

SOLVED PAPER

SSC COMBINED GRADUATE LEVEL

PRELIM EXAM

Held on: 16.05.2010 (Second Sitting)

GENERAL INTELLIGENCE

1. Bahu is Rahim's neighbour and his house is 200 metres away in the north west direction. Joseph is Rahim's neighbour and his house is located 200 metres away in the south west direction. Gopal is Joseph's neighbour and he stays 200 metres away in the south east direction. Roy is Gopal's neighbour and his house is located 200 metres away in the north east direction. Then where is the position of Roy's house in relation to Babu's ?
(a) South east (b) South west
(c) North (d) North east
2. A group of friends are sitting in an arrangement one each at the corner of an octagon. All are facing the centre. Mahima is sitting diagonally opposite Rama, who is on Sushma's right. Ravi is next to Sushma and opposite Girdhar, who is on Chandra's left. Savitri is not on Mahima's right but opposite Shalini. Who is on Shalini's right?
(a) Ravi (b) Mahima
(c) Girdhar (d) Rama
3. A cube has the following figures drawn on its five faces. The top surface is blank. The ellipse is between the cross and the triangle. The square is on the right of the triangle. The ellipse and the square are opposite to each other. Which face is the circle on?
(a) On the top
(b) Opposite to ellipse
(c) Opposite to triangle
(d) At the bottom

Directions (4 - 11) : In each of the following questions, select the related word/letters/ number/ figure from the given alternatives.

4. Fox : Cunning : : Rabbit : ?
(a) Courageous (b) Dangerous
(c) Timid (d) Ferocious
5. Flexible : Rigid : Confidence : ?
(a) Diffidence (b) Indifference
(c) Cowardice (d) Scare
6. AZCX : BYDW :: HQJO : ?
(a) GRFP (b) IPKM
(c) IPKN (d) GRJP
7. QIOK : MMKO :: YAWC : ?
(a) USGA (b) UESG
(c) VUES (d) SUEG
8. $\frac{ABC}{F} : \frac{BCD}{I} :: \frac{CDE}{L} : ?$
(a) $\frac{DEF}{O}$ (b) $\frac{DEF}{N}$
(c) $\frac{EDF}{O}$ (d) $\frac{DEF}{M}$
9. 1 : 8 :: 27 : ?
(a) 37 (b) 47
(c) 57 (d) 64
10. 24 : 126 :: 48 : ?
(a) 433 (b) 192
(c) 240 (d) 344
11. 987 : IHG :: 654 : ?
(a) FDE (b) FED
(c) EFD (d) DEF

Directions (12-18): In each of the following questions field the odd word/letters/number/figure from the given responses.

12. (a) Room (b) Chamber
(c) Veranda (d) Cabin
13. (a) Mouth Organ (b) Electric Guitar
(c) Keyboard (d) Sonata
14. (a) A (b) 1
(c) D (d) E
15. (a) RNMP (b) JFEH'
(c) RPOQ (d) HDCF
16. (a) AbcdE (b) lfgH0
(c) ApqrL (d) UlmnE
17. (a) 6243 (b) 2643
(c) 8465 (d) 4867
18. (a) 49 – 33 (b) 62 – 46
(c) 83 – 67 (d) 70 – 55
19. From amongst the given alternatives, select the one in which the set of numbers is most like the set of numbers given below:
(6, 14,30)
(a) 4, 16, 28 (b) 7, 12, 22
(c) 6, 12, 22 (d) 5, 12, 20
20. Which one of the given responses would be a meaningful order of the following words ? A. Family B. Community C. Member D. Locality E. Country
(a) C, A, D, B, E (b) C, A, B, D, E
(c) C, A, B, E, D (d) C, A, D, E, B
21. Arrange the following words according to the dictionary:
A. TORTOISE B. TORONTO
C. TORPED D. TORUS
E. TORSEL
(a) B, E, C, A, D (b) B, E, C, D, A
(c) B, C, E, A, D (d) B, C, E, D, A
22. Which set of letters when sequentially placed at the gaps in the given letter series shall complete it ?
_a_aaaba_ba ab
(a) abaaaa (b) abaaba
(c) aababa (d) ababaa

Directions (23-27): In each of the following questions, find the missing number /letters/figure from the given responses :

23. a, r, c, s, e, t, g, ____, ____,
(a) x, z (b) u, i
(c) w, y (d) v, b
24. (?), PSVYB, EHKNQ, TWZCF, ILORU
(a) B, E, H, K, N (b) A, D, G, J, M
(c) S, V, Y, B, E (d) Z, C, F, I, L
25. 0, 4, 18, 48, ?, 180
(a) 58 (b) 68
(c) 84 (d) 100
26. 36, 28, 24, 22, ?
(a) 18 (b) 19
(c) 21 (d) 22
35. A group of alphabets are given with each being assigned a numerical code. These have to be unscrambled into a meaningful word and the correct code so obtained may be indicated from the given responses ?
R A H K S
1 2 3 4 5
(a) 51234 (b) 54213
(c) 53214 (d) 53124
36. A statement is given followed by two assumptions, (a) and (b). You have to consider the statement to be true, even if it seems to be at variance from commonly known facts. You are to decide which of the given assumptions can definitely be drawn from the given statement. Indicate your answer.
Statement: Theoretical education does not bring in economic advancement and it leads to a steady loss of confidence and money in the country.
Assumptions:
(a) There is close relationship between development of confidence and economic development.
(b) Theoretical education makes priceless contribution for development of confidence.
(a) Only 1 is implicit
(b) Only 2 is implicit
(c) Both 1 and 2 are implicit
(d) Both 1 and 2 are not implicit
37. Two statements are given followed by four conclusions, I, II, III and IV. You have to consider the statements to be true, even if they seem to be at variance from commonly known facts. You

