through the lanes of an industrial area used by mini trucks and carrier vehicles.

Q21. Select the most appropriate option for blank No. 1.

(a) they
(b) we
(c) them
(d) she

Q22. Select the most appropriate option for blank No. 2.

(a) go
(b) reach
(c) come
(d) arrive

Q23. Select the most appropriate option for blank No. 3.

(a) in
(b) from
(c) on
(d) at

Q24. Select the most appropriate option for blank No. 4.

(a) with
(b) to
(c) from
(d) than

Q25. Select the most appropriate option for blank No. 5.

(a) widely
(b) daily
(c) hardly
(d) evenly

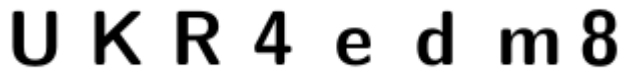
GENERAL INTELLIGENCE

Q26. Select the number-pair in which the two numbers are related in the same way as are the two numbers of the following number-pair.

7 : 729

(a) 8 : 1000
(b) 6 : 343
(c) 4 : 64
(d) 5 : 125

Q27. Select the correct mirror image of the given combination when the mirror is placed to the right.



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(a)

8 m b e 4 Я K O

(b)

8 m b e 4 B K U

(c)

Ɛ m b ɘ ⊬ Я ʞ U

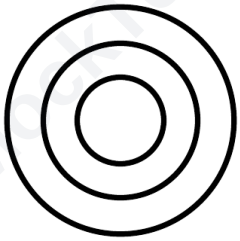
(d)

Ɛ w b ɘ ↩ Я ʞ U

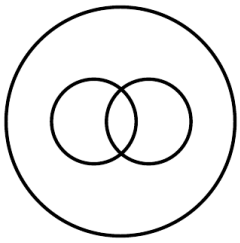
Q28. Select the Venn diagram that best illustrates the relationship between the following classes

Women, Sisters, Mothers

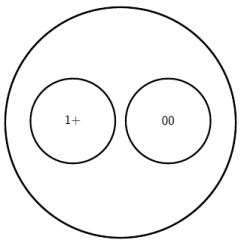
(a)



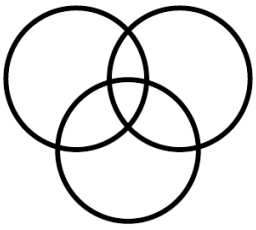
(b)



(c)



(d)



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Q29. 'Glaucoma' is related to 'Eyes' in the same way as 'Arthritis' is related to '_____'.

(a) Arteries
(b) Ears
(c) Liver
(d) Joints

Q30. Which two signs should be interchanged to make the given equation correct?

20 + 5 × 3 ÷ 3 – 1 = 14

(a) ÷ and +
(b) ÷ and ×
(c) × and +
(d) × and –

Q31. Three of the following four numbers are alike in a certain way and one is different. Pick the number that is different from the rest.

(a) 179
(b) 173
(c) 182
(d) 181

Q32. Three of the following four words are alike in a certain way and one is different. Pick the odd word out.

(a) Bleat
(b) Larva
(c) Croak
(d) Bark

Q33. In a code language, ELECTION is written as DKDBSHNM. How will EXAMPLE be written in the same language?

(a) DYZLOKD
(b) FWZLOKD
(c) DWZLOKD
(d) DWZLOKF

Q34. If MAGENTA is coded as 1317514201, then how will VISCOUS be coded as?

(a) 228193142118
(b) 218193162018
(c) 239203152219
(d) 229193152119

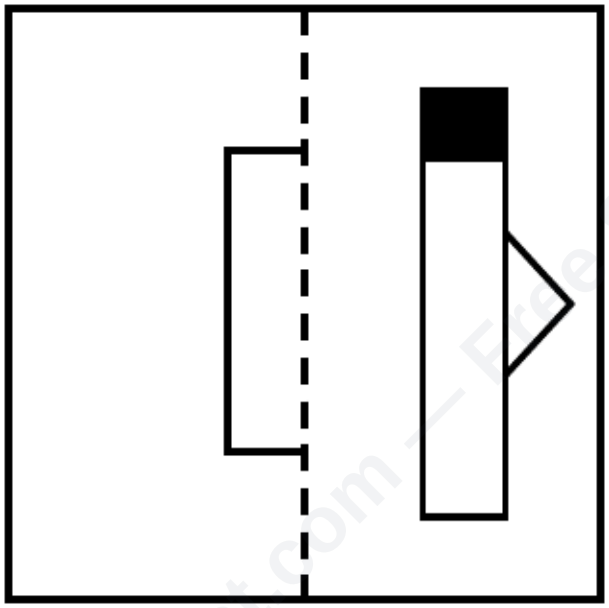
Q35. Select the letter cluster that will come next in the following series.

DOP, FPN, HQL, JRJ, ?

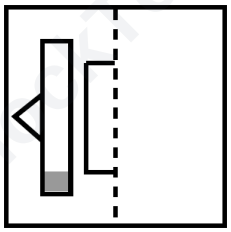
(a) KSH
(b) KTI
(c) LSI
(d) LSH

Q36. Select the option that depicts how the given transparent sheet of paper would appear if it is folded at the dotted line.

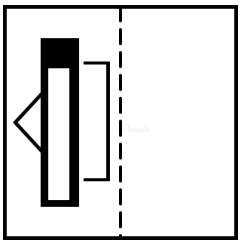
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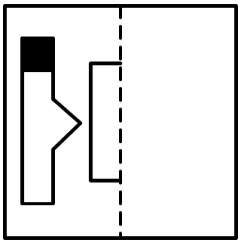
(a)



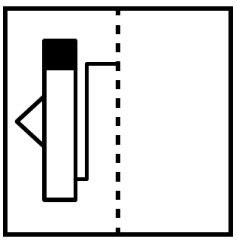
(b)



(c)



(d)

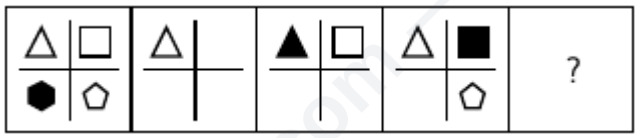


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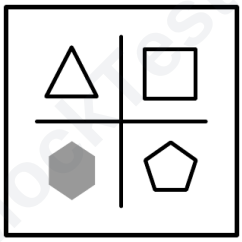
Q37. 'A + B' means 'A is the brother of B'.
'A – B' means 'A is the husband of B'.
'A × B' means 'A is the mother of B'.
'A ÷ B' means 'A is the sister of B'.
If P + R ÷ T – K × O × C, then how is P related to O?

(a) Paternal Uncle
(b) Paternal Grandfather
(c) Brother
(d) Father

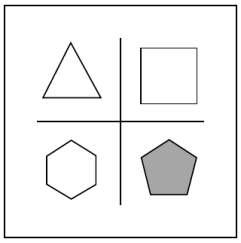
Q38. Select the figure that will come next in the following figure series.



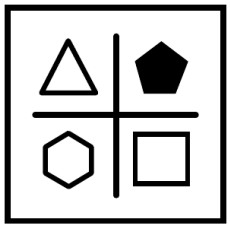
(a)



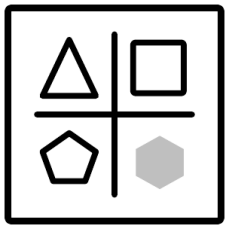
(b)



(c)

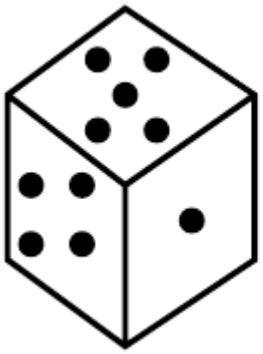


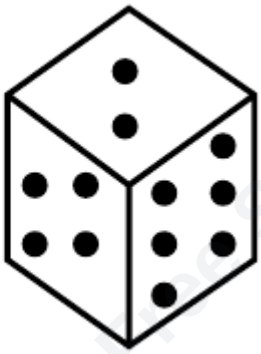
(d)



Q39. Two different positions of the same dice are shown. How many dots will be on the top if four dots are at the bottom?

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

Q40. In a code language, ELASTIC is written as DOHVFLW. How will SMARTER be written as in that language?

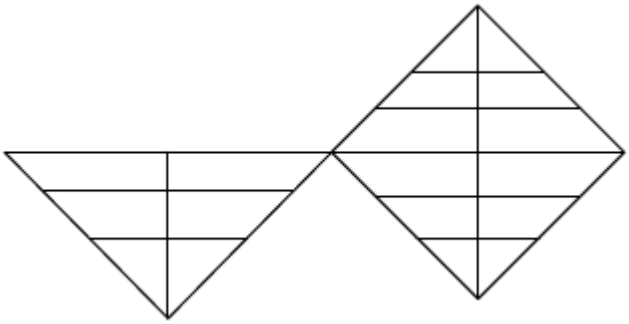
(a) DPVUUHW
(b) DPVTUGW
(c) DOTUUHX
(d) EQVUUHW

Q41. Select the combination of letters that when sequentially placed in the gaps of the given letter series will complete the series.

