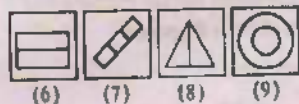
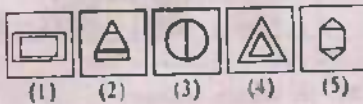


PART-I
GENERAL INTELLIGENCE & REASONING

1. A series of figures are given, and these can be grouped into classes. Select from amongst the alternatives one set of groups into which these figures can be classified.



- (1) 1, 3, 6; 2, 4, 6; 5, 7, 9
- (2) 1, 4, 9; 3, 6, 8; 2, 5, 7
- (3) 3, 4, 7; 9, 8, 7; 4, 3, 1
- (4) 2, 3, 6; 9, 3, 4; 6, 3, 2

Directions (2-3) : Which one of the given responses would be a meaningful order of the following words ?

- 2. 1. Income
2. Fame
3. Education
4. Employment
- (1) 1, 2, 3, 4
(2) 3, 4, 1, 2
(3) 3, 4, 2, 1
(4) 4, 3, 2, 1
- 3. 1. Plant 2. Tree
3. Soil 4. Fruit
5. Seed
- (1) 3, 4, 1, 2, 5
(2) 3, 5, 1, 2, 4
(3) 3, 2, 5, 4, 1
(4) 5, 2, 1, 4, 3

Directions : Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it ?

4. QST _ QS _ R. Q _ TR. _ STR.
- (1) SQTR (2) RTSQ
 - (3) TRQS (4) TSRQ

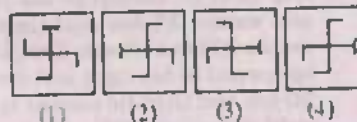
Directions (5-9) : Find the missing number/letters/figure from the given responses.

- 5. AMV, FOX, KUZ, _?
- (1) PYB (2) OXA
- (3) NYB (4) MYB
- 6. 27, 32, 30, 35, 33, _?
- (1) 28 (2) 31
- (3) 36 (4) 28
- 7. 71, 59, 48, 38, 29, _?
- (1) 18 (2) 21
- (3) 20 (4) 12

8. Problem Figures



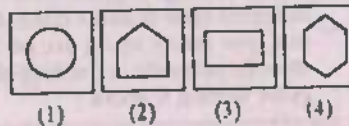
Answer Figures



9. Problem Figures



Answer Figures



10. If

- (A) Sunitha is taller than Anitha.
 - (B) Reena is taller than Chitra but shorter than Banu.
 - (C) Anitha is shorter than Chitra.
 - (D) Chitra is taller than Sunitha.
- then who is the shortest ?
- (1) Sunitha (2) Anitha
 - (3) Reena (4) Banu

11. Pointing to a photograph Vikas said "She is the daughter of my grandfather's only son". How is she related to Vikas in the photograph ?

- (1) Father (2) Brother
- (3) Sister (4) Mother

12. If the day before yesterday was Thursday, when will Sunday be ?

- (1) Tomorrow
- (2) Day after tomorrow
- (3) Today
- (4) Two days after today

13. In a row of children, Ravi is fourth from right and Sham is second from left. When they interchange positions Ravi is ninth from right. What will be Sham's position from left ?

- (1) Fifth (2) Sixth
- (3) Seventh (4) Eighth

14. A man was 32 years of age when he had his first son. His wife was 35 years of age when his son attained the age of 7 years. The difference in age between the man and his wife is

- (1) 7 years (2) 3 years
- (3) 5 years (4) 4 years

Directions : From the given alternatives select the word which cannot be formed using the letters given in the word.

15. PERMANENT
- (1) REMNANT
 - (2) TRAMP
 - (3) MENTOR
 - (4) AMPERE

Directions : Number of letters repeated in the given word are indicated in front of each alternative. Identify the correct alternative.

16. MEASUREMENTS
- (1) M₂E₂A₂S₂U₁R₁N₁T₁
 - (2) M₂E₃A₁S₁U₂R₁N₂T₁
 - (3) M₂E₂A₁S₂U₁R₁N₁T₁
 - (4) M₂E₃A₁S₂U₁R₁N₁T₁

17. If LOVE is coded as 27, then how is COME coded as ?

- (1) 38 (2) 18
- (3) 28 (4) 8

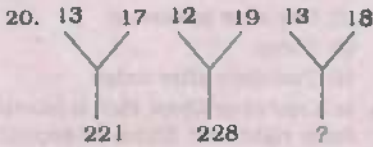
18. In a certain code MONKEY is XDJMNL. How is "TIGER" written as ?

- (1) QDFHS (2) SDFHS
- (3) SHFDQ (4) UJHFS

19. Some equations are solved on the basis of certain system. On the same basis find the correct answer for the unsolved equation.

- If $13 \times 12 = 651$ and $41 \times 23 = 448$, then $24 \times 22 = ?$
 (1) 504 (2) 46
 (3) 528 (4) 924

Directions (20 - 22) : Select the missing number from the given responses.



- (1) 31 (2) 229
 (3) 234 (4) 312
21. $\begin{matrix} 3 & 6 & 7 \\ 9 & 18 & 21 \\ 27 & 54 & ? \\ 81 & 162 & 189 \end{matrix}$
 (1) 22 (2) 63
 (3) 190 (4) 55



- (1) 0 (2) 125
 (3) 100 (4) 144

Directions : In the following question you have to identify the correct response from the given premises stated according to following symbols.

23. If $> = +, \vee = \times, < = \div, \wedge = -, + = =, \times = <, - = >$
 (1) $6 > 2 > 3 \wedge 8 \vee 4 + 13$
 (2) $6 \wedge 2 < 3 > 8 < 4 - 13$
 (3) $6 \vee 2 < 3 \wedge 8 > 4 \times 13$
 (4) $6 > 2 \vee 3 < 8 \wedge 4 + 13$

24. Assuming that the statement "Every library has books" is true, which of the following statement is definitely true ?

- (1) Books are only in Library
 (2) No Library is without books
 (3) Some libraries do not have readers
 (4) Libraries are meant for books only

Directions : In the following question, one statement is given, followed by two conclusion I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follow from the given statement.

25. **Statement :** All philosophers are men. Socrates was a philosopher.

Conclusion :

- I. Socrates was a man.
 II. Women cannot become philosophers.
 (1) Only I is valid
 (2) Only II is valid
 (3) Both are not valid
 (4) Both are valid

26. A man drives his car 50 km towards eastward direction. He turned right went for 30 km, then he turned west and drive for 10km. How far is he from the starting point ?

- (1) 50 km (2) 60 km
 (3) 100 km (4) 20 km

27. Raju facing North and moves 20 km, then he turned to his right and moves 20 km and then he moves 10 km in North-East, then he turned to his right and moves 20 km and then he turned to his right and moves 20 km, and again he turned to his left and moves 20 km. Now in which direction

- (1) South-East (2) North-East
 (3) South-West (4) North-West

28. The following diagram shows the different view of same cube. Find out how many spots are on face directly opposite to the face of the cube having 6 spots :



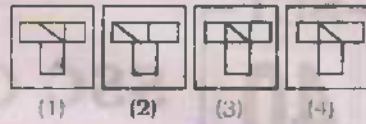
- (1) 1 (2) 3
 (3) 5 (4) 2

Directions : In the following question, among the four answer figures which one can be formed from the cut out pieces given below ?

29. **Problem Figures**

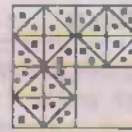


Answer Figures



Directions : In the following question, which one of the answer figures shall complete the given question figure?

30. **Problem Figures**



Answer Figures



31. In which answer figure is the question figure embedded ?

Problem Figures



Answer Figures



32. A piece of paper is folded and a cut is made as shown below. From the given responses indicate how it will appear when opened.

Problem Figures



Answer Figures

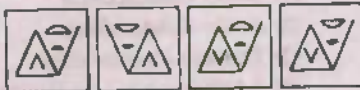


Directions : In the following question, which of the answer figures is exactly the mirror image of the question figure when the mirror is held at XY ?

33. Question Figures

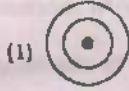


Answer Figures

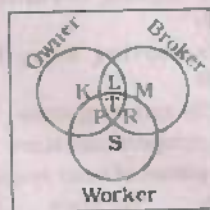


- (1)
- (2)
- (3)
- (4)

34. Which represents Carrot. Food. Vegetable ?



35. The diagram given below represents owner, broker and worker. Identify the region which represents all the three i.e. owner broker and worker.



- (1) L
- (2) T
- (3) P
- (4) R

Directions (36 - 43) : In the following questions, select the related letters/word/number/figure from the given alternatives.

36. River : Dam :: Traffic : ?

- (1) Vehicle
- (2) Speed
- (3) Signal light
- (4) Path

37. Ornithologist : Birds :: Archaeologist : ?

- (1) Artifacts
- (2) Archipelago
- (3) Arbiter
- (4) Aquatic

38. AYBZ : CWDX :: EUFV : ?

- (1) GSHT
- (2) GHST
- (3) SHGT
- (4) MVGT

39. DCEF : QPRS :: XWYZ : ?

- (1) IHGF
- (2) STUV
- (3) SRQP
- (4) NMOP

40. 17 : ? :: 145 : 195

- (1) 42
- (2) 35
- (3) 30
- (4) 24

41. 3222 : 7222 :: 3323 : ?

- (1) 9949
- (2) 8838
- (3) 7727
- (4) 2212

42. Problem Figures



Answer Figures

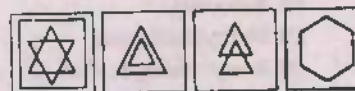


- (1)
- (2)
- (3)
- (4)

43. Problem Figures



Answer Figures



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

44. (1) Carpenter (2) Goldsmith
(3) Blacksmith (4) Drifter

Directions (45 - 50) : In the following questions, find the odd word/letters/number pair from the given responses.

45. (1) Ink (2) Paper
(3) Office (4) Pen

46. (1) deba (2) hgfa
(3) pqrs (4) rupo

47. (1) BFJN (2) DHLP
(3) QIMQ (4) HLPT

48. (1) (37 - 74) (2) (52 - 26)
(3) (47 - 84) (4) (88 - 44)

49. (1) 20, 16, 18
(2) 18, 14, 16

(3) 16, 12, 14
(4) 14, 11, 13

50.