are to decide which of the given conclusions can definitely be drawn from the given statements. Indicate your answer.

Statements:

(A) No cow is a chair. (B) All chairs are tables.

Conclusions:

- I. Some tables are chairs.
- II. Some tables are cows.
- III. Some chairs are cows.
- IV. No table is a cow
- (a) Either II or III follow
- (b) Either II or IV follow
- (c) Only I follows
- (d) All conclusions follow

27. 7, 9, 1.3, 21, 37, ?

- (a) 58
- (b) 63
- (c) 69
- (d) 72

28. Select the number which does NOT belong to the given series 232, 343, 454, 564, 676

- (a) 676
- (b) 454
- (c) 343
- (d) 564

29. A bus left with some definite number of passengers. At the first stop, half the passengers left the bus and 35 boarded the bus. At the

second stop $\frac{1}{5}$ th of the passengers left and 40 boarded the bus. Then, the bus moved with 80 passengers towards its destination without stopping any-where. How many passengers were there originally ?

- (a) 25
- (b) 30
- (c) 40
- (d) 50

30. If the day after tomorrow is Sun-day, what day was tomorrow's day before yesterday ?

- (a) Friday
- (b) Thursday
- (c) Monday
- (d) Tuesday

31. A man is 3 years older than his wife and four times as old as his son. If the son becomes 15 years old after 3 years, what is the present age of the wife ?

- (a) 60 years
- (b) 51 years
- (c) 48 years
- (d) 45 years

32. X and Y are brothers. R is the father of Y. S is the brother of T and maternal uncle of X. What is T to R?

- (a) Mother
- (b) Wife
- (c) Sister
- (d) Brother

33. Suresh is 7 ranks ahead of Ashok in the class of 39 students. If Ashok's rank is 17th from the last, what is Suresh's rank from the start?

- (a) 16th
- (b) 23th
- (c) 24th
- (d) 15th

34. A word/set of letters given in capital letters is followed by four answer words. Out of these only one cannot be formed by using the letters of the given word/set of letters. Find out that word INDETERMINATE

- (a) DETERMINE
- (b) RETINUE
- (c) REMINDER
- (d) RETINA

38. If HONESTY is written as 5132468 and POVERTY as 7192068, how is HORSE written in a certain code?

- (a) 50124
- (b) 51042
- (c) 51024
- (d) 52014

39. In a certain code SISTER is written as RHRSDQ. How is UNCLE written in that code?

- (a) TMBKD
- (b) TBMKD
- (c) TVBOD
- (d) TMKBD

40. If $841 = 3$, $633 = 5$, $425 = 7$ then $217 = ?$

- (a) 6
- (b) 7
- (c) 8
- (d) 9

41. The following equations follow a common property. Find out the correct value to complete D : A=51(714)14 : B = 61 (915) 15; C = 71 (1136) 16: D = 81 (?) 17

- (a) (1377)
- (b) (1378)
- (c) (1356)
- (d) (1346)

42. After interchanging \div and $=$, 2 and 3 which one of the following statements becomes correct ?

- (a) $15 = 2 = 3$
- (b) $5 \div 15 = 2$
- (c) $2 = 15 \div 3$
- (d) $3 = 2 \div 15$

43. $25 * 2 * 6 = 4 * 11 * 0$

Which set of symbols can replace * ?

- (a) $\times, -, \times, +$
- (b) $+, -, \times, +$
- (c) $\times, +, \times, -$
- (d) $\times, +, +, \times$

44. Find the missing number from the given responses

5	6	12
4	3	4
2	3	?
18	27	96

- (a) 4
- (b) 5
- (c) 3
- (d) 6

45. Peter walked 8 kms. west and turned right and walked 3 kms. The again he turned right and walked 12 kms. How far is he from the starting point ?

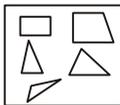
- (a) 7 (b) 8
(c) 4 (d) 5

46. Choose the correct figure that represents the given relation : Blue eyed, females, doctors

- (a) (b) (c) (d)

47. Among the four answer figures, which figure can be formed from the cutpieces given below in the question figure ?

Questions Figure:

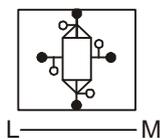


Answer Figures:

- (a) (b) (c) (d)

48. If the mirror is placed on the line LM, then which of the answer figures is the right image of the given question figure ?