H _ _ E P C K _ _ C D E P _ K F H C _ E P C _ F

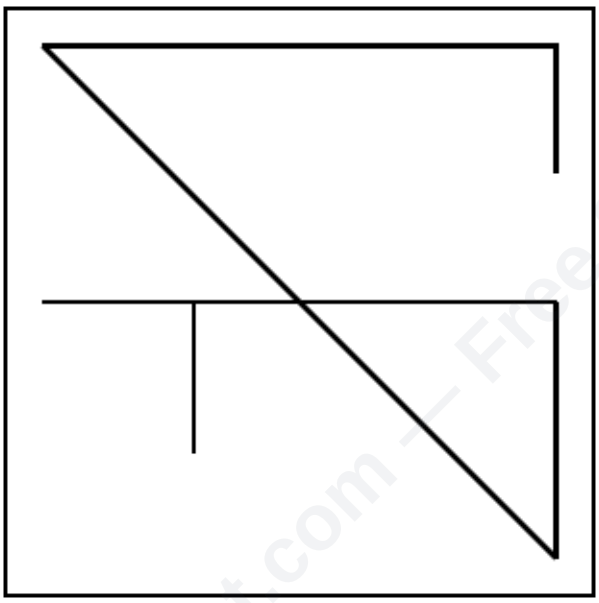
(a) CDHHDCK
(b) DCFHFDD
(c) CCFHKDK
(d) CDFHCDK

Q42. How many triangles are present in the following figure?

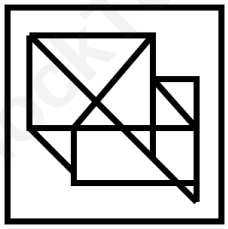


(a) 27
(b) 31
(c) 30
(d) 29

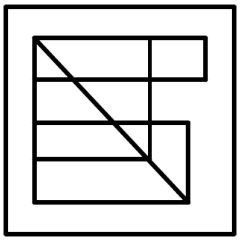
Q43. Select the option in which the given figure (X) is embedded (rotation not allowed)



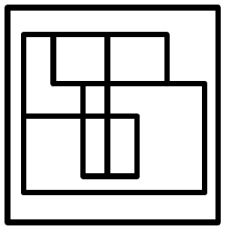
(a)



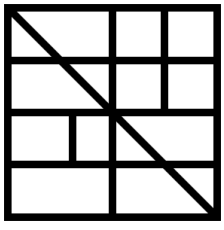
(b)



(c)



(d)



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Q44. Three of the following four letter-clusters are alike in a certain way and one is different. Pick the odd one out.

(a) KLNQ
(b) BCEH
(c) TUWZ
(d) LMPS

Q45. There are fourteen teams playing in a tournament. If every team plays one match with every other team, how many matches will be played in the tournament?

(a) 66
(b) 101
(c) 91
(d) 78

Q46. Two statements are given, followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:

All breads are cakes.

All eggs are cakes.

Conclusions:

I. Some cakes are breads.

II. Some breads are eggs.

III. No bread is an egg.

(a) Conclusion I and either conclusion II or III follow.
(b) Only conclusions I and II follow.
(c) Only conclusions I and III follow.
(d) All the conclusions follow.

Q47. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.

CQHL : FTEI :: OPAR : ?

(a) RSXO
(b) RSXP
(c) YTXO
(d) RTYO

Q48. Arrange the following in a logical and meaningful order.

1. World Cup semi-final matches
2. World Cup finals match
3. Organising the World Cup
4. Finalising the participating teams
5. Winner of the World Cup

(a) 4, 1, 3, 2, 5
(b) 4, 1, 2, 3, 5
(c) 5, 2, 3, 1, 4
(d) 4, 3, 1, 2, 5

Q49. Select the word-pair in which the two words are related in the same way as are the two words in the following word-pair.

Fan : Electricity

(a) Petrol : Fuel
(b) Bike : Kick
(c) Vehicles : Diesel

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(d) Cooler : Water

Q50. The total age of a mother and her son is 60 years. The difference between their ages is 30 years. Find out the age of the mother.

(a) 50 years
(b) 35 years
(c) 45 years
(d) 40 years

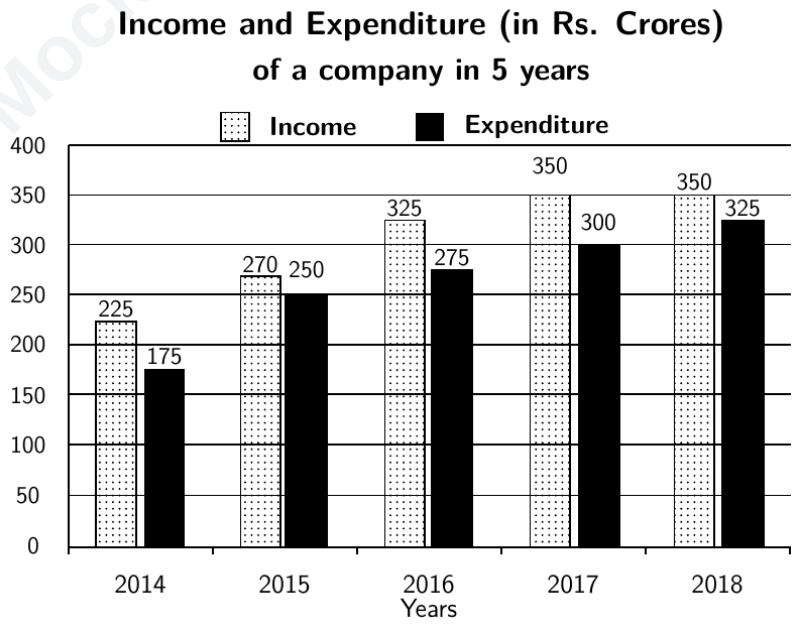
QUANTITATIVE APTITUDE

Q51. If $x + y + z = 19$, $x^2 + y^2 + z^2 = 133$, then the value of $x^3 + y^3 + z^3 - 3xyz$ is:

(a) 380
(b) 352
(c) 361
(d) 342

Directions

Direction: The given bar graph presents income and expenditure (in crores of rupees) of a company for the five years, 2014 to 2018.

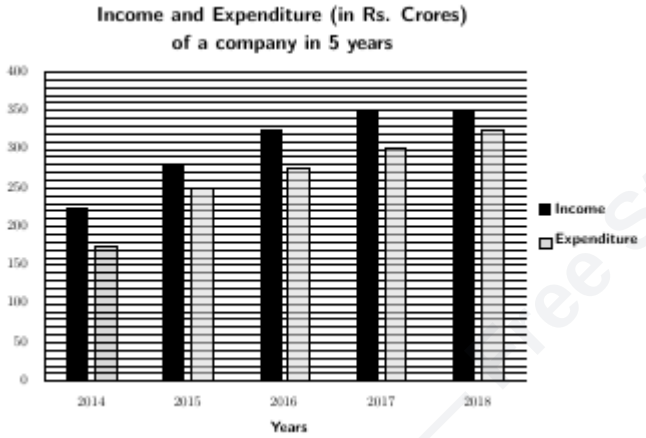


Q52. What is the ratio of total expenditure to total income of the company in 2014, 2016 and 2017?

(a) 13 : 18
(b) 3 : 4
(c) 15 : 16
(d) 5 : 6

Q53. In which year is expenditure more than 40% as compared to the Expenditure in the previous year?

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(a) 2017
(b) 2018
(c) 2016
(d) 2015

Q54. If $8(x + y)^3 - (x - y)^3 = (x + 3y)(Ax^2 + Bxy + Cy^2)$, then value of (A - B - C) is:

(a) -2
(b) 14
(c) -6
(d) 10

Q55. In a ΔABC, D and E are two points on side AB and BC, respectively such that AD : DB = 2 : 3 and DE || AC. If the area of ΔBDE is equal to 18 cm^2, then what is the area(in cm^2) of ΔABC?

(a) 45
(b) 40.5
(c) 50
(d) 54

Q56. Let ΔABC ~ ΔQPR and [{ar(ΔABC)/(arΔQPR)} = (9/4)]. If AB = 12 cm, BC = 6 cm and AC = 9 cm, then QR is equal to:

(a) 15 cm
(b) 9 cm
(c) 6 cm
(d) 12 cm

Q57. The compound interest on a certain sum for 3 years at 15% p.a., interest compound yearly, is Rs. 4167. What is the simple interest on the same sum in 24/5 years at the same rate?

(a) Rs. 5760
(b) Rs. 6000
(c) Rs. 6144
(d) Rs. 4800

Q58. If $[1/(1 + \text{cosec}\ \theta) - 1/(1 - \text{cosec}\theta)]\cos\theta = 2$, $0° < \theta < 90°$, then the value of $\sin^2\theta + \cot^2\theta + \sec^2\theta$ is:

(a) 2
(b) 212
(c) 7/2
(d) 1

Q59. An article is sold for Rs. X. if it is sold at 331/3 % of this price, there is a loss of 20%. What is the percentage profit when it is sold for Rs. X?

(a) 140
(b) 120
(c) 125

(d) 130

Q60. In a circle with center O, diameter AB and a chord CD intersect each other at E, AC and AD are joined. If angle BOC = 48° angle AOD = 100°, then what is the measure of angle CEB?

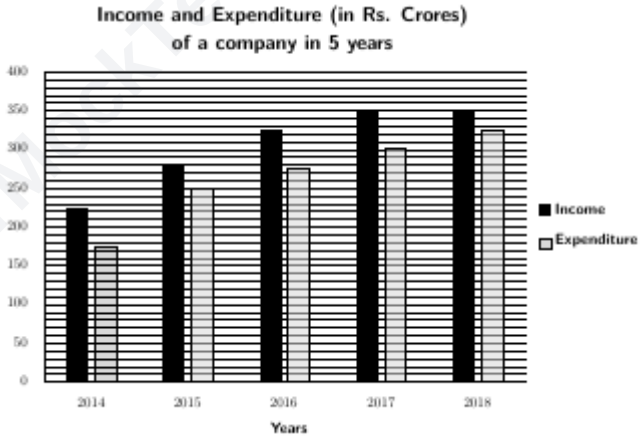
(a) 74°
(b) 72°
(c) 82°
(d) 78°

Q61. Two trains of equal length travelling in opposite directions at 72 km/h and 108 km/h cross each other in 10 second. In how much time (in seconds) does the first train cross a platform of length 350 m?