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

PART - II :

GENERAL AWARENESS

51. Global warming is expected to result in

- (1) Increase in level of sea
- (2) Change in crop pattern
- (3) Change in coast line
- (4) All of the above

52. Earth Summit (Save Earth) was sponsored by

- (1) UNESCO
- (2) UNCED
- (3) WHO
- (4) UNICEF

53. If two commodities are complements, then their cross-price elasticity is

- (1) zero
- (2) positive
- (3) negative
- (4) imaginary number

54. Opportunity cost of production of a commodity is

- (1) the cost that the firm could have incurred when a different technique was adopted
- (2) the cost that the firm could have incurred under a different method of production
- (3) the actual cost incurred
- (4) the next best alternative output

55. Surplus earned by a factor other than land in the short period of referred to as

- (1) economic rent
- (2) net rent
- (3) quasi-rent
- (4) super-normal rent

56. Who is the Ex-officio Chairman of the Planning Commission ?

- (1) Minister for Planning & Development
- (2) Finance Minister
- (3) Prime Minister
- (4) Minister for Rural & Community Development

57. Which from the following is not true when the interest rate in the economy goes up ?

- (1) Saving increases
- (2) Lending decreases
- (3) Cost of production increases
- (4) Return on capital increases

58. Which one of the following is not a method of measurement of National Income ?
 (1) Value Added Method
 (2) Income Method
 (3) Investment Method
 (4) Expenditure Method
59. Labour Intensive Technique would get chosen in a
 (1) Labour Surplus Economy
 (2) Capital Surplus Economy
 (3) Developed Economy
 (4) Developing Economy
60. Which one of the following would not constitute an economic activity ?
 (1) A teacher teaching students in his class
 (2) A teacher teaching students under Sarva Shiksha Abhiyan
 (3) A teacher teaching his own daughter at home
 (4) A teacher providing consultancy services from his residence
61. The Finance Commission
 (1) draws up Five Year Plans
 (2) formulates Monetary Policy
 (3) recommends pay revision of Central Government Employees
 (4) adjudicates on the sharing of resources between Centre and the States
62. Net National Product of a country is
 (1) GDP minus depreciation allowances
 (2) GDP plus net income from abroad
 (3) GNP minus net income from abroad
 (4) GNP minus depreciation allowances
63. Jaundice is caused due to the infection of
 (1) Brain (2) Liver
 (3) Kidney (4) Spleen
64. The average heart beat rate per minute in a normal person is
 (1) 82 (2) 92
 (3) 72 (4) 98
65. EEG records the activity of
 (1) heart (2) lungs
 (3) brain (4) muscles
66. The colour of cow's milk is slightly yellow due to the presence of
 (1) Xanthophyll
 (2) Riboflavin
 (3) Ribulose
 (4) Carotene
67. Which one of these is a communicable disease ?
 (1) Diabetes (2) Diphtheria
 (3) Arthritis (4) Cancer
68. The concentration of which of the following decreases in anaemia ?
 (1) Haemoglobin
 (2) Collagen
 (3) Hyoglobin
 (4) Myosin
69. Which of the following diseases usually spreads through air ?
 (1) Plague (2) Typhoid
 (3) Tuberculosis (4) Cholera
70. Cereals are a rich source of
 (1) Starch (2) Glucose
 (3) Fructose (4) Maltose
71. Aspirin is common name of
 (1) Salicylic Acid
 (2) Salicylate
 (3) Methyl Salicylate
 (4) Acetyl Salicylic Acid
72. Small Pox is caused by
 (1) Rubella Virus
 (2) Variola Virus
 (3) Varicella
 (4) Myxovirus
73. Carbon monoxide is an inflammable gas. Which one of the following is also inflammable ?
 (1) Helium (2) Nitrogen
 (3) Oxygen (4) Hydrogen
74. Respiration process requires
 (1) heat (2) water
 (3) oxygen (4) sunlight
75. Which one of the following metals does not react with water to produce Hydrogen ?
 (1) Potassium (2) Cadmium
 (3) Sodium (4) Lithium
76. Ozone consists of
 (1) Oxygen only
 (2) Oxygen and Nitrogen
 (3) Hydrogen and Carbon
 (4) Oxygen and Carbon
77. Which of the following liquids has the least density ?
 (1) Fresh water
 (2) Salt water
 (3) Petrol
 (4) Mercury
78. Which of the following principle is used to produce 'low-temperatures' ?
 (1) Super conductivity
 (2) Joule-Kelvin effect
 (3) Thermo-electric effect
 (4) Adiabatic demagnetisation
79. A photo-electric cell converts
 (1) mechanical energy to electric energy
 (2) heat energy to mechanical energy
 (3) light energy to chemical energy
 (4) light energy to electrical energy
80. Two stones of different masses are dropped simultaneously from the top of a building
 (1) Smaller stone reaches the ground earlier
 (2) Larger stone reaches the ground earlier
 (3) Both the stones reach the ground at the same time
 (4) Depends on the composition of the stone
81. Pulsars are
 (1) stars moving towards the Earth
 (2) stars moving away from Earth
 (3) rapidly spinning stars
 (4) high temperature stars
82. Biggest planet of solar system is
 (1) Earth (2) Mars
 (3) Saturn (4) Jupiter
83. The 'National School of Drama' is situated in which of the following cities ?
 (1) Mumbai
 (2) New Delhi
 (3) Bhopal
 (4) Kolkata
84. When was our National Anthem first sung and where ?
 (1) 24th January, 1950 in Allahabad
 (2) 24th January, 1950 in Delhi
 (3) 26th December, 1942 in Calcutta
 (4) 27th December, 1911 in Calcutta

85. The ozone hole that has been detected lies in the atmosphere above
 (1) Arctic Ocean
 (2) Antarctica
 (3) India
 (4) Alaska
86. Brain drain
 (1) is a disease
 (2) refers to dropouts from educational and technical institutions
 (3) is fruitless expenditure on scientific and industrial research
 (4) refers to emigration of skilled persons
87. How many spokes are there in the Dharma Chakra of the National Flag?
 (1) 22 (2) 24
 (3) 18 (4) 14
88. 'India Today' is
 (1) a staggering mass of problems
 (2) former British India minus Pakistan
 (3) a News magazine mainly devoted to current affairs
 (4) the Union of India, a member of United Nations
89. The book "It was Five Past Midnight" is on
 (1) Bhuj Earthquake
 (2) Orissa Floods
 (3) Andhra Cyclone
 (4) Bhopal Gas Tragedy
90. Teen Bigha Corridor links
 (1) India and Pakistan
 (2) India and China
 (3) Bangladesh and Pakistan
 (4) Bangladesh and India
91. What is the field in which outstanding work may be recognised with the award of Pulitzer Prize?
 (1) Science and Technology
 (2) Literature and Journalism
 (3) International Understanding
 (4) Environmental Studies
92. Vijay Stambha at Chittor was built by
 (1) Maharana Pratap
 (2) Rana Sangram Singh
 (3) Rana Kumbha
 (4) Rana Ratan Singh
93. The device used to change the speed of an electric fan is
 (1) Amplifier
 (2) Regulator
 (3) Switch
 (4) Rectifier
94. Namdhapa National Park is in
 (1) Mizoram
 (2) Manipur
 (3) Tripura
 (4) Arunachal Pradesh
95. Which scripture was called his 'mother' by Gandhiji?
 (1) Ramayana
 (2) The New Testament
 (3) Bhagwat Gita
 (4) The Holy Quran
96. On which of the following rivers is the Tehri Hydropower Complex located?
 (1) Alkananda
 (2) Mandakini
 (3) Dhauli Ganga
 (4) Bhagrathi
97. Nobel Prize winning India, Amartya Sen, is known for his work in which area?
 (1) Physics
 (2) Environmental Protection
 (3) Chemistry
 (4) Economics
98. Who has been crowned Miss Universe 2008?
 (1) Miss Japan
 (2) Miss Venezuela
 (3) Miss Philippines
 (4) Miss Malaysia
99. Wholesale price based inflation rate in India reached its highest level in 13 years on 27th July, 2008. It was
 (1) 11.75 per cent
 (2) 11.85 per cent
 (3) 12.00 per cent
 (4) 12.05 per cent
100. The French Open, 2009 Men's Singles was won by
 (1) Roger Federer
 (2) Rafael Nadal
 (3) Bob Bryan
 (4) Katarina Srebotnik
101. The venue of the Energy Summit, 2008 was
 (1) Jeddah (2) Tehran
 (3) Riyadh (4) Tripoli
102. CTBT stands for
 (1) Continued Test Ban Treaty
 (2) Continued Test Based Treatments
 (3) Comprehensive Test Ban Treaty
 (4) Commercial Test Based Tariff
103. Asia Cup, 2008 final was played between
 (1) India and Sri Lanka
 (2) Pakistan and India
 (3) Sri Lanka and Pakistan
 (4) Bangladesh and India
104. For which one of the following, M.S. Dhoni was chosen for the year 2007?
 (1) Arjun Award
 (2) Dronacharya Award
 (3) Rajiv Gandhi Khel Ratna Award
 (4) None of the above
105. Full form of MCA is
 (1) Ministry of Company Affairs
 (2) Master of Computer Application
 (3) Member Chartered Accountant
 (4) Master of Commerce and Arts
106. China has hosted the
 (1) XXIX Olympic Games
 (2) XXVIII Olympic Games
 (3) XXVII Olympic Games
 (4) XXX Olympic Games
107. Rashtrapati Bhawan was designed by
 (1) Edward Stone
 (2) Le Corbusier
 (3) Edwin Lutyens
 (4) Tarun Dutt
108. The Quit India Movement was launched in 1942 in the month of
 (1) January
 (2) March
 (3) August
 (4) December
109. Match the following :
 Column-I
 (A) Keshab Sen
 (B) Dayanand Saraswati
 (C) Aumaram Pandurang
 (D) Syed Ahmad Khan