(a) 32
(b) 36
(c) 24
(d) 30

Q62. Direction: The given bar graph presents income and expenditure (in crores of rupees) of a company for the five years, 2014 to 2018.

The average income (per year) of the company in five years is what percentage more than its expenditure in 2015?



(a) 18.4
(b) 20.8
(c) 22.4
(d) 24.6

Q63. The length of a rectangular park is 20 meter more than its breadth. If the cost of fencing the park at Rs. 53 per meter is Rs. 21200, then what is the area (in m^2) of the park?

(a) 9900
(b) 9504
(c) 9204
(d) 8925

Q64. If a 10-digit number 46789x531y is divisible by 72, then the value of (2x + 5y), for the largest value of x is:

(a) 38
(b) 28
(c) 10
(d) 16

Q65. A man gets a discount of 30% and then 20% on his food bill of Rs. 1250. How much amount does he have to pay?

(a) Rs. 550
(b) Rs. 500
(c) Rs. 700
(d) Rs. 350

Q66. The value of $4\tan^2 30° + 1/4 \sin^2 90° + (1/8) \times (\cot^2 30° \cos^2 45°/\sin 60° \cos 30°) - \cos 60° \sin 30°$ is:

(a) 1
(b) 11/14
(c) 7/4
(d) 19/12

Q67. What is the simplified value of 5 ÷ 10 of 10 × 4 + 4 ÷ 4 of 4 × 10 - (10 - 4) ÷ 16 × 4 = ?

(a) 21
(b) 1.2
(c) 58.5
(d) 2.5

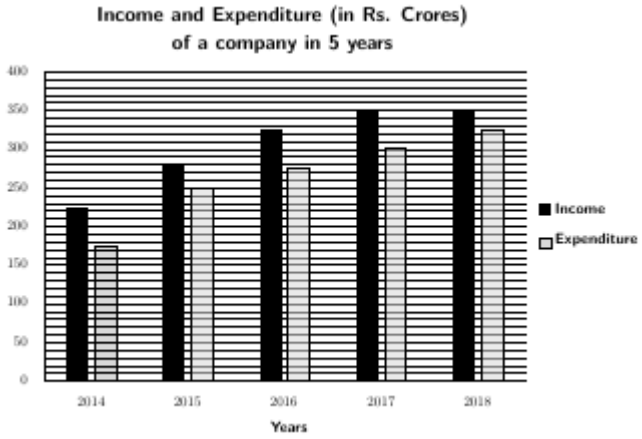
Q68. An article is sold for Rs. 360 after allowing discount of 20% on its marked price. Had the discount not been allowed, the profit would have been 50%. The cost price of the article is:

(a) Rs. 320
(b) Rs. 300
(c) Rs. 360
(d) Rs. 350

Q69. In ΔABC, AD is the bisector of angle BAC, meeting BC at D. If AC = 21, BC = 12 cm and the length of BD is 2 cm less than DC, then the length of side AB is:

(a) 14 cm
(b) 18 cm
(c) 15 cm
(d) 10 cm

Q70. The given bar graph presents income and expenditure (in cores of rupees) of a company for the five years, 2014 to 2018.



The total income of the company in 2015, 2017 and 2018 is approximately what percent less than the total expenditure in the five years?

(a) 26
(b) 21
(c) 22
(d) 24

Q71. If tan x = cot (60° + 6x), then what is the value of x?

(a) 15°/2
(b) 10°
(c) 12°
(d) 30°/7

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Q72. If $9a^2 + 16b^2 + c^2 + 25 = 24(a + b)$, then the value of $(3a + 4b + 5c)$ is:

(a) 7
(b) 9
(c) 6
(d) 10

Q73. The price of an article increases by 20% every year. If the difference between the prices at the end of third and fourth years is Rs. 259.20, then 40% of the price (in Rs.) at the end of second year is:

(a) 484
(b) 432
(c) 384
(d) 472

Q74. In a class of 80 students, the ratio of the urban to the rural is 5 : 3. In a test, the average score of the rural students is 40% more than the urban students. If the average score of all the students is 69, then what is the average score of the rural students?

(a) 84
(b) 80
(c) 92
(d) 76

Q75. 18 men can complete a work in 9 days. After they have worked for 5 days, 6 more men join them. How many days will they take to complete the remaining work?

(a) 212
(b) 2
(c) 312
(d) 3

GENERAL AWARENESS

Q76. Who among the following was awarded the third Sayaji Ratna Award in November 2018 which has been established in the memory of erstwhile Baroda ruler Sayajirao Gaekwad III?

(a) Amitabh Bachchan
(b) Shiv Nadar
(c) Azim Premji
(d) Mohanlal

Q77. Which day has been proclaimed as The International Day for Biological Diversity (IDB) to increase understanding and awareness of biodiversity issues by The United Nations?

(a) 18 October
(b) 22 May
(c) 10 November
(d) 24 April

Q78. Which one of the following is a monetary principle stating that "bad money drives out good"?

(a) The multiplier effect
(b) Pareto efficiency
(c) Gresham's law
(d) Marshall's scissors analysis

Q79. Which emperor’s army did Maharana Pratap fight in the Battle of Haldighati?

(a) Ibrahim Lodi
(b) Akbar
(c) Humayun
(d) Mahmud Shah

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Q80. Oman author Joka Alharthi won the '2019 Man Booker International Prize' for which of the following novels?

(a) The Years
(b) Milkman
(c) Celestial Bodies
(d) The Pine Islands

Q81. According to Census 2011, which state has the highest density of population?

(a) West Bengal
(b) Uttar Pradesh
(c) Bihar
(d) Maharashtra

Q82. In the famous Rohilla War in the year 1774, the Rohillas were defeated by the Nawab of Awadh named _____.

(a) Asif Jah Mirza
(b) Yamin-ud-Daula
(c) Shuja-ud-Daula
(d) Asaf-ud-Daula

Q83. Which is the new state bird of Andhra Pradesh declared by the State Government in June 2018?

(a) Great Hornbill
(b) Sarus Crane
(c) Black Crested Bulbul
(d) Rose-ringed Parrot

Q84. India lifted South Asian Football Federation SAFF Women's Championship for how many times in a row in March 2019?

(a) 5^(th)
(b) 3^(rd)
(c) 6^(th)
(d) 4^(th)

Q85. As per the Constitution of India, Panchayats at the intermediate level may NOT be constituted in a State having a population not exceeding:

(a) Ten lakhs
(b) Thirty lakhs
(c) Twenty lakhs
(d) Forty lakhs

Q86. The power to enquire into and decide all doubts and disputes arising out of election of the President is vested in:

(a) The Chairman of Rajya Sabha
(b) The Supreme Court
(c) The Election Commission
(d) The Prime Minister of India

Q87. Second generation computers can be characterized largely by their use of _____.

(a) Microprocessors
(b) Integrated circuits
(c) Vacuum tubes
(d) Transistors

Q88. Which force helps swimmers float in water?

(a) Muscular force
(b) Magnetic force
(c) Buoyant force

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(d) Frictional force

Q89. Who among the following invented the computer language, COBOL?

(a) Brendan Eich
(b) John McCarthy
(c) Guido van Rossum
(d) Grace Murray Hopper

Q90. Deficiency of which of the following nutrients is the most common cause of goiters?

(a) Calcium
(b) Iodine
(c) Iron
(d) Vitamin C

Q91. Which of the following is the highest award (in the order of precedence) for military services in India?

(a) Ashok Chakra
(b) Kirti Chakra
(c) Param Vir Chakra
(d) Veer Chakra

Q92. Which country won the '2019 Sultan Azlan Shah Cup Hockey' title?

(a) Australia
(b) India
(c) South Korea
(d) Malaysia

Q93. Which of the following places is famous for Chikankari embroidery?

(a) Indore
(b) Chennai
(c) Lucknow
(d) Hyderabad

Q94. As of May 2019, which player has scored the most international runs in the world in all the three formats (Test Match, ODI Match and T-20 Match) of cricket combined?

(a) Sachin Tendulkar
(b) Ricky Ponting
(c) Virat Kohli
(d) Don Bradman

Q95. On which river is Polavaram irrigation project being built?

(a) Kaveri
(b) Godavari
(c) Son
(d) Tungabhadra

Q96. Who was recently elected as the President of Indonesia for the second term?

(a) Megawati Sukarnoputri
(b) Susilo Bambang Yudhoyono
(c) Joko Widodo
(d) Abdurrahman Wahid

Q97. What is the rank of India on Human Development Index 2018?

(a) 130
(b) 181
(c) 21

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(d) 210

Q98. _____ is a metamorphic rock form characterised by banding caused by segregation of different types of rock, typically light and dark silicates.

(a) Gneiss
(b) Slate
(c) Marble
(d) Quartzite

Q99. Kolleru Lake which is one of the largest freshwater lakes in India is located in which state?

(a) Andhra Pradesh
(b) Rajasthan
(c) Manipur
(d) Jammu & Kashmir

Q100. To which state does the traditional folk dance 'Gotipua' belong?