Column-II

1. Prarthana Samaj
 2. Brahma Samaj
 3. Aligarh Movement
 4. Arya Samaj
- | | A | B | C | D |
|-----|---|---|---|---|
| (1) | 4 | 1 | 3 | 2 |
| (2) | 1 | 4 | 2 | 3 |
| (3) | 2 | 4 | 1 | 3 |
| (4) | 3 | 2 | 4 | 1 |
110. Who was the first English President of the Indian National Congress ?
 - (1) George Yule
 - (2) William Wedderburn
 - (3) A.O. Hume
 - (4) Henry Cotton
 111. Which one of the following personalities is known as 'Grand Old Man of India' ?
 - (1) Bal Gangadhar Tilak
 - (2) Dadabhai Naoroji
 - (3) Motilal Nehru
 - (4) Lala Lajpat Rai
 112. Who wrote Akbarnama ?
 - (1) Akbar
 - (2) Birbal
 - (3) Abul Fazal
 - (4) Bhagavan Das
 113. The pledge for "Poorna Swaraj" was taken at the Congress Session of
 - (1) Calcutta
 - (2) Lahore
 - (3) Allahabad
 - (4) Madras
 114. When was the Panchayat Raj System introduced in India ?
 - (1) 1950 A.D.
 - (2) 1945 A.D.
 - (3) 1947 A.D.
 - (4) 1962 A.D.
 115. Who held the office of the Vice-President of India for two consecutive terms ?
 - (1) Dr. S. Radhakrishnan
 - (2) Mr. R. Venkataraman
 - (3) Dr. Shankar Dayal Sharma
 - (4) Mr. V.V. Giri
 116. Which Amendment of the Indian Constitution inserted the two words - 'Socialist' and 'Secular' in the Preamble ?
 - (1) 28th
 - (2) 40th
 - (3) 42nd
 - (4) 52nd
 117. When there is a vacancy in the office of the President and the Vice President at the same time, the office is held temporarily by
 - (1) a person nominated by both the Houses of Parliament
 - (2) the Speaker of Lok Sabha
 - (3) the Deputy Chairman of Rajaya Sabha
 - (4) the Chief Justice of India
 118. The Constitution of India came into force on
 - (1) 26 January, 1950
 - (2) 26 January, 1952
 - (3) 15 August, 1948
 - (4) 26 November, 1949
 119. Who was the first Woman Governor of a State in free India from out of the following ?
 - (1) Mrs. Sarojini Naidu
 - (2) Mrs. Sucheta Kriplani
 - (3) Mrs. Indra Gandhi
 - (4) Mrs. Vijay Laxmi Pandit
 120. The Parliamentary Committee which scrutinises the report of the Comptroller and Auditor General of India is
 - (1) Estimates Committee
 - (2) Select Committee
 - (3) Public Accounts Committee
 - (4) None of these
 121. Fog is an example of
 - (1) Gas dispersed in gas
 - (2) Liquid dispersed in gas
 - (3) Solid dispersed in gas
 - (4) Solid dispersed in liquid
 122. Which from the following is an landlocked sea ?
 - (1) Timor Sea
 - (2) Arafura Sea
 - (3) Greenland Sea
 - (4) Aral Sea
 123. Match the following :

Sea Ports	(A) Bhatkal	(B) Alleppey
States	(C) Kakinada	(D) Tuticorin

 1. Kerala
 2. Tamil Nadu
 3. Karnataka
 4. Andhra Pradesh

	A	B	C	D
(1)	1	3	4	2
(2)	4	3	2	1
(3)	3	1	4	2
(4)	2	4	1	3

124. Which one of the following represent the lines joining the places of equal rainfall ?
 - (1) Isohypses
 - (2) Isohalines
 - (3) Isobars
 - (4) Isohyets
125. Equator represents
 - (1) line joining North and South poles
 - (2) imaginary line passing round the Earth midway between North & South poles
 - (3) a belt (ring) around the planet Saturn
 - (4) axis of rotation of Earth

PART- III :

NUMERICAL ABILITY

126. The LCM of two multiples of 12 is 1056. If one of the numbers is 132, the other number is
 - (1) 12
 - (2) 72
 - (3) 96
 - (4) 132
127. Sum of two numbers is 384. H.C.F. of the numbers is 48. The difference of the numbers is
 - (1) 100
 - (2) 192
 - (3) 288
 - (4) 336
128. The two numbers are in the ratio 2 : 3 and their product is 96. The sum of the numbers is
 - (1) 5
 - (2) 20
 - (3) 101
 - (4) 102
129. The sum of two numbers is 10. Their product is 20. Find the sum of the reciprocals of the two numbers.
 - (1) 1
 - (2) $\frac{3}{5}$
 - (3) $\frac{1}{2}$
 - (4) $\frac{11}{6}$
130. A number when divided by 192 gives a remainder of 54. What remainder would be obtained on dividing (the same number by 16 ?
 - (1) 2
 - (2) 4
 - (3) 6
 - (4) 8
131. The least number which when divided by 5, 6, 7 and 8 leaves a remainder 3, but when divided by 9 leaves no remainder is
 - (1) 1677
 - (2) 1683
 - (3) 2523
 - (4) 3363

132. The sum of the digits of a two digit number is 10. The number formed by reversing the digits is 18 less than the original number. Find the original number.

- (1) 81 (2) 46
(3) 64 (4) 60

133. The least number to be subtracted from 36798 to get a number which is exactly divisible by 78 is

- (1) 18 (2) 60
(3) 38 (4) 68

134. Five times of a positive integer is equal to 3 less than twice the square of that number. The number is

- (1) 3 (2) 13
(3) 23 (4) 33

135. The product of two numbers is 24 times the difference of these two numbers. If the sum of these numbers is 14, the larger number is

- (1) 9 (2) 8
(3) 7 (4) 10

136. The greatest number of four digits which when divided by 12, 16 and 24 leave remainders 2, 6 and 14 respectively is

- (1) 9974 (2) 9970
(3) 9807 (4) 9998

137. When a number is divided by 15, 20 or 35, each time the remainder is 8. Then the smallest number is

- (1) 428 (2) 427
(3) 328 (4) 338

138. A man read $\frac{2}{5}$ th of a book on the first day. He read $\frac{1}{3}$ rd more than he read on the first day. 15 pages were left for the third day. The number of pages in the book is

- (1) 100 (2) 105
(3) 225 (4) 250

139. Jyothi can do $\frac{3}{4}$ th of a job in 12 days. Mala is twice as efficient as Jyothi. In how many days will Mala finish the job?

- (1) 6 (2) 8
(3) 12 (4) 16

140. Three pipes A, B and C can fill a cistern in 6 hours. After working at it together for 2 hours, C is closed and A and B fill it in 7 hours more. The time taken by C alone to fill the cistern is

- (1) 14 hours
(2) 15 hours
(3) 16 hours
(4) 17 hours

141. A is twice as good a workman as B and B is twice as good a workman as C. If A and B can together finish a piece of work in 4 days, then C can do it by himself in

- (1) 6 days (2) 8 days
(3) 24 days (4) 12 days

142. A and B can do a piece of work in 10 days. B and C can do it in 12 days. C and A in 15 days. In how many days will C finish it alone?

- (1) 24 (2) 30
(3) 40 (4) 60

143. Water is flowing at the rate of 5 km/hr through a pipe of diameter 14 cm into a rectangular tank which is 50 m long and 44m wide. Determine the time in which the level of water in the tank will rise by 7cm.

$$\left(\text{Take } \pi = \frac{22}{7} \right)$$

144. Two solid cylinders of radii 4 cm and 5cm and lengths 6 cm and 4 cm respectively are recast into cylindrical disc of thickness 1 cm. The radius of the disc is

- (1) 7 cm (2) 14 cm
(3) 21 cm (4) 28 cm

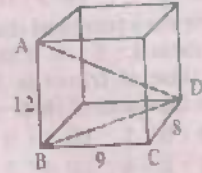
145. The length of rectangle is increased by 60%. By what percent would the breadth to be decreased to maintain the same area?

- (1) $37\frac{1}{2}$ (2) 60
(3) 75 (4) 120

146. Volume of two cones are in the ratio 1 : 4 and their diameters are in the ratio 4 : 5. The ratio of their heights is

- (1) 1 : 5 (2) 5 : 4
(3) 5 : 16 (4) 25 : 64

147. What is the greatest length of the rod which can be kept in a room of dimensions 12m × 9m × 8m?



- (1) 288 m (2) 29 m
(3) 17 m (4) 13 m

148. Water is being pumped out through a circular pipe whose internal diameter is 7cm. If the flow of water is 12 cm per second, how many litres of water is being pumped out in one hour?

- (1) 1663.2 (2) 1500
(3) 1747.6 (4) 2000

149. The lateral surface area of a cylinder is 1056 cm² and its height is 16cm. Find its volume.

- (1) 4545 cm³
(2) 4455 cm³
(3) 5445 cm³
(4) 5544 cm³

150. The largest sphere is carved out of a cube of side 7 cm. The volume of the sphere (in cm³) will be

- (1) 718.66 (2) 543.72
(3) 481.34 (4) 179.67

151. The radius of circle A is twice that of circle B and the radius of circle B is twice that of circle C. Their area will be in the ratio

- (1) 16 : 4 : 1 (2) 4 : 2 : 1
(3) 1 : 2 : 4 (4) 1 : 4 : 16

152. A dozen pair of socks quoted at Rs. 80 are available at a discount of 10%. How many pairs of socks can be bought for Rs. 24?

- (1) 4 (2) 5
(3) 3 (4) 6

153. The marked price of a T.V. is Rs. 16,000. After two successive discounts it is sold for Rs. 11,400. If the first discount is 5%, then the rate of second discount is

- (1) 15% (2) 20%
(3) 30% (4) 25%

154. The difference between a discount of 30% on Rs. 2,000 and two successive discounts of 25% and 5% on the same amount is

- (1) Rs. 30 (2) Rs. 35
(3) Rs. 25 (4) Rs. 40

155. If $x : y = 2 : 1$, then $(x^2 - y^2) : (x^2 + y^2)$ is
 (1) 3 : 5 (2) 5 : 3
 (3) 4 : 5 (4) 5 : 6
156. Three cars travelled distances in the ratio 1 : 2 : 3. If the ratio of the time of travel is 3 : 2 : 1, then the ratio of their speeds is
 (1) 3 : 9 : 1 (2) 1 : 3 : 9
 (3) 1 : 2 : 4 (4) 4 : 3 : 2
157. The ratio between two numbers is 3 : 4. If each number is increased by 6, the ratio becomes 4 : 5. The difference between the numbers is
 (1) 1 (2) 3
 (3) 6 (4) 8
158. There are three numbers A, B, C such that twice A is equal to thrice B and four times B is equal to five times C. Then the ratio between A and C is
 (1) 3 : 4 (2) 8 : 15
 (3) 15 : 8 (4) 4 : 3
159. The weights of Mr. Gupta and Mrs. Gupta are in the ratio 7 : 8 and their total weight combined is 120 kg. After taking a dieting course Mr. Gupta reduces by 6 kg and the ratio between their weights changes to 5 : 6. So Mrs. Gupta has reduced by
 (1) 2 kg (2) 4 kg
 (3) 3 kg (4) 5 kg
160. Three numbers are in the ratio 5 : 6 : 7. If the product of the numbers is 5670, then the greatest number is
 (1) 15 (2) 18
 (3) 21 (4) 28
161. A road of 5 km length will be constructed in 100 days. So 280 workers were employed. But after 80 days it was found that only $3\frac{1}{2}$ km road was completed. Now how many more people were needed to finish the work in the specified time?
 (1) 480 (2) 80
 (3) 200 (4) 100
162. A constant distance from Chennai to Bangalore is covered by Express train at 100 km/hr. If it returns to the same distance at 80 km/hr, then the average speed during the whole journey is
 (1) 90.20 km/hr
 (2) 88.78 km/hr
 (3) 88.98 km/hr
 (4) 88.89 km/hr
163. The average weight of 15 students in a class increases by 1.5kg when one of the students weighing 40 kg is replaced by a new student. What is the weight (in kg) of the new student?
 (1) 64.5 (2) 56
 (3) 60 (4) 62.5
164. The average marks of 100 students were found to be 40. Later on it was discovered that a score of 53 was misread as 83. Find the correct average corresponding to the correct score.
 (1) 38.7 (2) 39
 (3) 39.7 (4) 41
165. By selling a basket for Rs. 19.50, a shopkeeper gains 30%. For how much should he sell it to gain 40%?
 (1) Rs. 21 (2) Rs. 21.50
 (3) Rs. 24 (4) Rs. 23
166. A person sold a TV for Rs. 9,400 and he lost a particular amount. When he sold another TV of the same type at Rs. 10,600, his gain was double the former loss. What was the cost price of each TV?
 (1) Rs. 9,800 (2) Rs. 10,000
 (3) Rs. 10,200 (4) Rs. 10,400
167. A cooker is sold at a gain of 16%. If it has been sold for Rs. 20 more, 20% would have been gained. The cost price of the cooker is
 (1) Rs. 350 (2) Rs. 400
 (3) Rs. 500 (4) Rs. 600
168. By selling an article for Rs. 144 a man gained such that the percentage gain equals the cost price. The cost price of the article is
 (1) Rs. 60 (2) Rs. 72
 (3) Rs. 80 (4) Rs. 64
169. A fruit vendor bought bananas at the rate of 5 for a rupee and sold them 4 for a rupee. The percent gain or loss is
 (1) $12\frac{1}{2}\%$ gain (2) 25% loss
 (3) 25% gain (4) $12\frac{1}{2}\%$ loss
170. If 4 litres of water is evaporated on boiling from 12 litres of salt solution containing 7 percentage salt, the percentage of salt in the remaining solution is
 (1) 10.5 (2) 11.5
 (3) 12 (4) 13
171. Tulsiram's salary is 20% more than that of Kashyap. If Tulsiram saves Rs. 720 which is 4% of his salary, then Kashyap's salary is
 (1) Rs. 15,000
 (2) Rs. 12,000
 (3) Rs. 10,000
 (4) Rs. 22,000
172. Two numbers are respectively 10% and 25% more than a third number. What per cent is the first of the second?
 (1) 88% (2) 65%
 (3) 75% (4) 80%
173. A reduction of 10% in the price of sugar enables a housewife to buy 6.2 kg more for Rs. 1116. The reduced price per kg is
 (1) Rs. 12 (2) Rs. 14
 (3) Rs. 16 (4) Rs. 18
174. A boy who was asked to find $3\frac{1}{2}\%$ of a sum of money misread the question and found $5\frac{1}{2}\%$ of it. His answer was Rs. 220. What would have been the correct answer?
 (1) Rs. 120 (2) Rs. 140
 (3) Rs. 160 (4) Rs. 150
175. The simple interest on a sum of money is $\frac{1}{4}$ th of the principal and the number of years is equal to rate per cent per annum. The rate per cent is
 (1) 2.5 (2) 5
 (3) 7.5 (4) 10
176. A loan of Rs. 12,300 at 5% per annum compound interest, is to be repaid in two equal annual instalments at the end of every year. Find the amount of each instalment.
 (1) Rs. 6,651
 (2) Rs. 6,615
 (3) Rs. 6,516
 (4) Rs. 6,156

177. A sum of money placed at compound interest doubles itself in 5 years. It will amount to eight times itself at the same rate of interest in

- (1) 7 years (2) 10 years
(3) 15 years (4) 20 years

178. A sum was invested on simple interest at a certain rate for 2 years. Had it been put at 3% higher rate, it would have fetched Rs. 72 more. The sum is

- (1) Rs. 1,200
(2) Rs. 1,500
(3) Rs. 1,600
(4) Rs. 1,800

179. Equal sums of money are lent to X and Y at 7.5% per annum for a period of 4 years and 5 years respectively. If the difference in interest, paid by them was Rs. 150, the sum lent to each was

- (1) Rs. 500 (2) Rs. 1000
(3) Rs. 2000 (4) Rs. 3000

180. A passenger train 150m long is travelling with a speed of 36 km/hr. If a man is cycling in the direction of train at 9 km/hr., the time taken by the train to pass the man is

- (1) 10 sec (2) 15 sec
(3) 18 sec (4) 20 sec

181. A boat running downstream covers a distance of 20km in 2 hrs while it covers the same distance upstream in 5 hrs. Then speed of the boat in still water is

- (1) 7 km/hr (2) 8 km/hr
(3) 9 km/hr (4) 10 km/hr

182. A boy is late by 9 minutes if he walks to school at a speed of 4 km/hour. If he walks at the rate of 5 km/hour, he arrives 9 minutes early. The distance to his school is

- (1) 9 km (2) 5 km
(3) 4 km (4) 6 km

183. Two towns A and B are 500 km. apart. A train starts at 8 AM from A towards B at a speed of 70 km/hr. At 10 AM, another train starts from B towards A at a speed of 110 km/hr. When will the two trains meet?

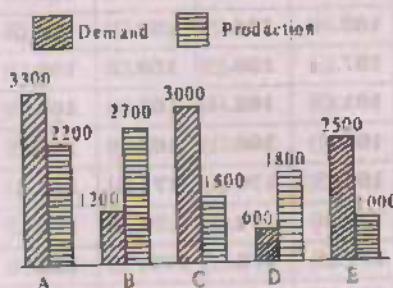
- (1) 1 PM
(2) 12 Noon
(3) 12.30 PM
(4) 1.30 PM

184. A car can cover a certain distance in $4\frac{1}{2}$ hours. If the speed is increased by 5 km/hour, it would take $\frac{1}{2}$ hour less to cover the same distance. Find the slower speed of the car.

- (1) 50 km/hour
(2) 40 km/hour
(3) 45 km/hour
(4) 60 km/hour

Directions (185-188): Study the following graph and answer the questions. Number on the top of a bar is the number of TVs.

Demand and Production of Colour T.Vs of five Companies for January 2006



185. What is the ratio of the companies having more demand than production to the companies having less demand than demand?

- (1) 2 : 3 (2) 4 : 1
(3) 2 : 2 (4) 3 : 2

186. What is the difference between average demand and average production of the five companies taken together?

- (1) 1400 (2) 400
(3) 280 (4) 138

187. Demand of company D is approximately what per cent of demand of company E?

- (1) 12% (2) 20%
(3) 24%
(4) 30%

188. What is the ratio of average demand to average production of companies B and D?

- (1) 1 : 5 (2) 2 : 5
(3) 3 : 5 (4) 4 : 5

189. The least fraction to be subtracted from the expression

$$3\frac{1}{4} - \frac{4}{5} \text{ of } \frac{5}{6}$$

$$4\frac{1}{3} + \frac{1}{5} - \left(\frac{3}{10} + 2\frac{1}{5}\right) \text{ to make}$$

it an integer.

- (1) $\frac{1}{2}$ (2) $\frac{5}{6}$
(3) $\frac{1}{4}$ (4) $\frac{3}{10}$

190. If $\sqrt[3]{0.014 \times 0.14x} = 0.014 \times$

$$0.14\sqrt[3]{y}, \text{ find the value of } \frac{x}{y}.$$

- (1) 0.000196 (2) 0.00196
(3) 0.0196 (4) 0.196

191. The value of

$$\left[\frac{(0.337 + 0.126)^2 - (0.337 - 0.126)^2}{0.337 \times 0.126} \right]$$

is

- (1) 4 (2) 0.211
(2) 0.463 (4) 0.4246

192. $\sqrt[4]{\frac{12}{125}}$ is equal to

- (1) 1.4 (2) 1.6
(3) 1.8 (4) 2.4

193. The simplified value of

$$\sqrt{900} + \sqrt{0.09} - \sqrt{0.000009} \text{ is}$$

- (1) 30.27 (2) 30.297
(3) 30.097 (4) 30.197

194. The simplified value of

$$\sqrt{5 + \sqrt{11 + \sqrt{19 + \sqrt{29 + \sqrt{49}}}}}$$

is

- (1) 3 (2) 2
(3) 4 (4) 6

195. The least number among

$$\frac{4}{9}, \sqrt{\frac{9}{49}}, 0.45 \text{ and } (0.8)^2 \text{ is}$$

- (1) $\frac{4}{9}$ (2) $\sqrt{\frac{9}{49}}$

- (3) 0.45 (4) $(0.8)^2$

196. The value of $99\frac{95}{99} \times 99$ is

- (1) 9798 (2) 9997
(3) 9898 (4) 9896

197. $1.2 \times 0.03 =$

- (1) 0.04 (2) 0.036
(3) 1.13 (4) 0.037

198. $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}}$
 $-\frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} =$

- (1) 5 (2) 4
(3) 3 (4) 2

199. Evaluate :

$16\sqrt{\frac{3}{4}} - 9\sqrt{\frac{4}{3}}$ if $\sqrt{12} = 3.46$

- (1) 3.46 (2) 10.38
(3) 13.84 (4) 24.22

200. If $2^{2x-y} = 16$ and $2^{x+y} = 32$, the value of xy is

- (1) 2 (2) 4
(3) 6 (4) 8

ANSWERS

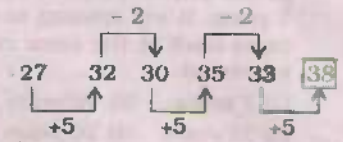
1.(2)	2.(2)	3.(2)	4.(2)
5.(1)	6.(4)	7.(2)	8.(2)
9.(2)	10.(2)	11.(3)	12.(1)
13.(3)	14.(4)	15.(3)	16.(4)
17.(2)	18.(1)	19.(4)	20.(3)
21.(2)	22.(3)	23.(4)	24.(2)
25.(4)	26.(1)	27.(3)	28.(1)
29.(4)	30.(1)	31.(4)	32.(4)
33.(3)	34.(1)	35.(2)	36.(3)
37.(1)	38.(1)	39.(4)	40.(2)
41.(3)	42.(3)	43.(1)	44.(4)
45.(3)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

93.(2)	94.(4)	95.(3)	96.(4)
97.(4)	98.(2)	99.(4)	100.(1)
101.(1)	102.(3)	103.(1)	104.(3)
105.(2)	106.(1)	107.(3)	108.(3)
109.(3)	110.(1)	111.(2)	112.(3)
113.(2)	114.(1)	115.(1)	116.(3)
117.(4)	118.(1)	119.(1)	120.(3)
121.(2)	122.(4)	123.(3)	124.(4)
125.(2)	126.(3)	127.(3)	128.(2)
129.(3)	130.(3)	131.(2)	132.(3)
133.(2)	134.(1)	135.(2)	136.(1)
137.(1)	138.(3)	139.(2)	140.(1)
141.(3)	142.(3)	143.(2)	144.(2)
145.(1)	146.(4)	147.(3)	148.(1)
149.(4)	150.(4)	151.(1)	152.(1)
153.(4)	154.(3)	155.(1)	156.(2)
157.(3)	158.(3)	159.(2)	160.(3)
161.(3)	162.(4)	163.(4)	164.(3)
165.(1)	166.(1)	167.(3)	168.(3)
169.(3)	170.(1)	171.(1)	172.(1)
173.(4)	174.(2)	175.(2)	176.(2)
177.(3)	178.(1)	179.(3)	180.(4)
181.(1)	182.(4)	183.(2)	184.(2)
185.(4)	186.(3)	187.(3)	188.(2)
189.(1)	190.(2)	191.(1)	192.(2)
193.(2)	194.(1)	195.(2)	196.(4)
197.(4)	198.(1)	199.(1)	200.(3)

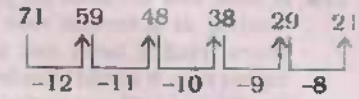
EXPLANATIONS

- (2) 1, 4, 9 ⇒ Two similar figures
2, 5, 7 ⇒ Two line segments inside the main design
3, 6, 8 ⇒ One line segment inside the main design
- (2)
(3) (4) (1) (2)
Education → Employment → Income → Fame
3. (2) (3) (5) (1) (2) (4)
Soil → Seed → Plant → Tree → Fruit
- (2) Q S T R / Q S T R / Q
S TR / Q STR
- (1) A $\xrightarrow{+5}$ F $\xrightarrow{+5}$ K $\xrightarrow{+5}$ P
M $\xrightarrow{+4}$ Q $\xrightarrow{+4}$ U $\xrightarrow{+4}$ Y
V $\xrightarrow{+2}$ X $\xrightarrow{+2}$ Z $\xrightarrow{+2}$ B

6. (4)



7. (2)



8. (2) In each subsequent figure the line segment with curve moves one step in clockwise direction after being inverted while one small line segment is added in clockwise direction.