(a) Chhattisgarh
(b) West Bengal
(c) Bihar
(d) Odisha

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) eccentric

- The correct answer is option 1.
- The meaning of the given idiom 'Mad as a hatter' means 'Crazy or deranged; particularly eccentric'.
- Therefore option 1 'eccentric' which means 'deviating from the norm' gives the same meaning as the given idiom.

Q2. Answer: (c) BCAD

- The correct answer is Option 3.
- The given jumbled sentences are talking about the launch of a rocket. So the answer begins with sentence B as it is talking about the beginning of the rocket launch. Sentences C & A make paired sentences, as C is talking about the speed & is continued by sentence A.
- This sequence is correctly followed by option 3 'BCAD'.

Q3. Answer: (d) delayed

- The correct answer is option 4.
- The meaning of the given words:
- Instant: A very short period of time; a moment.

• Immediate: happening right away, instantly.
• Current: Existing or occurring at the moment.
• Quick: Moving with speed, rapidity.
• Delayed: Postpone, to put off.
• Therefore, out of given alternatives, the word 'delayed' is the most opposite word and all other words form synonyms to the given word.

Q4. Answer: (c) barometer

• The correct answer is Option 3 'barometer' which means 'An instrument for measuring atmospheric pressure'.
• The meaning of the other words:
• Altimeter: An apparatus for measuring altitude.
• Thermometer: An apparatus used to measure temperature.
• Voltmeter: An instrument for measuring electric potential in volts.

Q5. Answer: (d) archaeology

The correct answer is Option 4 i.e. 'Archaeology' which means 'The study of past by excavation and analysis of its material remains'.
• The meaning of other words:
• Anthropology: The study of humanity.
• Psephology: The predictive or statistical study of elections.
• Geology: The science that studies the structure of the earth.

Q6. Answer: (a) convenient

• The correct answer is Option 1.
• The meaning of the given words:
• Handy: Easy to use, useful.
• Convenient: Of or pertaining to convenience.
• Useless: Without use or possibility to be used.
• Clumsy: Awkward, lacking coordination.
• Hard: having a severe property, strong.
• Therefore, out of given alternatives, the word 'handy' & 'convenient' gives the same meaning.

Q7. Answer: (d) resembel

• The correct answer is Option 4.
• The correct spelling is 'resemble' which means 'To be like or similar to something'.
• The meaning of other words:
• Require: To ask for something; to insist upon.
• Reverse: Opposite, contrary.
• Reproduce: To produce an image or copy of.

Q8. Answer: (a) be developed by

The correct answer is option 1)
• Adding water is the agency involved here so, the use of the preposition 'by' is appropriate.
• And if the agency is involved and 'by' is used then, of course, the passive form should be used.
• For that, we need to use the third form of the verb i.e. developed.

Q9. Answer: (d) The plants are looked after well by the new gardener.

The given sentence is in the Active voice.(Subject+verb+object). We must convert it into Passive voice:
• Thus in the Passive voice, The Subject of the Active voice ('The new gardener') is changed into the Object of the Passive voice.
• Similarly, The Object of the Active voice ('the plants') is changed into the Subject (Subject1) of the Passive voice.
In our case of the Present Indefinite (Simple Present) Tense:('looks after')
• The construction of Active Voice here is –

Subject +	Verb¹ +	Object	
The new gardener	looks after	the plants well.	

• Therefore, the construction of Passive Voice here will be:

Subject[1] +	am / is / are +	Verb[3] +	(by + agent)
The plants	are	looked after well	by the new gardener.

Thus, the correct answer is option 4.

Q10. Answer: (c) gesture

• The correct answer is Option 3.

• In the given sentence the action done by the prisoner 'holding fist' is a gesture which means 'An act or a remark made as a formality or as a sign of a attitude.

• Therefore, the word 'gesture' is the suitable word that fits in the given blank.

Q11. Answer: (c) Impede

The correct answer is option 3) i.e. impede.

• Thwart: prevent (someone) from accomplishing something.

• Impede: prevent (someone or something) by obstructing them. Hence, both 'thwart' and 'impede' mean the same, so, they are synonyms.

• Aid: help.

Q12. Answer: (b) one of the favourite teacher

The correct answer is option 2) i.e. one of the favourite teacher.

• A plural noun is used after 'one of the'.

• Hence, 'teachers' will be used in the given sentence.

So, the correct sentence will be: Mrs. Sangeeta Malik is one of the favourite teachers of most children in our school.

Note: Most can be used as a determiner, in general, to refer to a quantity of an unspecific group of people or things.

E.g. Most students ask questions.

There is no need for placing article 'the' in this situation. So there is no error in the last part of the sentence.

Q13. Answer: (b) Father asked me if I was going to keep him waiting all night.

The correct answer is option 2) i.e. Father asked me if I was going keep him waiting all night.

• If the direct speech is in the interrogative form, 'said to' is changed into 'asked'.

• The subject in the reported speech i.e. 'you' is changed according to the object i.e. me of the reporting speech.

• Hence, 'you' will be changed into 'I'.

• And the auxiliary verb in indirect speech will be used according to 'I' i.e. was.

• All these rules are followed in option 2), hence, it will be the correct answer.

Q14. Answer: (d) found violating the law

The correct answer is option 4) i.e. found violating the law.

• In the given sentence the use of the word 'violated' is wrong.

• 'find' is always followed by 'V4'.

• Hence, in the given sentence 'violating' will be used in place of 'violated'.

• So, the sentence after improvement will be: The civic bodies in the capital have formed teams to crack down on coaching centres found violating the law.

Q15. Answer: (a) nerveous

The correct answer is option 1) i.e. nerveous.

• The correct spelling is nervous which means anxious or apprehensive.

• neglect: fail to care for properly.

• nerve: one's steadiness and courage in a demanding situation.

Q16. Answer: (d) beyond one's capacity to understand

The correct answer is option 4.

The meaning of the idiom is- beyond one's capacity to understand.

Q17. Answer: (c) forgo

The correct answer is option 3.

assert- state a fact or belief confidently and forcefully.

resign- voluntarily leave a job or office.

forgo- go without (something desirable).

claim- state or assert that something is the case, typically without providing evidence or proof.

Contextually option 3 is correct.

Q18. Answer: (c) during about

The correct answer is option 3 i.e. during about.

During about both can not be used together because this is making the meaning of the sentence overflows

So, for the sentence grammatically correct we need to remove ABOUT from the sentence.

The correct sentence will be-

I expect to return from Singapore during a week's time.

Q19. Answer: (a) BDAC

The correct answer is option 1 i.e. BDCA.

A can not be the first sentence because this follows part D.

C starts with contradictory conjunction so, this will not be the first sentence.

D follows Part B.

So, the first sentence will be part B. As B is followed by D so BD will be a combination and this is in the option A so this will be our correct answer.

Q20. Answer: (b) communicative

The correct answer is option 2 i.e. communicative.

RESERVED- slow to reveal emotion or opinions.

placid- not easily upset or excited.

communicative- willing, eager, or able to talk or impart information.

modest- unassuming in the estimation of one's abilities or achievements.

quiet- making little or no noise.

The chosen option shows the opposite meaning of the given word.

Q21. Answer: (a) they

• The correct answer is Option 1.

• The correct pronoun to be used in the given blank is 'they' as we are talking about two persons in the passage. The pronoun 'they' is used when referring to more than one person.

• Option 2 is wrong because the pronoun 'we' is used to refer to different groups of people, but always including the speaker.

• Option 3 'them' is wrong because it is the accusative form of 'they', which is used to show the direct object of a verb.

• Option 4 'she' is wrong as it is a singular pronoun whereas we require plural pronoun to fit in the blank.

Q22. Answer: (b) reach

• The correct answer is Option 2.

• The passage is talking about how the two sisters Kushi & Ankita go to their school. Therefore, the word 'reach' which means 'to arrive at a particular destination' is the correct word to fit in the blank.

• The other verbs 'go' & 'arrive' also give the same meaning but their usage in the given sentence 'go the school', 'arrive the school' does not make proper sense. It would be correct to use if 'to' is placed after these verbs.

Q23. Answer: (d) at

• The correct answer is Option 4.

• The correct preposition to be used in the given blank is 'at' which is used to point out specific time, as the time is clearly mentioned in the passage.

• The usage of other prepositions:

• In: Used for unspecific times during a day, month, season, year.

• From: Used to show where somebody/something starts.

• On: Used to express a surface or a contact of something.

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Q24. Answer: (d) than

• The correct answer is Option 4.

• In the given passage, the school bags of two sisters are compared with their torses (human body excluding the head and limbs) which means the bags are heavier than their bodies.

• Therefore, the correct word to be used in the blank is 'than' which is used in the comparison.

Q25. Answer: (b) daily

• The correct answer is Option 2.

• The given passage is talking about two sisters going to school. Therefore, the use of the word 'daily' makes sense in the given blank.

• Other words when used in the given blank do not give meaningful sentence.

Q26. Answer: (a) 8 : 1000

The pattern followed here is:

7 : 729

7 + 2 = 9 and $9^3 = 729$

Similarly,

8 : 1000

8 + 2 = 10 and $10^3 = 1000$

Hence, the correct answer is 8 : 1000.

Q27. Answer: (b) [figure]

Hence, option 2 is the correct answer.

Q28. Answer: (b) [figure]

Sisters can be a mother of another person.

Mothers can be a sister of another person

Both are female.

Here, the relation between Women, sisters and mothers is shown in following diagram.

Hence, option 2 is correct.

Q29. Answer: (d) Joints

Glaucoma is the disease of the eye.

Similarly, Arthritis is the disease of the joints

Hence, the correct answer is Joints.

Q30. Answer: (a) ÷ and +

The given expression is:

20 + 5 × 3 ÷ 3 – 1 = 14

1) Interchanging the sign ÷ by +

20 ÷ 5 × 3 + 3 – 1 (By applying BODMAS rule)

= 4 × 3 + 3 -1

= 12 + 3 -1

= 15 – 1

= 14

2) Interchanging the sign ÷ by ×

20 + 5 ÷ 3 × 3 – 1 (By applying BODMAS rule)

= 20 + 5 - 1

= 25 - 1

= 24 ≠ 14

3) Interchanging the sign × by +

20 × 5 + 3 ÷ 3 – 1 (By applying BODMAS rule)

= 20 × 5 + 1 - 1

= 100 + 1 - 1

= 101 – 1

= 100 ≠ 14

4) Interchanging the sign × by -

20 + 5 - 3 ÷ 3 × 1 (By applying BODMAS rule)

= 20 + 5 - 1 × 1

= 20 + 5 - 1

= 25 – 1

= 24 ≠ 14

Hence, the correct answer is ÷ and +.

Q31. Answer: (c) 182

179, 173 and 181 are prime numbers but 182 is a composite number.

Hence, 182 is the odd one among the given options.

Q32. Answer: (b) Larva

Bleat – is the sound of sheep

Larva – is an immature form of an insect

Croak – is the sound of frog

Bark – is the sound of dog

Hence, the correct answer is Larva.

Q33. Answer: (c) DWZLOKD

The pattern followed here is:

Similarly,

Hence, the code for EXAMPLE is “DWZLOKD”.

Q34. Answer: (d) 229193152119

The pattern followed here is:

Similarly,

Hence, the code for VISCOUS is “229193152119”.

Q35. Answer: (d) LSH

The pattern followed here is:

Hence, the letter cluster that will come next is LSH.

Q36. Answer: (d) [figure]

Hence, the figure in option 4 is the correct answer.

Q37. Answer: (a) Paternal Uncle

A is			
•	–	×	÷
Brother	Husband	Mother	Sister
of B			

Statement: P + R ÷ T – K × O × C

P + R means “P is the brother of R”. R ÷ T means “R is the sister of T”. T – K means “T is the husband of K”. K × O means “K is the mother of O”. O × C means “O is the mother of C”

Hence, P is the Paternal Uncle of O.

Q38. Answer: (b) [figure]

The pattern followed here is:

One shape is introduced clockwise in each step starting from the upper-left quadrant and it is shaded in the next step and unshaded in the remaining steps.

The order of introduction of shapes: triangle (upper-left quadrant), square (upper-right), pentagon (lower-right), hexagon (lower-left)

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Thus, the required figure will have a new shape (hexagon) in the lower-left quadrant and the shape in the lower-right quadrant will be shaded.

Hence, the figure in option 2 will be the next one in the series.

Q39. Answer: (c) 3

The face of 4 dots is common to both the positions of the given dice.

1 and 5 are adjacent to 4 in the first position.

2 and 6 are adjacent to 4 in the second position.

Now, the only number left is 3.

Therefore, there must be three dots in the face opposite to that of the face containing four dots.

Hence, if four dots are at the bottom, then three dots will be on the top.

Q40. Answer: (a) DPVUUHW

The pattern followed here is:

Similarly,

Hence, the code for SMARTER is DPVUUHW.

Q41. Answer: (d) CDFHCDK

1) H C D E P C K H H C D E P D K F H C C E P C K F → doesn't follow any pattern

2) H D C E P C K F H C D E P F K F H C D E P C D F → doesn't follow any pattern

3) H C C E P C K F H C D E P F K F H C D E P C D F → doesn't follow any pattern

4) H C D E P C K F / H C D E P C K F/ H C D E P C K F → follows a pattern i.e., HCDEPCKF

Hence, the sequence CDFHCDK will complete the given series.

Q42. Answer: (d) 29

Total triangles are:

AFG, AFR, AGR, AHS, AIS, AHI, ABT, AOT, ABO, EJU, EUK, EJK, ELV, EMV, ELM, EOW, EDW, EOD, CPY, CQY, CQP, CNX, CMX, CMN, CDW, COW, CDO, COE, CDE.

Hence, the total triangles are 29.

Q43. Answer: (d) [figure]

The question figure is embedded in the below figure:

Hence, the figure in option 4 is the correct answer.

Q44. Answer: (d) LMPS

The pattern followed here is:

Hence, LMPS is different from other options.

Q45. Answer: (c) 91

First team (suppose A) will play 13 matches with each other.

Second team (suppose B) will play 12 matches and not 13 because team B has to play a match with a team only once. If it plays 13 matches then it is repeating its match with team A.

Like this the last team will play only one match

Hence, the calculation will be

13 + 12 + 11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 91

Or, you can use direct formula,

(14 × 13)/2 = 91. where 14 is the no. of teams.

Hence, 91 matches will be played in the tournament.

Q46. Answer: (a) Conclusion I and either conclusion II or III follow.

Least possible venn diagram is shown below:

Conclusions:

I. Some cakes are breads → True (All breads are cakes.)

II. Some breads are eggs → False (it is possible but not definite)

III. No bread is an egg → False (it is possible but not definite)

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Conclusion II and III form a complementary pair.
Hence, Conclusion I and either conclusion II or III follow.

Q47. Answer: (a) RSXO

The pattern followed here is:
Similarly,
Hence, RSXO is the correct answer.

Q48. Answer: (d) 4, 3, 1, 2, 5

The steps in the completion of the organization of the World Cup tournament are as follows:
4. Finalising the participating teams
3. Organising the World Cup
1. World Cup semi-final matches
2. World Cup finals match
5. Winner of the World Cup
Hence, the meaningful order is 4, 3, 1, 2, 5.

Q49. Answer: (c) Vehicles : Diesel

Fans operate with the help of electricity
Similarly,
Vehicles operate with the help of Diesel.
Hence, Vehicles : Diesel is the correct answer.

Q50. Answer: (c) 45 years

Total age of mother and son is
Mother + Son = 60 …(i)
Difference in age of mother and son is
Mother - Son = 30 …(ii)
Adding equation (i) and (ii)
Mother + Son = 60
Mother - Son = 30
Mother = 45
Hence, the age of mother is 45 years.

Q51. Answer: (c) 361

Given:
x + y + z = 19
x2 + y2 + z2 = 133
Formula used:
$(x + y + z)^2 = x2 + y2 + z2 + 2xy + 2yz + 2zx$
$x3 + y3 + z3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$
Calculation:
$(x + y + z)^2 = 19^2$
$\Rightarrow x^2 + y^2 + z^2 + 2(xy + yz + zx) = 361$
$\Rightarrow 133 + 2(xy + yz + zx) = 361$
$\Rightarrow 2(xy + yz + zx) = 361 - 133 = 228$
$\Rightarrow xy + yz + zx = 114$
$x^3 + y^3 + z^3 - 3xyz$
$\Rightarrow (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx) = 19 \times (133 - 114) = 361$

Q52. Answer: (d) 5 : 6

Calculation:
Total expenditure of the company in 2014, 2016 and 2017
$\Rightarrow 175 + 275 + 300 = 750$

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Total income of the company in 2014, 2016 and 2017

=> 225 + 325 + 350 = 900

The ratio of total expenditure to total income of the company in 2014, 2016 and 2017 = 750 : 900 = 5 : 6

Q53. Answer: (d) 2015

Calculation:

Expenditure in year 2014 = 175

Expenditure in year 2015 = 250

Percentage increment = (250 - 175) × 100/175 = 42.85%

In year 2015, expenditure more than 40% as compared to the Expenditure in the previous year.

Q54. Answer: (a) -2

Given:

8(x + y)3 - (x - y)3 = (x + 3y) (Ax2 + Bxy + Cy2)

Formula used:

a3 - b3 = (a - b)(a2 + ab + b2)

Calculation:

8(x + y)3 - (x - y)3

=> {2(x + y)}³ - (x - y)³

=> [2(x + y) - (x - y)] [(2(x + y))² + 2(x + y) × (x - y) + ((x - y))²]

=> (x + 3y)(4x²+ 4y² + 8xy +2x² - 2y² + x² + y² - 2xy)

=> (x + 3y)(7x² + 6xy + 3y²)

Therefore,

8(x + y)³ - (x - y)³= (x + 3y) × (7x2 + 6xy + 3y2).

Now the Value of (A - B - C) = 7 - 6 - 3

=> -2

Q55. Answer: (c) 50

Calculation:

ΔABC ~ ΔDBE so,

(AB/DB)² = (BC/BE)2 = (AC/DE)2 = (area of ΔABC/area of ΔDBE)

=> (5/3)² = area of ΔABC/18

=> Area of ΔABC = 50

Q56. Answer: (c) 6 cm

Shortcut Trick

For similar triangles, the ratio of their areas is equal to the square of the ratio of their corresponding sides.

√(Area ΔABC / Area ΔQPR) = AC / QR

√(9 / 4) = 9 / QR

3 / 2 = 9 / QR

3 × QR = 18

QR = 6 cm

Therefore The correct answer is 6 cm.