9. (2) In each subsequent figure one line segment is added.

10. (2) Chitra > Sunitha > Anitha
Banu > Reena > Chitra
From statements (i) and (ii) Anitha is the shortest.

11. (3) The only son of grandfather (paternal) of Vikas means father of Vikas.

Therefore, the girl is sister of Vikas.

12. (1) Day before yesterday was Thursday.

Today is Saturday.
Tomorrow will be Sunday.

13. (3) Left → S | | | R → Right
2nd 7th
4th

14. (4) At the birth of son, the age of mother = 35 - 7 = 28 years
Difference in age = 32 - 28 = 4 years

15. (3) There is no 'O' letter in the keyword.

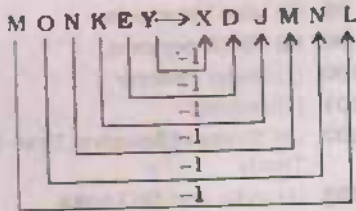
16. (4) M ⇒ 2; E ⇒ 3, A ⇒ 1, S ⇒ 2, U ⇒ 1, R ⇒ 1, N ⇒ 1, T ⇒ 1

17. (2) L O V E
↓ ↓ ↓ ↓
12 + 15 + 22 + 5 = 54
 $\frac{54}{2} = 27$

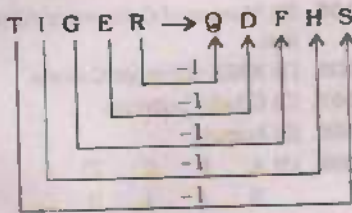
Similarly,
C O M E
↓ ↓ ↓ ↓
3 + 15 + 13 + 5 = 36

$\frac{36}{2} = 18$

18. (1)



Similarly,



19. (4) $13 \times 12 \Rightarrow 31 \times 21 = 651$
 $41 \times 23 \Rightarrow 14 \times 32 = 448$

Similarly,

$24 \times 22 \Rightarrow 42 \times 22 = 924$

20. (3) $13 \times 17 = 221$
 $12 \times 19 = 228$
 $13 \times 18 = 234$

21. (2) $3 \times 3 = 9, 9 \times 3 = 27, 27 \times 3 = 81$
 $6 \times 3 = 18, 18 \times 3 = 54, 54 \times 3 = 162$
 $7 \times 3 = 21, 21 \times 3 = 63, 63 \times 3 = 189$

22. (3) $5 + 0 = 5, 5 + 3 = 8, 8 + 3 = 11$
 $7 - 3 = 4, 3 + 5 = 8, 8 - 2 = 6$
 $3 + 6 = 9$ and $6 + 4 = 10$
 $1 + 0 = 0 = 1$ and 0

23. (4) $6 > 2 > 3 \wedge 8 \vee 4 + 13$
 $\Rightarrow 6 + 2 + 3 - 8 \times 4 = 13$

$\Rightarrow 6 + \frac{2}{3} - 32 \neq 13$

$6 \wedge 2 < 3 > 8 < 4 - 13$
 $\Rightarrow 6 - 2 + 3 \div 8 + 4 > 13$

$\Rightarrow 6 - 2 + \frac{3}{8} + 4 > 13$

$\Rightarrow \frac{48 - 16 + 3 + 32}{8} > 13$

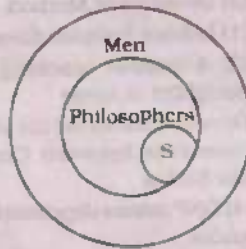
$\Rightarrow \frac{67}{8} \neq 13$

$6 \vee 2 < 3 \wedge 8 > 4 \times 13$
 $\Rightarrow 6 \times 2 + 3 - 8 \div 4 < 13$
 $\Rightarrow 12 + 3 - 2 < 13$
 $\Rightarrow 13 \neq 13$

$6 > 2 \vee 3 < 8 \wedge 4 + 13$
 $\Rightarrow 6 \div 2 \times 3 + 8 - 4 = 13$
 $\Rightarrow 3 \times 3 + 8 - 4 = 13$
 $\Rightarrow 9 + 8 - 4 = 13$

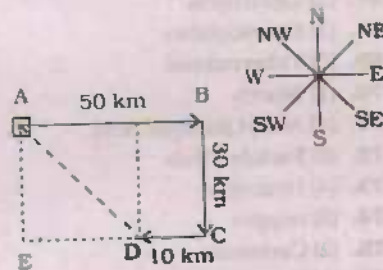
24. (2) 'Every library has books' means 'there are books in every library'. Therefore, No library can be without books.

25. (4)



All philosophers without exception are men. So no woman can be philosopher.

26. (1)

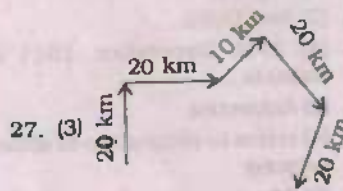


$AD = \sqrt{(AE)^2 + (DE)^2}$

$AD = \sqrt{(30)^2 + (40)^2}$

$= \sqrt{900 + 1600}$

$AD = \sqrt{2500} = 50 \text{ km}$



27. (3)

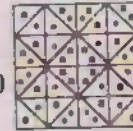
28. (1) One, two, five and six dot(s) are on the faces adjacent to the face having three dots. Therefore, there should be four dots on the face opposite to face having three dots.

Two, three, four or five dots cannot be on the face opposite to face having six dots. Therefore, one dot lies opposite the face having six dots.

29. (4)



30. (1)



31. (4)



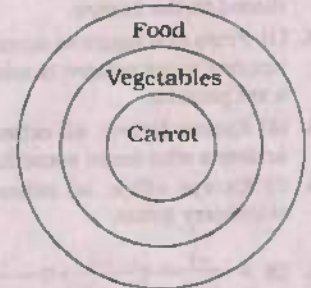
32. (4)



33. (3)



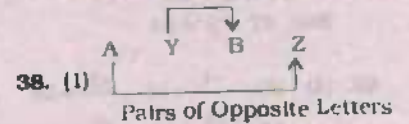
34. (1) Carrot is a vegetable. All vegetables are food items.



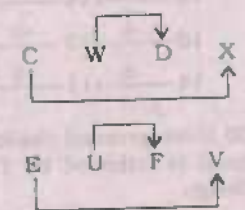
35. (2) The region common to all the three circles is represented by T.

36. (3) The flow of river is controlled by constructing dam. Similarly, traffic is controlled by Signal light.

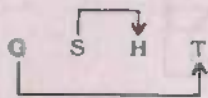
37. (1) The one who studies different varieties of birds is known as Ornithologist. Similarly, Archaeologist studies artifacts.



38. (1)



Similarly,



$$\begin{array}{ccccccc}
 39. (4) & D & \xrightarrow{-1} & C & \xrightarrow{+2} & E & \xrightarrow{+1} & F \\
 & Q & \xrightarrow{-1} & P & \xrightarrow{+2} & R & \xrightarrow{+1} & S \\
 & X & \xrightarrow{-1} & W & \xrightarrow{+2} & Y & \xrightarrow{+1} & Z \\
 & N & \xrightarrow{-1} & M & \xrightarrow{+2} & O & \xrightarrow{+1} & P
 \end{array}$$

40. (2) $(4)^2 + 1 = 17$
 $(6)^2 + 1 = 35$
 $(12)^2 + 1 = 145$
 $(14)^2 + 1 = 195$

41. (3) $\begin{array}{cc} 3222 & 3323 \\ 4000 & 4404 \\ 7222 & 7727 \end{array}$

42. (3) From first figure to second figure one dot is added to every sector of the design and three line segments with curves are introduced in the centre.

43. (1) From first figure to second figure one more square is added in a set pattern.

44. (4) Except Driver, all others are artisans who make something.

45. (3) Except office, all others are stationery items.

$$\begin{array}{ccccccc}
 46. (3) & d & \xrightarrow{-1} & c & \xrightarrow{-1} & b & \xrightarrow{-1} & a \\
 & h & \xrightarrow{-1} & g & \xrightarrow{-1} & f & \xrightarrow{-1} & e \\
 & p & \xrightarrow{+1} & q & \xrightarrow{+1} & r & \xrightarrow{+1} & s \\
 & r & \xrightarrow{-1} & q & \xrightarrow{-1} & p & \xrightarrow{-1} & o
 \end{array}$$

$$\begin{array}{ccccccc}
 47. (3) & B & \xrightarrow{+4} & F & \xrightarrow{+4} & J & \xrightarrow{+4} & N \\
 & D & \xrightarrow{+4} & H & \xrightarrow{+4} & L & \xrightarrow{+4} & P \\
 & G & \xrightarrow{+2} & I & \xrightarrow{+4} & M & \xrightarrow{+4} & Q \\
 & H & \xrightarrow{+4} & L & \xrightarrow{+4} & P & \xrightarrow{+4} & T
 \end{array}$$

48. (3) $37 \times 2 = 74$, $26 \times 2 = 52$.
 $44 \times 2 = 88$
 But, $47 \times 2 = 94$

$$\begin{array}{ccccccc}
 49. (4) & 20 & \xrightarrow{-4} & 16 & \xrightarrow{+2} & 18 \\
 & 18 & \xrightarrow{-4} & 14 & \xrightarrow{+2} & 16 \\
 & 16 & \xrightarrow{-4} & 12 & \xrightarrow{+2} & 14 \\
 & 14 & \xrightarrow{-3} & 11 & \xrightarrow{+2} & 13
 \end{array}$$

50. (2) If we proceed clockwise pin head is followed by T-shaped design.