Alternate Method

Given:

ΔABC ~ ΔQPR, Area(ΔABC)/Area(ΔQPR) = 9/4, AB = 12 cm, BC = 6 cm, AC = 9 cm

Formula Used:

If Δ1 ~ Δ2, then Area(Δ1) / Area(Δ2) = (Side1 / Corresponding Side2)²

Calculations:

Since ΔABC ~ ΔQPR, the corresponding sides are determined by the order of vertices:

=> AB corresponds to QP

=> BC corresponds to PR

=> AC corresponds to QR

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Using the property of areas of similar triangles:

=> Area(ΔABC) / Area(ΔQPR) = (AC / QR)²

=> 9 / 4 = (9 / QR)²

Taking square root on both sides:

=> √(9 / 4) = 9 / QR

=> 3 / 2 = 9 / QR

=> 3 × QR = 9 × 2

=> 3 × QR = 18

=> QR = 18 / 3

=> QR = 6 cm

Therefore The correct answer is 6 cm.

Additional Information

Ratio of Areas Theorem

The ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding altitudes, medians, or angle bisectors.

Perimeter of Similar Triangles

The ratio of the perimeters of two similar triangles is equal to the ratio of their corresponding sides: P1 / P2 = s1 / s2.

SSS Similarity Criterion

If the corresponding sides of two triangles are in the same ratio, then their corresponding angles are equal and the triangles are similar.

Q57. Answer: (a) Rs. 5760

Given:

C.I. = Rs. 4167

Time period = 3 years

Rate of interest = 15%

Formula used:

In case of compound interest,

C.I. = P{(1 + R/100)^T - 1}

In case of Simple interest,

S.I. = (P × R × T)/100

where P → Principal

R → Rate of interest

T → Time period

Calculation:

C.I = P × [(1 + 15/100)3 - 1]

4167 = P × [(1.15)³ - 1]

=> 0.52P = 4167

=> P = 8000

Simple interest = 8000 × 24/5 × 15/100 = 5760

Q58. Answer: (c) 7/2

Formula used:

cosec²θ - 1 = cot²θ

Calculation:

=> [1/(1 + cosecθ) - 1/(1 - cosecθ)]cos θ = 2

=> [frac1 - cosecθ - 1 - cosecθ 1 - cosec²θ]cosθ = 2

=> [frac - 2 cosecθ 1 - cosec²θ]cos θ = 2

=> [frac2cosecθ cosec²θ - 1]cosθ = 2

=> [frac2/sinθcot^(2)θ]cosθ = 2

=> [frac2/sinθfraccos²θ sin²θ]cosθ = 2

=> tanθ = 1

So, θ = 45°

To find,
$Sin^2\theta + cot^2\theta + sec^2\theta$
$\Rightarrow Sin^2 45° + cot^2 45° + sec^2 45°$
$\Rightarrow 1/2 + 1 + 2 = 7/2$
Additional Information

Q59. Answer: (a) 140

Given:
S.P. of an article = X
If S..P. = 331/3 %, then, loss = 20%
Formula used:
S.P. = {C.P. × (100 - loss%)}/100
Profit = S.P. - C.P.
Calculation:
Let the C.P. be Rs. 100.
According to question,
$\Rightarrow$ 33.33% = 80
$\Rightarrow$ 100% = Rs. 240
Profit = 240 - 100 = 140
Profit percentage = 140 × 100/100 = 140%

Q60. Answer: (a) 74°

According to question,
AB is the diameter.
OC and OD are radius of the circle.
angle BOC = 48° and angle AOD = 100°.
Here,
angle AOD + angle BOD = 180° (Sum of angles on a straight line is 180°)
angle BOD = 180° - 100° = 80°
Now,
in triangle OCD,
OC and OD are radius of the circle and are equal.
Therefore angle OCD = angle ODC
angle DOC = 80 + 48 = 128°
Now,
angle DOC + angle OCD + angle ODC = 180°
2angle OCD = 180 - 128 = 52°
angle OCD = 52/2 = 26°
Now,
According to theorem,
angle OCD + angle COB = angle CEB (Sum of interior opposite angles is
equal to the exterior angle)
angle CEB = 48 + 26 = 74°

Q61. Answer: (d) 30

Given:
Speed of Train1 = 72km/h
Speed of Train2 = 108km/h
Time taken to cross each other = 10sec
Formula used:
If the two bodies having speed S1 and S2, travelling in same direction, then their Relative speed = S1 - S2
If the two bodies having speed S1 and S2, travelling in opposite direction, then their Relative speed = S1 + S2
Time = Distance traveled / Speed

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Calculation:
Relative speed = 72 + 108 = 180 km/hr
But 1 km/hr = 5/18 m/s
Relative speed = (180) × (5/18) = 50 m/s
When both train (length l) crosses each other
Time = distance/speed
10 = (l + l)/50
l = 250 m
Therefore, the time taken to cross the platform by the first train
t = (250 + 350)/[72 × (5/18)]
t = 600/20 = 30 sec.
The time taken to cross the platform is 30 sec.

Q62. Answer: (c) 22.4

Calculation:
Expenditure in 2015 = 250
Total income of company = 225 + 280 + 325 + 350 + 350 = 1530
Average income of company = 1530/5 = 306
Required percentage = (306 - 250) × 100/250 = 22.4%

Q63. Answer: (a) 9900

Given:
The length of a rectangular park = 20m more than breadth
the cost of fencing the park at Rs. 53 per meter = Rs. 21200
Formula used:
Perimeter of rectangle = 2(l + b)
Area of rectangle = l × b
where l → length and b → breadth
Calculation:
Let the breadth of the park be x.
Length = 20 + x
Perimeter of park = 21200/53
=> 2(x + 20 + x) = 400
=> x = 90
Length = 20 + 90 = 110m
Area of park = 110 × 90 = 9900 m2

Q64. Answer: (b) 28

For divisible by 72, number should be divisible by 2 and 3.so,
=> 4 + 6 + 7 + 8 + 9 + x + 5 + 3 + 1 + y = 43 + x + y
We take the maximum value of x = 9
So, 43 + 9 + y = 52 + y
We take the value of y = 2 for divisible by 2 and 3.
=> 2x + 5y = 2 × 9 + 5 × 2 = 28

Q65. Answer: (c) Rs. 700

Given:
Discount = 30% and 20%
M.P. = Rs. 1250
Formula used:
Successive Discount = (x + y - xy/100)%
S.P. = M.P. × (100 - Discount%)/100
Calculation:

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S.P. = 1250 × (100 - 30)% × (100 - 20)%
=> 1250 × 70% × 80% = Rs. 700

Q66. Answer: (d) 19/12

Shortcut Trick
Substitute the standard trigonometric values directly into the expression.
$4 \times (1/\sqrt{3})^2 + 1/4 \times (1)^2 + (1/8) \times [3 \times (1/2) / (\sqrt{3}/2 \times \sqrt{3}/2)] - (1/2 \times 1/2)$
$4/3 + 1/4 + (1/8 \times (3/2)/(3/4)) - 1/4$ => $4/3 + 1/4 + (1/8 \times 2) - 1/4$
$4/3 + 1/4 + 1/4 - 1/4 = 4/3 + 1/4 = 19/12$.
Therefore The correct answer is 19/12.
Alternate Method
Given values:
$\tan 30° = 1/\sqrt{3}$, $\sin 90° = 1$, $\cot 30° = \sqrt{3}$, $\cos 45° = 1/\sqrt{2}$, $\sin 60° = \sqrt{3}/2$, $\cos 30° = \sqrt{3}/2$, $\cos 60° = 1/2$, $\sin 30° = 1/2$.
Expression: $4\tan^2 30° + 1/4 \sin^2 90° + (1/8) \times (\cot^2 30° \cos^2 45° / \sin 60° \cos 30°) - \cos 60° \sin 30°$
=> $4 \times (1/\sqrt{3})^2 + 1/4 \times (1)^2 + (1/8) \times [(\sqrt{3})^2 \times (1/\sqrt{2})^2 / (\sqrt{3}/2 \times \sqrt{3}/2)] - (1/2 \times 1/2)$
=> $4 \times (1/3) + 1/4 + (1/8) \times [(3 \times 1/2) / (3/4)] - 1/4$
=> $4/3 + 1/4 + (1/8) \times [(3/2) / (3/4)] - 1/4$
=> $4/3 + 1/4 + (1/8 \times 2) - 1/4$
=> $4/3 + 1/4 + 1/4 - 1/4$
=> $4/3 + 1/4 = (16 + 3) / 12 = 19/12$.
Therefore The correct answer is 19/12.
Additional Information
Trigonometric Ratios of Complementary Angles
Note that $\sin 60° = \cos 30°$ and $\sin 30° = \cos 60°$. These are based on the identity $\sin \theta = \cos(90° - \theta)$.
Standard Trigonometric Identities
Common identities include $\sin^2\theta + \cos^2\theta = 1$ and $1 + \tan^2\theta = \sec^2\theta$.