51. (4) All of the above
 52. (2) UNCED
 53. (3) negative
 54. (4) the next best alternative output
 55. (3) quasi-rent
 56. (3) Prime Minister
 57. (4) Return on capital increases
 58. (3) Investment Method
 59. (1) Labour Surplus Economy
 60. (3) A teacher teaching his own daughter at home
 61. (4) adjudicates on the sharing of resources between Centre and the States
 62. (4) GNP minus depreciation allowances
 63. (2) Liver
 64. (3) 72
 65. (3) brain
 66. (4) Carotene
 67. (2) Diphtheria
 68. (1) Haemoglobin
 69. (3) Tuberculosis
 70. (1) Starch
 71. (4) Acetyl Salicylic Acid
 72. (2) Variola Virus
 73. (4) Hydrogen
 74. (3) oxygen
 75. (2) Cadmium
 76. (1) Oxygen only
 77. (3) Petrol
 78. (4) Adiabatic demagnetisation
 79. (4) energy
 80. (3) Both the stones reach the ground at the same time
 81. (3) rapidly spinning stars
 82. (4) Jupiter
 83. (2) New Delhi
 84. (4) 27th December, 1911 in Calcutta
 85. (2) Antarctica
 86. (4) refers to emigration of skilled persons
 87. (2) 24
 88. (3) a News magazine mainly devoted to current affairs
 89. (4) Bhopal Gas Tragedy
 90. (4) Bangladesh and India
 91. (2) Literature and Journalism
 92. (3) Rana Kumbha
 93. (2) Regulator
 94. (4) Arunachal Pradesh
 95. (3) Bhagwat Gita

96. (4) Bhagirathi
 97. (4) Economics
 98. (2) Miss Venezuela
 99. (4) 12.05 per cent
 100. (1) Roger Federer
 101. (1) Jeddah
 102. (3) Comprehensive Test Bāh Treaty
 103. (1) India and Sri Lanka
 104. (3) Rajiv Gandhi Khel Ratna Award
 105. (2) Master of Computer Application
 106. (1) XXIX Olympic Games
 107. (3) Edwin Lutyens
 108. (3) August
 109. (3)

A	B	C	D
2	4	1	3

 110. (1) George Yule
 111. (2) Dadabhai Naoroji
 112. (3) Abul Fazal
 113. (2) Lahore
 114. (1) 1950 A.D.
 115. (1) Dr. S. Radhakrishnan
 116. (3) 42nd
 117. (4) the Chief Justice of India
 118. (1) 26 January, 1950
 119. (1) Mrs. Sarojini Naidu
 120. (3) Public Accounts Committee
 121. (2) Liquid dispersed in gas
 122. (4) Aral Sea
 123. (3) 3 1 4 2
 124. (4) Isohyets
 125. (2) imaginary line passing round the Earth midway between North & South poles
 126. (3) Let the numbers be $12x$ and $12y$.
 \therefore Their LCM = $12xy$ when x and y are prime to each other.
 $\therefore y = \frac{1056}{132} = 8$ [$\because 12x = 132$]
 \therefore Other number = $12y$
 $= 12 \times 8 = 96$
 127. (3) Let the numbers be $48x$ and $48y$ where x and y are co-primes.
 $\therefore 48x + 48y = 384$
 $\Rightarrow 48(x + y) = 384$
 $\Rightarrow x + y = \frac{384}{48} = 8$ (1)
 Possible and acceptable pairs of x and y satisfying this condition are : (1, 7) and (3, 5).

∴ Numbers are : $48 \times 1 = 48$
and $48 \times 7 = 336$
and, $48 \times 3 = 144$ and $48 \times 5 = 240$

∴ Required difference
= $336 - 48 = 288$

128. (2) Let the numbers be $2x$ and $3x$.

∴ $2x \times 3x = 96$
 $\Rightarrow x^2 = \frac{96}{6} = 16$

∴ $x = \sqrt{16} = 4$

∴ Sum = $2x + 3x = 5x$
= $5 \times 4 = 20$

129. (3) $x + y = 10$ (i)
 $xy = 20$ (ii)
Dividing equation (i) by (ii),

$\frac{x+y}{xy} = \frac{10}{20} \Rightarrow \frac{1}{y} + \frac{1}{x} = \frac{1}{2}$

130. (3) Here, the first divisor 192 is a multiple of second divisor 16.

∴ Required remainder
= remainder obtained by dividing 54 by 16 = 6

131. (2) The LCM of 5, 6, 7 and 8 = 840

∴ Required number = $840k + 3$ which is exactly divisible by 9 for some value of k .

Now, $840k + 3 = 93 \times 9k + (3k + 3)$

When $k = 2$, $3k + 3 = 9$, which is divisible by 9.

∴ Required number = $840 \times 2 + 3 = 1683$

132. (3) Let the two digit number be $10x + y$ where $x > y$.

Here, $x + y = 10$ (i)
and, $10x + y - 10y - x = 18$
 $\Rightarrow 9x - 9y = 18$

$\Rightarrow 9(x - y) = 18$
 $\Rightarrow x - y = 2$ (ii)

Solving equations (i) and (ii),
 $x = 6$ and $y = 4$

∴ Number = $10 \times 6 + 4 = 64$

133. (2) When 38798 is divided by 78, the remainder = 60

∴ The least number to be subtracted = 60

134. (1) Let the positive integer be x .

∴ $2x^2 - 5x = 3$
 $\Rightarrow 2x^2 - 5x - 3 = 0$
 $\Rightarrow 2x^2 - 6x + x - 3 = 0$
 $\Rightarrow 2x(x - 3) + 1(x - 3) = 0$

$\Rightarrow (x - 3)(2x + 1) = 0$
∴ $x = 3$ as $x = -\frac{1}{2}$ is not admissible.

135. (2) Let the first number be x .

∴ Second number = $14 - x$
∴ $x(14 - x) = 24(x - 14 + x)$
 $\Rightarrow x(14 - x) = 24(2x - 14)$

$\Rightarrow 14x - x^2 = 48x - 336$
 $\Rightarrow x^2 + 34x - 336 = 0$

$\Rightarrow x^2 + 42x - 8x - 336 = 0$
 $\Rightarrow x(x + 42) - 8(x + 42) = 0$
 $\Rightarrow (x + 42)(x - 8) = 0$

∴ $x = 8$ as $x = -42$

∴ Second number = $14 - 8 = 6$
∴ Larger number = 8

Note : It is preferable to solve it by oral calculation with the help of given alternatives.

136. (1) Here, $12 - 2 = 10$; $16 - 6 = 10$;

$24 - 14 = 10$
Now, LCM of 12, 16 and 24 = 48

∴ The greatest 4-digit number exactly divisible by 48 = 9984

∴ Required number
= $9984 - 10 = 9974$

137. (1) LCM of 15, 20 and 35 = 420

∴ Required least number
= $420 + 8 = 428$

138. (3) Let the number of pages in the book be x .

$\frac{2x}{5} + \frac{2x}{5} + \frac{x}{3} \times \frac{2}{5} + 15 = x$

$\Rightarrow \frac{4x}{5} + \frac{2x}{15} + 15 = x$

$\Rightarrow \frac{12x + 2x + 225}{15} = x$

$\Rightarrow 15x = 14x + 225$
 $\Rightarrow 15x - 14x = 225$
 $\Rightarrow x = 225$

139. (2) ∴ Jyothi can do $\frac{3}{4}$ th of a job

in 12 days.

∴ Jyothi can do 1 job in
 $\frac{12 \times 4}{3} = 16$ days.

As Mala is twice as efficient as Jyothi,

∴ Mala will finish the job in 8 days.

140. (1) Part of the cistern filled by pipes A, B and C in 1 hour

= $\frac{1}{6}$

∴ Part of the cistern filled by all three pipes in 2 hours = $\frac{1}{3}$

∴ Remaining part = $1 - \frac{1}{3} = \frac{2}{3}$

Now, pipes A and B fill $\frac{2}{3}$ rd part

of the cistern in 7 hours

∴ Pipes A and B will fill the cistern in $\frac{7 \times 3}{2} = \frac{21}{2}$ hours

∴ Part of the cistern filled by A and B in 1 hour = $\frac{2}{21}$

∴ Part of the cistern filled by C in 1 hour = $\frac{1}{6} - \frac{2}{21}$

= $\frac{7 - 4}{42} = \frac{1}{14}$

∴ Pipe C will fill the cistern in 14 hours.

141. (3) According to the question,

If A takes x days to complete the work, B will take $2x$ days and C will take $4x$ days.

Now, (A + B)'s 1 day's work

= $\frac{1}{4}$

$\Rightarrow \frac{1}{x} + \frac{1}{2x} = \frac{1}{4}$

$\Rightarrow \frac{2 + 1}{2x} = \frac{1}{4}$

$\Rightarrow 2x = 12$
 $\Rightarrow x = 6$

∴ C will complete the work in 24 days.

142. (3) (A + B)'s 1 day's work

= $\frac{1}{10}$ (i)

(B + C)'s 1 day's work

= $\frac{1}{12}$ (ii)

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(C + A)'s 1 day's work

$$= \frac{1}{15} \dots\dots\dots (iii)$$

On adding all these.

2(A + B + C)'s 1 day's work

$$= \frac{1}{10} + \frac{1}{12} + \frac{1}{15}$$

$$= \frac{6+5+4}{60} = \frac{1}{4}$$

∴ (A + B + C)'s 1 day's work

$$= \frac{1}{8} \dots\dots\dots (iv)$$

∴ C's 1 day's work = equation (iv) - (ii)

$$= \frac{1}{8} - \frac{1}{10} = \frac{5-4}{40} = \frac{1}{40}$$

∴ C will finish the work in 40 days.

143. (2) Rate of flow = 5 kmph
= 5000 m/hour

Radius = 7 cm = $\frac{7}{100}$ metre

Volume of water filled per hour

$$= \pi r^2 h = \frac{22}{7} \times \frac{7}{100} \times \frac{7}{100} \times 5000$$

$$= 77 \text{ cubic metre}$$

Volume of water to be filled in the tank

$$= \frac{50 \times 44 \times 7}{100} = 154 \text{ cubic metre}$$

$$\therefore \text{Required time} = \frac{154}{77}$$

$$= 2 \text{ hours}$$

144. (2) Sum of the volumes of two cylinders

$$= \pi r_1^2 h_1 + \pi r_2^2 h_2$$

$$= \frac{22}{7} (4 \times 4 \times 6 + 5 \times 5 \times 4)$$

$$= \frac{22}{7} (96 + 100)$$

$$= \frac{22}{7} \times 196 = 616 \text{ cm}^3$$

Let the radius of the disc be r cm.

$$\therefore \pi r^2 \times 1 = 616$$

$$\Rightarrow \frac{22}{7} \times r^2 = 616$$

$$\Rightarrow r^2 = \frac{616 \times 7}{22} = 196$$

$$\Rightarrow r = \sqrt{196} = 14 \text{ cm}$$

145. (1) For changes of x% and y% in length and breadth respectively. effective change in area

$$= (x + y + \frac{xy}{100})\%$$

(decrease with negative sign)

$$\therefore 60 - y - \frac{60y}{100} = 0$$

$$\Rightarrow y + \frac{3y}{5} = 60$$

$$\Rightarrow \frac{8y}{5} = 60$$

$$y = \frac{60 \times 5}{8} = \frac{75}{2} = 37\frac{1}{2}\%$$

146. (4) Let the heights of the cones be h_1 and h_2 respectively.

$$\frac{\frac{1}{3} \pi r_1^2 h_1}{\frac{1}{3} \pi r_2^2 h_2} = \frac{1}{4}$$

(r_1 and r_2 are radii.)

$$\Rightarrow \frac{h_1}{h_2} = \frac{1}{4} \times \frac{r_2^2}{r_1^2} = \frac{1}{4} \times \frac{25}{16} = \frac{25}{64}$$

147. (3) The greatest length of the rod

$$= \sqrt{12^2 + 9^2 + 8^2}$$

$$= \sqrt{144 + 81 + 64} = \sqrt{289}$$

$$= 17 \text{ metre}$$

148. (1) Volume of water flowing per second = $\pi r^2 h$

$$= \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times 12 = 462 \text{ cm}^3$$

∴ Volume of water pumped out in 1 hour

$$= 462 \times 60 \times 60 \text{ cm}^3$$

$$= 1663200 \text{ cm}^3 = 1663.2 \text{ litres}$$

149. (4) Let the radius of base be r cm and height be 16 cm.

$$\therefore 2\pi r h = 1056$$

$$\Rightarrow 2 \times \frac{22}{7} \times r \times 16 = 1056$$

$$\Rightarrow r = \frac{1056 \times 7}{2 \times 22 \times 16} = \frac{21}{2} \text{ cm}$$

∴ Volume of the cylinder = $\pi r^2 h$

$$= \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} \times 16 = 5544 \text{ cm}^3$$

150. (4) Radius of the largest sphere

$$= \frac{7}{2} \text{ cm}$$

∴ Volume of sphere = $\frac{4}{3} \pi r^3$

$$= \left(\frac{4}{3} \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times \frac{7}{2} \right) \text{ cm}^3$$

$$= 179.67 \text{ cm}^3$$

151. (1) Required ratio

$$= \pi (4r)^2 : \pi (2r)^2 : \pi (r)^2$$

$$= 16 : 4 : 1$$

152. (1) SP of 12 pairs of socks

$$= 90\% \text{ of Rs. } 80$$

$$= \frac{80 \times 90}{100} = \text{Rs. } 72$$

∴ Number of pairs bought for

$$\text{Rs. } 24 = \frac{12 \times 24}{72} = 4$$

153. (4) After a discount of 5%

$$\text{SP} = \frac{95 \times 16000}{100}$$

$$= \text{Rs. } 15200$$

Let the second discount be x%.

$$\therefore x\% \text{ of } 15200$$

$$= (15200 - 11400)$$

$$\Rightarrow \frac{x \times 15200}{100} = 3800$$

$$\Rightarrow x = \frac{3800 \times 100}{15200} = 25$$

∴ Second discount = 25%

154. (3) Case I.

$$\text{Discount} = \frac{30 \times 2000}{100} = \text{Rs. } 600$$

Single equivalent discount for discounts of 25% and 5%.

$$= \left(25 + 5 - \frac{25 \times 5}{100} \right) \%$$

$$= (30 - 1.25)\% = 28.75\%$$

$$\therefore \text{Discount} = \frac{28.75 \times 2000}{100}$$

$$= \text{Rs. } 575$$

$$\therefore \text{Difference} = \text{Rs. } (600 - 575)$$

$$= \text{Rs. } 25$$

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155. (1) Here, $\frac{x}{y} = \frac{2}{1} \Rightarrow \frac{x^2}{y^2} = \frac{4}{1}$

$$\frac{x^2 - y^2}{x^2 + y^2} = \frac{\frac{x^2}{y^2} - 1}{\frac{x^2}{y^2} + 1}$$

$$= \frac{4 - 1}{4 + 1} = \frac{3}{5}$$

156. (2) Required ratio = $\frac{1}{3} : \frac{2}{2} : \frac{3}{1}$

$$\left[\because \text{Speed} = \frac{\text{Distance}}{\text{Time}} \right]$$

$$= 1 : 3 : 9$$

157. (3) Let the numbers be $3x$ and $4x$.

$$\frac{3x + 6}{4x + 6} = \frac{4}{5}$$

$$\Rightarrow 16x + 24 = 15x + 30$$

$$\Rightarrow x = 30 - 24 = 6$$

$$\therefore \text{Required difference} = 6$$

158. (3) As given,

$$2A = 3B$$

$$\Rightarrow A : B = 3 : 2$$

$$\text{and } 4B = 5C$$

$$\Rightarrow B : C = 5 : 4$$

$$\therefore A : B : C$$

$$= 3 \times 5 : 2 \times 5 : 2 \times 4$$

$$= 15 : 10 : 8$$

$$\therefore A : C = 15 : 8$$

159. (2) Let the initial weights of Mr. Gupta and Mrs. Gupta be $7x$ and $8x$ kg respectively.

$$\therefore 7x + 8x = 120$$

$$\Rightarrow 15x = 120$$

$$\Rightarrow x = \frac{120}{15} = 8$$

$$\therefore \text{Mr. Gupta's weight} = 7 \times 8 = 56 \text{ kg}$$

$$\text{Mrs. Gupta's weight} = 8 \times 8 = 64 \text{ kg}$$

Let Mrs. Gupta reduce her weight by y kg.

$$\frac{56 - 8}{64 - y} = \frac{5}{6}$$

$$\Rightarrow \frac{50}{64 - y} = \frac{5}{6}$$

$$\Rightarrow 64 - y = 60$$

$$\Rightarrow y = 64 - 60 = 4 \text{ kg}$$

160. (3) Let the numbers be $5x$, $6x$ and $7x$ respectively.

$$\therefore 5x \times 6x \times 7x = 5670$$

$$\Rightarrow x^3 = \frac{5670}{5 \times 6 \times 7} = 27$$

$$\therefore x = \sqrt[3]{27} = 3$$

$$\therefore \text{The greatest number} = 7x = 7 \times 3 = 21$$

161. (3) Remaining work

$$= 5 - \frac{7}{2} = \frac{3}{2}$$

$$M_1 \times D_1 \times W_1 = M_2 \times D_2 \times W_2$$

$$\Rightarrow 280 \times 80 \times \frac{3}{2}$$

$$= M_2 \times 20 \times \frac{7}{2}$$

$$\Rightarrow M_2 = \frac{280 \times 80 \times 3}{20 \times 7} = 480$$

$$\therefore \text{Required number of additional men} = 480 - 280 = 200$$

162. (4) If same distances are covered at two different speeds of x and y kmph, the average speed of

$$\text{journey} = \frac{2xy}{x+y}$$

$$= \left(\frac{2 \times 100 \times 80}{100 + 80} \right) \text{ kmph} = 88.89 \text{ kmph}$$

163. (4) Weight of the new student

$$= (40 + 15 \times 1.5) \text{ kg}$$

$$= (40 + 22.5) \text{ kg}$$

$$= 62.5 \text{ kg}$$

164. (3) Total of correct marks

$$= 100 \times 40 - 83 + 53 = 3970$$

$$\therefore \text{Correct average marks}$$

$$= \frac{3970}{100} = 39.70$$

165. (1) Let CP of basket be Rs. x .

$$\therefore 130\% \text{ of } x = 19.50$$

$$\Rightarrow \frac{130 \times x}{100} = 19.50$$

$$\Rightarrow x = \frac{19.50 \times 100}{130} = \text{Rs. } 15$$

For 40% gain,

$$\text{SP} = \frac{140 \times 15}{100} = \text{Rs. } 21$$

166. (1) Let CP of each TV be Rs. x . According to the question,

$$2(x - 9400) = 10600 - x$$

$$\Rightarrow 2x - 18800 = 10600 - x$$

$$\Rightarrow 3x = 10600 + 18800$$

$$= 29400$$

$$\Rightarrow x = \frac{29400}{3} = \text{Rs. } 9800$$

167. (3) Let the CP of the cooker be Rs. x .

$$\therefore \text{Initial SP} = \frac{116x}{100}$$

Again,

$$\text{SP} = \text{Rs. } \left(\frac{116x}{100} + 20 \right)$$

$$\therefore \frac{116x}{100} + 20 = \frac{120x}{100}$$

$$\Rightarrow 116x + 2000 = 120x$$

$$\Rightarrow 4x = 2000$$

$$\Rightarrow x = \frac{2000}{4} = \text{Rs. } 500$$

168. (3) Let CP of the article be Rs. x . As given,

$$\frac{144 - x}{x} \times 100 = x$$

$$\Rightarrow 14400 - 100x = x^2$$

$$\Rightarrow x^2 + 100x - 14400 = 0$$

$$\Rightarrow x^2 + 180x - 80x - 14400 = 0$$

$$\Rightarrow x(x + 180) - 80(x + 180) = 0$$

$$\Rightarrow (x - 80)(x + 180) = 0$$

$$\therefore x = 80 \text{ as } x \neq -180$$

$$\therefore \text{Cost price} = \text{Rs. } 80$$

169. (3) Let the vendor buy 20 (LCM of 5 and 4) bananas.

$$\therefore \text{CP of 20 bananas} = \text{Rs. } 4$$

$$\text{SP of 20 bananas} = \text{Rs. } 5$$

$$\therefore \text{Gain\%} = \frac{5 - 4}{4} \times 100 = 25\%$$

170. (1) In 12 litres salt solution,

$$\text{Salt} = \frac{7 \times 12}{100} = 0.84 \text{ units}$$

$$\text{Water} = \frac{93 \times 12}{100} = 11.16 \text{ units}$$

After evaporation,

Percentage of salt

$$= \frac{0.84}{8} \times 100 = 10.5$$

171. (1) Let Tulsiram's salary be Rs. x .

$$\therefore \frac{x \times 4}{100} = 720$$

$$\Rightarrow x = \frac{720 \times 100}{4}$$

= Rs. 18000

\(\therefore\) Kashyap's salary

$$= \text{Rs.} \left(\frac{100}{120} \times 18000 \right)$$

= Rs. 15000

172. (1) If two numbers are respectively $x\%$ and $y\%$ more than a third number, the first as a per cent of second is

$$= \frac{100 + x}{100 + y} \times 100 = \frac{110}{125} \times 100$$

= 88%

173. (4) Reduced price of 6.2kg of sugar

= 10% of Rs. 1116

= Rs. 111.6

\(\therefore\) Reduced price per kg

$$= \text{Rs.} \left(\frac{111.6}{6.2} \right) = \text{Rs.} 18$$

174. (2) Let sum of money be Rs. x .

$$\therefore \frac{11}{2}\% \text{ of } x = 220$$

$$\Rightarrow x = \frac{220 \times 200}{11} = 4000$$

$$\therefore 3\frac{1}{2}\% \text{ of } 4000 = \frac{7}{2} \times \frac{4000}{100}$$

= Rs. 140

175. (2) Let the principal be Rs. x and rate be $y\%$ per annum.