Q67. Answer: (b) 1.2

Concept used:
Calculation:
5 ÷ 10 of 10 × 4 + 4 ÷ 4 of 4 × 10 - (10 - 4) ÷ 16 × 4 = ?
=> 5 ÷ 100 × 4 + 4 ÷ 16 × 10 - 6 ÷ 16 × 4 = ?
=> 1/5 + 10/4 - 3/2 = ?
=> ? = 24/20 = 1.2

Q68. Answer: (b) Rs. 300

Given:
S.P. of an article = Rs. 360
Discount = 20%
If a discount not allowed, then Profit% = 50%
Formula used:
M.P. = {S.P. × 100}/{(100 - Discount%)}
If profit % is given, then C.P. = S.P. × 100/(100 + profit%)
Calculation:
Marked price = 360 × 100/80 = 450
If discount is not given, then S.P. = Rs. 450
Profit = 50%
=> Cost price = 450 × 100/150 = Rs. 300

Q69. Answer: (c) 15 cm

Let the length of CD be x.
x + x - 2 = 12
=> x = 7

Length of BD = 7 - 2 = 5
From angle bisector property -
AB/5 = 21/7
=> AB = 15 cm

Q70. Answer: (a) 26

Calculation:
The total income of the company in 2015, 2017 and 2018
=> 280 + 350 + 350 = 980
The total expenditure in the five years
=> 175 + 250 + 275 + 300 + 325 = 1325
Required percentage = 100 × (1325 - 980)/1325 = 26.03%

Q71. Answer: (d) 30°/7

Given:
tan x = cot (60° + 6x)
Concept used:
tanθ = cos(90 - θ)
Calculation:
cot (90° - x) = cot (60° + 6x)
=> 90° - x = 60° + 6x
=> 7x = 30
=> x = 30°/7

Q72. Answer: (a) 7

it is given that,
$9a^2 + 16b^2 + c^2 + 25 = 24(a + b)$
$=> 9a^2 + 16b^2 + c^2 + 25 - 24a - 24b = 0$
$=> (3a)^2 - 24a + 16 + (4b)^2 - 24b + 9 + c^2 + = 0$
$=> (3a)^2 - 2(3a)(4) + (4)^2 + (4b)^2 - 2(4b)(3) + 3^2 + c^2 = 0$
using formula,
$x^2 - 2xy + y^2 = (x - y)^2$
$(3a)^2 - 2(3a)(4) + (4)^2 = (3a - 4)^2$
$(4b)^2 - 2(4b)(3) + (4)^2 = (4b - 3)^2$
now, $(3a)^2 - 2(3a)(4) + (4)^2 + (4b)^2 - 2(4b)(3) + 3^2 + c^2 = (3a - 4)^2 + (4b - 3)^2 + c^2 = 0$
$=> (3a - 4)^2 + (4b - 3)^2 + c^2 = 0$
this is possible only when
3a = 4, 4b = 3 and c = 0
so, 3a + 4b + 5c = 4 + 3 + 0 = 7
hence, value of 3a + 4b + 5c = 7

Q73. Answer: (b) 432

Let the price of an article be Rs. x.
The price of an article at the end of 4^(th) year = x × 1.2 × 1.2 × 1.2 × 1.2
The price of an article at the end of 3^(rd) year = x × 1.2 × 1.2 × 1.2
Difference of the third and fourth years = 259.20
=> (x × 1.2 × 1.2 × 1.2 × 1.2) - (x × 1.2 × 1.2 × 1.2) = 259.20
=> x × 1.2 × 1.2 × 1.2 × 0.2 = 259.2
=> x × 1.2 × 1.2 = 1080
40% of the price (in Rs.) at the end of second year = x × 1.2 × 1.2 × 40/100 = 1080 × 40/100 = Rs. 432

Q74. Answer: (a) 84

Urban students in the class = 80 × 5/8 = 50
Rural students in the class = 80 × 3/8 = 30

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Let the average score of urban students be x.

So, average score of rural students = 1.4x

Total score of urban students = 50x

Total score of rural students = 30 × 1.4x = 42x

Total score of all students = 69 × 80 = 5520

=> 50x + 42x = 5520

=> x = 5520/92 = 60

Average score of rural students = 1.4 × 60 = 84

Q75. Answer: (d) 3

Given:

18 men can complete a work in 9 days

No.of men joined after 5 days = 6

Concept used:

(M1 × d1× h1)/w1 = (M2× d2 × h2)/w2

Where M = no. of men, D = no of days, H = no. of hours, and w amount of work

Calculation:

=> 18 × 9 = 18 × 5 + 24 × d

=> d = 3 days

Q76. Answer: (a) Amitabh Bachchan

The correct answer is option 1 i.e Amitabh Bachchan

Sayaji Ratna Award:

• This award is given annually to the personalities for their outstanding contribution in the fields of business, sports, arts, humanity, education, governance and medicine.

• Amitabh Bachchan was awarded the third Sayaji Ratna Award, established in the memory of erstwhile Baroda ruler Sayajirao Gaekwad III.

• Earlier this award was given to Infosys co-founder N R Narayana Murthy and to industrialist Ratan Tata.

Q77. Answer: (b) 22 May

The correct answer is option 2 i.e 22 May

• May 22 is celebrated as the International Day for Biological Diversity (IDB) to increase understanding and awareness of biodiversity issues.

• The theme for International Day of Biodiversity 2019 is Our Biodiversity, Our Food, Our Health.

Name of the Event	Date
International Day for Biological Diversity	22 May
National Panchayati Day	24 April

Q78. Answer: (c) Gresham's law

The correct answer is option 3 i.e Gresham's law

• Gresham's law states that “bad money drives out the good money”.

• Good money here means any currency or coin whose accepted value (legal tender value) and the value of the commodity from which it is made does not differ much.

• Bad money means the coin or currency whose accepted value (legal tender value) is much higher than the value of the commodity from which it is made.

• For example-

• If a coin has a legal tender value of Rs 100 and the silver metal worth Rs 100 is used to make the coin, then it will be considered as good money in Gresham’s law.

• If a coin has a legal tender value of Rs 100 and the alloy worth Rs 5 is used to make the coin, then it will be considered as bad money in Gresham’s law.

• Thus, he said that if both kinds of money are available with the public, having the same legal tender value, then people would start hoarding good money and would use bad money for the transaction.

• So, as per our example, people will start hoarding silver coins for their intrinsic value and start using alloy coins for transactions.

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• Thus, eventually, bad money will drive out good money.

Pareto efficiency:

• Pareto's efficiency is defined as the economic situation when the circumstances of one individual cannot be made better without making the situation worse for another individual.

Marshall's scissors analysis

• This combined the demand and supply i.e utility and cost of production.

Multiplier Effect

• The multiplier effect refers to the increase in final income arising from any new injection of spending.

Q79. Answer: (b) Akbar

The correct answer is option 2 i.e Akbar

Battle of Haldighati:

• The Battle of Haldighati was fought in the year 1576 AD.

• The battle was fought between Rana Pratap Singh, the Hindu Rajput ruler of Mewar in Rajasthan and Raja Man Singh of Amber, the general of the Mughal Emperor Akbar.

• At present Haldighati is a tourist spot in Rajasthan.Haldighati is a mountain pass in the Aravalli Range of Rajasthan in western India which connects Rajsamand and Pali districts

Q80. Answer: (c) Celestial Bodies

The correct answer is option 3 i.e Celestial Bodies

• Celestial Bodies book was written by Jokha Alharthi, the first Gulf writer to win the award and the first female writer from Oman to be translated into English.

• Celestial Bodies follows the story of three sisters in Oman as the cultural landscape of the nation slowly evolves.

• The book confronts Oman's history of slavery, which was abolished in the country only in 1970

Name of the Book	Author
The Years	Virginia Woolf
Milkman	Anna Burns
Celestial Bodies	Jokha Alharthi
The Pine Islands	Marion Poschmann

Q81. Answer: (c) Bihar

The correct answer is Bihar.

• Census 2011 is the 15th census of India and 7th after the independence.

• The motto of the 2011 Census is " Our Census, Our future".

• The first census took place in 1872.

Parameter	State
Most populous state	Uttar Pradesh
Least populous state/UT	Lakshwadeep
Highest Population UT	Delhi
Highest Sex Ratio	Kerala
Highest Literacy	Kerala
Highest Density	Bihar

Q82. Answer: (c) Shuja-ud-Daula

The correct answer is option 2 i.e Shuja-ud-Daula

Rohilla War

• The first Rohilla war was fought in the year 1774.

• The war was fought between the Shuja-ud-Daula, Nawab of Awadh and the Rohillas (Afghans)

• The Nawab was supported by the British East India Company under the governor-general of Bengal, Warren Hastings.

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• In the war, the Rohillas were defeated.

Q83. Answer: (d) Rose-ringed Parrot

The correct answer is option 4 i.e Rose-ringed Parrot

Name of the state bird	States
Great Hornbill	Kerala, Arunachal Pradesh
Sarus Crane	Uttar Pradesh
Black Crested Bulbul	•
Rose-ringed Parrot	Andhra Pradesh

Q84. Answer: (a) 5^(th)

The correct answer is option 1 i.e 5^(th)

SAFF Women's Championship:

• The SAFF 2019 Women's Championship is the 5^(th)edition of the SAFF. 2019 edition was hosted by Nepal.

• The current SAFF members are Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.

• It is held every two years. India Won all the edition of the 2019 tournament.

• India defeated Nepal to win the fifth title in a row.

Q85. Answer: (c) Twenty lakhs

The correct answer is option 3 i.e Twenty lakhs

• Panchayat" means an institution of self-government constituted under article 243B of the Indian Constitution for the rural areas.

Article 243(1)

• They shall be constituted in every State, Panchayats at the village, intermediate and district levels in accordance with the provisions. Panchayats at the intermediate level may not be constituted in a State having a population not exceeding twenty lakhs.

Q86. Answer: (b) The Supreme Court

The correct answer is option 2 i.e The Supreme Court

Article 71 of Constitution: Matters relating to, or connected with, the election of a President or Vice-President

• All doubts and disputes arising out of or in connection with the election of a President or Vice-President shall be inquired into and decided by the Supreme Court whose decision shall be final.

• If the election of a person as President or Vice-President is declared void by the Supreme Court, acts done by him in the exercise and performance of the powers and duties of the office of President or Vice-President, as the case may be, on or before the date of the decision of the Supreme Court shall not be invalidated by reason of that declaration.

• Subject to the provisions of this Constitution, Parliament may by law regulate any matter relating to or connected with the election of a President or Vice-President.