According to the question,

$$\therefore \text{SI} = \frac{P \times R \times T}{100}$$

$$\Rightarrow \frac{x}{4} = \frac{x \times y \times y}{100}$$

$$\Rightarrow y^2 = \frac{100}{4} = 25$$

$$\Rightarrow y = \sqrt{25} = 5\% \text{ per annum}$$

176. (2) Let each instalment be Rs. x .

$$\therefore \left(1 + \frac{5}{100} \right) + \frac{x}{\left(1 + \frac{5}{100} \right)^2} = 12300$$

$$\Rightarrow \frac{20x}{21} + \left(\frac{20}{21} \right)^2 x = 12300$$

$$\Rightarrow \frac{20x}{21} \left(1 + \frac{20}{21} \right) = 12300$$

$$\Rightarrow \frac{20x}{21} \times \frac{41}{21} \times x = 12300$$

$$\Rightarrow x = \frac{12300 \times 21 \times 21}{20 \times 41}$$

= Rs. 6615

177. (3) Let $r\%$ rate of interest per annum and principal be Re. 1.

$$A = P \left(1 + \frac{R}{100} \right)^T$$

$$\therefore 2 = 1 \left(1 + \frac{r}{100} \right)^5$$

$$\therefore 2^3 = 1 \left(1 + \frac{r}{100} \right)^{5 \times 3}$$

$$\therefore 8 = 1 \left(1 + \frac{r}{100} \right)^{15}$$

\(\therefore\) Time = 15 years

178. (1) Let the sum = P and original rate = $R\%$ per annum.

Then,

$$\frac{P \times (R + 3) \times 2}{100} - \frac{P \times R \times 2}{100} = 72$$

$$\Rightarrow \frac{P \times 3 \times 2}{100} = 72$$

$$\Rightarrow P = \frac{72 \times 100}{3 \times 2} = \text{Rs.} 1200$$

179. (3) Let the sum lent be Rs. x .

$$\therefore \frac{x \times 7.5 \times 5}{100} - \frac{x \times 7.5 \times 4}{100} = 150$$

$$\Rightarrow \frac{x \times 7.5 \times 1}{100} = 150$$

$$\Rightarrow x = \frac{150 \times 100}{7.5}$$

= Rs. 2000

180. (4) Relative speed of train

$$= (36 - 9) \text{ kmph} = 27 \text{ kmph}$$

$$= \frac{27 \times 5}{18} \text{ m/sec}$$

$$= \frac{15}{2} \text{ m/sec}$$

\(\therefore\) Required time

$$= \frac{\text{Length of the train}}{\text{Relative speed}}$$

$$= \frac{150 \times 2}{15} = 20 \text{ second}$$

181. (1) Let the speed of boat in still water be x kmph and that of stream be y kmph.

$$\therefore \frac{20}{x + y} = 2$$

$$\Rightarrow x + y = 10 \text{ kmph} \dots\dots\dots(i)$$

$$\frac{20}{x - y} = 5$$

$$\Rightarrow x - y = 4 \text{ kmph} \dots\dots\dots(ii)$$

On adding,

$$2x = 14 \text{ kmph}$$

$$\Rightarrow 7 \text{ kmph}$$

182. (4) Let the required distance be x km.

According to the question,

$$\frac{x}{4} - \frac{x}{5} = \frac{18}{60}$$

$$\Rightarrow \frac{5x - 4x}{20} = \frac{3}{10}$$

$$\Rightarrow x = \frac{3}{10} \times 20 = 6 \text{ km}$$

183. (2) Let two trains meet after t hours when the train from town A leaves at 8 AM.

\(\therefore\) Distance covered in t hours at 70 kmph + Distance covered in $(t - 2)$ hours at 110 kmph = 500km

$$\therefore 70t + 110(t - 2) = 500$$

$$\Rightarrow 70t + 110t - 220 = 500$$

$$\Rightarrow 180t = 500 + 220 = 720$$

$$\Rightarrow t = \frac{720}{180} = 4 \text{ hours}$$

Hence, the trains will meet at 12 noon.

184. (2) Let the initial speed of the car be x kmph and the distance be y km.

$$\therefore y = \frac{9}{2}x \dots\dots\dots (i)$$

$$\text{and, } y = 4(x + 5) \dots\dots\dots (ii)$$

$$\therefore \frac{9x}{2} = 4(x + 5)$$

$$\Rightarrow 9x = 8x + 40$$

$$\Rightarrow x = 40 \text{ kmph}$$

185. (4) Companies with more demand than production are A, C and E.

Companies with more production than demand are B and D.

\(\therefore\) Required ratio = 3 : 2

186. (3) Average demand

$$= \frac{3300 + 1200 + 3000 + 600 + 2500}{5}$$

$$= \frac{10600}{5} = 2120$$

Average production

$$= \frac{2200 + 2700 + 1500 + 1800 + 1000}{5}$$

$$= \frac{9200}{5} = 1840$$

\(\therefore\) Required difference

$$= 2120 - 1840 = 280$$

187. (3) Required percentage

$$= \frac{600}{2500} \times 100 = 24$$

188. (2) Average demand of companies B and D

$$= \frac{1200 + 600}{2} = \frac{1800}{2} = 900$$

Average production of companies B and D

$$= \frac{2700 + 1800}{2} = 2250$$

\(\therefore\) Required ratio = 900 : 2250

$$= 2 : 5$$

189. (1) Expression

$$= \frac{\frac{13}{4} - \frac{4}{5} \times \frac{5}{6}}{\frac{13}{3} \times 5 - \left(\frac{3}{10} + \frac{106}{5}\right)}$$

$$= \frac{\frac{13}{4} - \frac{2}{3}}{\frac{65}{3} - \frac{3}{10} - \frac{106}{5}}$$

$$\frac{39 - 8}{\frac{12}{650 - 9 - 636}} = \frac{31}{30}$$

$$= \frac{31}{12} \times \frac{30}{5} = \frac{31}{2} = 15 \frac{1}{2}$$

\(\therefore\) Required answer

$$= 15 \frac{1}{2} - 15 = \frac{1}{2}$$

190. (2) $\sqrt[3]{0.014 \times 0.14x}$

$$= 0.014 \times 0.14 \sqrt[3]{y}$$

On squaring both sides,

$$0.014 \times 0.14x$$

$$= (0.014)^2 \times (0.14)^2 \times y$$

$$\therefore \frac{x}{y} = 0.014 \times 0.14 = 0.00196$$

191. (1) Let 0.337 = a and 0.126 = b.

\(\therefore\) Expression

$$= \frac{(a+b)^2 - (a-b)^2}{ab} = \frac{4ab}{ab} = 4$$

192. (2) Expression = $\sqrt[3]{4 \frac{12}{125}}$

$$= \sqrt[3]{\frac{512}{125}} = \sqrt[3]{\frac{8 \times 8 \times 8}{5 \times 5 \times 5}} = \frac{8}{5} = 1.6$$

$$= \sqrt{900} + \sqrt{0.09} - \sqrt{0.000009}$$

$$= 30 + 0.3 - 0.003$$

$$= 30.297$$

194. (1) Expression

$$= \sqrt{5 + \sqrt{11 + \sqrt{19 + \sqrt{29 + 7}}}}$$

$$= \sqrt{5 + \sqrt{11 + \sqrt{19 + 6}}}$$

$$= \sqrt{5 + \sqrt{11 + 5}}$$

$$= \sqrt{5 + 4} = \sqrt{9} = 3$$

195. (2) Decimal equivalents :

$$\frac{4}{9} = 0.4; \sqrt{\frac{9}{49}} = \frac{3}{7} = 0.43$$

$$0.45; (0.8)^2 = 0.64$$

\(\therefore\) Least number = 0.43

$$= \sqrt{\frac{9}{49}}$$

196. (4) Expression

$$= \left(99 + \frac{95}{99}\right) \times 99$$

$$= 99 \times 99 + 95 = 9896$$

197. (4) Expression = 1.2×0.03

$$= 1 \frac{2}{9} \times \frac{3}{99} = \frac{11}{9} \times \frac{3}{99} = \frac{1}{27}$$

$$= 0.037$$

198. (1) Here,

$$\frac{1}{3 - \sqrt{8}} = \frac{(3 + \sqrt{8})}{(3 - \sqrt{8})(3 + \sqrt{8})}$$

$$= \frac{3 + \sqrt{8}}{9 - 8} = 3 + \sqrt{8}$$

$$\frac{1}{\sqrt{8} - \sqrt{7}} = \frac{\sqrt{8} + \sqrt{7}}{(\sqrt{8} - \sqrt{7})(\sqrt{8} + \sqrt{7})}$$

$$= \sqrt{8} + \sqrt{7} \text{ etc.}$$

Expression

$$= (3 + \sqrt{8}) - (\sqrt{8} + \sqrt{7}) + (\sqrt{7} + \sqrt{6}) - (\sqrt{6} + \sqrt{5}) + (\sqrt{5} + 2)$$

$$= 3 + \sqrt{8} - \sqrt{8} - \sqrt{7} + \sqrt{7} + \sqrt{6} - \sqrt{6} - \sqrt{5} + \sqrt{5} + 2$$

$$= 3 + 2 = 5$$

199. (1) Expression

$$= 16\sqrt{\frac{3 \times 4}{4 \times 4}} - 9\sqrt{\frac{4 \times 3}{3 \times 3}}$$

$$= \frac{16\sqrt{12}}{4} - \frac{9\sqrt{12}}{3}$$

$$= 4\sqrt{12} - 3\sqrt{12}$$

$$= \sqrt{12} = 3.46$$

200. (3) $2^{2x-y} = 16 = 2^4$

$$\Rightarrow 2x - y = 4 \dots\dots\dots (i)$$

$$2^{x+y} = 32 = 2^5$$

$$\Rightarrow x + y = 5 \dots\dots\dots (ii)$$

On adding equations (i) and (ii).

$$3x = 9 \Rightarrow x = 3$$

From equation (ii).

$$y = 5 - x = 5 - 3 = 2$$

$$\therefore xy = 3 \times 2 = 6$$

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