Q87. Answer: (d) Transistors

The correct answer is option 4 i.e Transistors

Generation	Period	Description
First	1946-59	Vacuum Tube Based
Second	1959-65	Transistor
Third	1965-71	Integrated Circuit
Fourth	1971-80	VLSI Microprocessor
Fifth	1980-Present	ULSI Microprocessor

Q88. Answer: (c) Buoyant force

The correct answer is option 3 i.e Buoyant force

CONCEPT:

• Archimedes' principle states that when a body immersed in a fluid, whether fully or partially submerged, the upward buoyant force that is exerted on it, is equal to the weight of the fluid that the body displaces.

• When an object is submerged in fluid fully or partially, an upward force is exerted on the body. This force is known as the

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buoyant force. Fbuoyant = ρf Vf g

where ρf is the density of the fluid in which the object is submerged, Vf is the volume of the displaced fluid (or volume of the object that is submerged inside the fluid) and g is the gravitational acceleration.

• When an object is submerged in fluid fully or partially there are two forces, 1. buoyant force 2. weight of the object

and weight of object W = mg = ρo Vo g where ρo is the density of the object, Vo is the volume of the object, g is the gravitational acceleration.

• Laws of Floatation: The three conditions required for the body to float on water are:

1. The weight of the body in the figure is equal to the buoyant force. (c) (d)

2. The weight of the body is greater than the weight of the fluid displaced i.e. buoyant force. (b)

3. The weight of the body is less than the weight of the fluid displaced i.e. buoyant force. (a)

Buoyant Force:

• Buoyancy or upthrust is an upward force which is exerted by a fluid that opposes the weight of an immersed object.

• When a body is wholly or partially immersed in a fluid at rest, the fluid exerts pressure on the surface of the body in contact with the fluid. The pressure is greater on lower surfaces of the body than on the upper surfaces as the pressure in a fluid increases with depth. The resultant of all the forces is an upward force called buoyant force.

EXPLANATION:

From the above explanation, we can see that,

The upward force applied by the fluid on the object when it is submerged in it is called buoyant force.

How it helps the swimmers:

• Buoyancy is the upward force that acts on the swimmer while they are in the water. The pressure from beneath the swimmer is much greater than the pressure above them which allow the swimmer to float. At the surface of the pool, there is less resistance as the fluid is more resistant than air.

• For an object to float, its buoyant force needs to be greater or equal to the weight of the water.

• When an object is floating on water surface then weight of an object is Zero

• Fnet = FGravity – FBuoyant = 0 [FGravity = FBuoyant]

Q89. Answer: (d) Grace Murray Hopper

The correct answer is option 4 i.e Grace Murray Hopper

Name of the Scientist	Discoveries
Brendan Eich	JavaScript Programming language
John McCarthy	Artificial Intelligence
Guido van Rossum	Python Programming language
Grace Murray Hopper	COBOL

Q90. Answer: (b) Iodine

The correct answer is option 2 i.e Iodine

Name of Nutrient Deficiency	Disease
Calcium	Osteoporosis
Iodine	Goitres
Iron	Anaemia
Vitamin C	Scurvy

Q91. Answer: (c) Param Vir Chakra

The correct answer is option 1 i.e Param Vir Chakra

• Gallantry Award is meant for exceptional courage, valour and dignity. In India, Gallantry award are given to the personnel of the forces for their exceptional bravery.

• After Independence, the three Gallantry awards came into force i.e. the Paramvir Chakra, the Mahavir Chakra and the Veer Chakra.

• The Gallantry awards are announced twice in a year i.e on Republic day and on Independence day.

• The order of Precedence of these awards is

1. Param Vir Chakra
2. Ashoka Chakra
3. Mahavir Chakra
4. Kirti Chakra
5. Vir Chakra
6. Shaurya Chakra

Param Vir Chakra:

• The Param Vir Chakra is awarded for most conspicuous bravery or some daring or pre-eminent act of valour or self-sacrifice, in the presence of the enemy, whether on land, at sea, or in the air.

• Param Vir Chakra means "Wheel of the Ultimate Brave".

Ashok Chakra:

• The Ashok Chakra is India's highest peacetime military decoration awarded for valour, courageous action or self-sacrifice away from the battlefield.

• It is the peacetime equivalent of the Param Vir Chakra.

Kirti Chakra:

• The Kirti Chakra is an Indian military decoration awarded for valour, courageous action or self-sacrifice away from the field of battle.

• It may be awarded to civilians as well as military personnel, including posthumous awards. It is the peacetime equivalent of the Maha Vir Chakra

Vir Chakra:

• Vir Chakra is an Indian gallantry award presented for acts of gallantry in the presence of the enemy on the battlefield.

Q92. Answer: (c) South Korea

The correct answer is option 3 i.e South Korea.

• Sultan Azlan Shah cup is associated with Hockey.

• The 2019 Sultan Azlan Shah Cup was the 28th edition of the Sultan Azlan Shah Cup. It was hosted by Malaysia.

• Total 6 teams participated in the tournament.

• South Korea beat India by 4-2 in the penalty shootout to lift the title. It was their third title in the history of the tournament.

Q93. Answer: (c) Lucknow

The correct answer is option 3 i.e Lucknow

Name of the place	Famous for
Indore	Cotton Textiles, Bangles
Chennai	Automobile and software industry
Lucknow	Chikankari embroidery, dasheri mangoes
Hyderabad	Charminar

Q94. Answer: (a) Sachin Tendulkar

The correct answer is option 1 i.e Sachin Tendulkar

• Top 5 batsman who has scored the most international runs are: Sachin Tendulkar, KC Sangakkara, Ricky Ponting, DPMD Jayawardene, JH Kallis

Name of the player	Country for which they played
Sachin Tendulkar	India
Ricky Ponting	Austrailia
Virat Kohli	India
Don Bradman	Australia

Cricket Governing Body:

• International Cricket Council

• HQ: Dubai, United Arab Emirates

• Chairperson: Shashank Manohar

• CEO: Manu Sawhney

Q95. Answer: (b) Godavari

The correct answer is option 2 i.e Godavari

Polavaram Project:

• Polavaram Project, is a multi-purpose National project on the Godavari River in the West Godavari District in Andhra Pradesh.

• The Polavaram project is intended to stabilise the ayacut and water supply for two crops in a year.

• The project proposes to supply irrigation water for 7.2 lakh acres, generate 960 MW hydropower and lift 80 TMC of water to the Prakasam Barrage on Krishna river. It also aims to supply 23.44 TMC of drinking water to Visakhapatnam.

• Recently, the Polavaram irrigation project created two Guinness world records for “pouring the highest amount of concrete" and “largest continuous concrete pour in 24 hours".

River	City
Kaveri	Thiruchirapalli, Erode
Godavari	Gangakhed, Ramagundam, Rajahmundry, Nashik, Nanded etc.
Son	Sidhi, Dehri, Patna, Daudnagar
Tungabhadra	Hampi, Hosapete, Kurnool, Mantralayam

Q96. Answer: (c) Joko Widodo

The correct answer is option 3 i.e Joko Widodo

Name of the country	Capital	President
Indonesia	Jakarta (Now East Borneo)	Megawati Sukarnoputri (former President)(2001-2004)
Indonesia	Jakarta (Now East Borneo)	Susilo Bambang Yudhoyono (2004-2014)
Indonesia	Jakarta (Now East Borneo)	Joko Widodo (Present)
Indonesia	Jakarta (Now East Borneo)	Abdurrahman Wahid (1999-2001)

Q97. Answer: (a) 130

• India climbed one spot to 130 out of 189 countries in 2018 human development rankings.

• India inched up one spot to rank 129th out of 189 countries on the 2019 Human Development Index (HDI) released by the United Nations Development Programme (UNDP) in December 2019.

• The rank of top five countries are:

1. Norway
2. Switzerland
3. Ireland
4. Germany
5. Hongkong

Q98. Answer: (a) Gneiss

The correct answer is option 1 i.e Gneiss

Metamorphic Rocks: These are those types of rocks that result from the alteration of preexisting rocks in response to changing environmental conditions, such as variations in temperature, pressure, and mechanical stress,

Gneiss

• It is a metamorphic rock form characterized by banding caused by segregation of different types of rock, typically light and dark silicates.

• The "gneissic texture" is the segregation of light and dark minerals.

Slate:

• Slate is a fine-grained, foliated metamorphic rock created by the alteration of shale or mudstone by low-grade regional metamorphism.

• It can be used for the following purpose like roofing, flooring, and flagging because of its durability and attractive appearance.

Marble:

• It is a metamorphic rock that forms when limestone is subjected to the heat and pressure of metamorphism. It contains the mineral calcite ($CaCO_3$).

Quartzite:

• Quartzite is a metamorphic rock formed when quartz-rich sandstone or chert has been exposed to high temperatures and pressures.

Q99. Answer: (a) Andhra Pradesh

The correct answer is option 1 i.e Andhra Pradesh

• Kolleru Lake is one of the largest freshwater lakes in India located in state of Andhra Pradesh.

• Kolleru is located between Krishna and Godavari deltas

Name of the state	Famous lake
Andhra Pradesh	Kolleru Lake
Rajasthan	Lake Pichola
Manipur	Loktak Lake
Jammu and Kashmir	Wular Lake

Q100. Answer: (d) Odisha

The correct answer is option 4 i.e Odisha

Name of the state	Folk Dance
Chattisgarh	Raut Nacha
West Bengal	Chhau dance
Bihar	Bideshiya, Domkach
Odisha	Gotipua

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