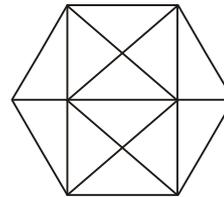
Question Figure:



- (a) (b)

- (c) (d)

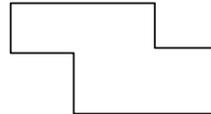
49. How many triangles are there in the following figure ?



- (a) 20 (b) 24
(c) 28 (d) 32

50. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure:



Answer Figures:

- (a) (b) (c) (d)

GENERAL AWARENESS

51. Which of the following Indonesian regions was a victim of massive earthquake in 2004?

- (a) Irian Jaya (b) Sumatra
(c) Kalibangan (d) Java

52. The first non-stop air-conditioned 'DURANTO' train was flagged off between
(a) Sealdah — New Delhi
(b) Mumbai — Howrah
(c) Bangalore — Howrah
(d) Chennai — New Delhi
53. Which among the following agencies released the report, Economic Outlook for 2009-10 ?
(a) Planning Commission
(b) PM's Economic Advisory Council
(c) Finance Commission
(d) Reserve Bank of India
54. India and U.S. have decided to finalise agreements related to which of the following?
(a) Trade and Investment
(b) Intellectual Property
(c) Traditional Knowledge
(d) All of the above
55. Which one of the following states does not form part of Narmada River basin?
(a) Madhya Pradesh (b) Rajasthan
(c) Gujarat (d) Maharashtra
56. Which of the following countries has recently become the third largest market for Twitter?
(a) China (b) India
(c) Brazil (d) Indonesia
57. The exchange of commodities between two countries is referred as
(a) Balance of trade (b) Bilateral trade
(c) Volume of trade (d) Multilateral trade
58. Soil erosion on hill slopes can be checked by
(a) Afforestation (b) Terrace cultivation
(c) Strip cropping (d) Contour ploughing
59. Who coined the word 'Geography'?
(a) Ptolemy (b) Eratosthenes
(c) Hecataeus (d) Herodotus
60. Which of the following is called the "ecological hot spot of India"?
(a) Western Ghats (b) Eastern Ghats
(c) Western Himalayas (d) Eastern Himalayas
61. The art and science of map making is called
(a) Remote Sensing (b) Cartography
(c) Photogrammetry (d) Mapping
62. The age of the Earth can be determined by
(a) Geological Time Scale
(b) Radio-Metric Dating
(c) Gravity method
(d) Fossilization method
63. The monk who influenced Ashoka to embrace Buddhism was
(a) Vishnu Gupta (b) Upa Gupta
(c) Brahma Gupta (d) Brihadratha
64. The declaration that Democracy is a Government 'of the people, by the people; for the people' was made by
(a) George Washington (b) Winston Churchill
(c) Abraham Lincoln
(d) Theodore Roosevelt
65. The Lodi dynasty was founded by
(a) Ibrahim Lodi (b) Sikandar Lodi
(c) Bahlol Lodi (d) Khizr Khan
66. Harshvardhana was defeated by
(a) Prabhakaravardhana
(b) Pulakesin II
(c) Narasimhasvarma Pallava
(d) Sasanka
67. Who among the following was an illiterate?
(a) Jahangir (b) Shah Jahan
(c) Akbar (d) Aurangzeb
68. Which Governor General is associated with Doctrine of Lapse?
(a) Lord Ripon (b) Lord Dalhousie
(c) Lord Bentinck (d) Lord Curzon
69. India attained 'Dominion Status' on
(a) 15th January, 1947 (b) 15th August, 1947
(c) 15th August, 1950 (d) 15th October, 1947
70. Despotism is possible in a
(a) One party state (b) Two party state
(c) Multi Party state
(d) Two and multi party state
71. Marx belonged to
(a) Germany (b) Holland
(c) France (d) Britain
72. Which one of the following is the guardian of Fundamental Rights?
(a) Legislature (b) Executive
(c) Political parties (d) Judiciary
73. Sarkaria Commission was concerned with
(a) Administrative Reforms
(b) Electoral Reforms
(c) Financial Reforms
(d) Centre-State relations

74. The Speaker of the Lok-Sabha has to address his/her letter of resignation to
(a) Prime Minister of India
(b) President of India
(c) Deputy Speaker of Lok Sabha
(d) Minister of Parliamentary Affairs
75. A want becomes a demand only when it is backed by the
(a) Ability to purchase
(b) Necessity to buy
(c) Desire to buy
(d) Utility of the product
76. The terms "Micro Economics" and "Macro Economics" were coined by
(a) Alfred Marshall (b) Ragner Nurkse
(c) Ragner Frisch (d) J.M. Keynes
77. During periods of inflation, tax rates should
(a) increase (b) decrease
(c) remain constant (d) fluctuate
78. Which is the biggest tax paying sector in India?
(a) Agriculture sector
(b) Industrial sector
(c) Transport sector
(d) Banking sector
79. "Economics is what it ought to be" - This statement refers to
(a) Normative economics
(b) positive economics
(c) Monetary economics
(d) Fiscal economics
80. The excess of price a person is to pay rather than forego the consumption of the commodity is called
(a) Price (b) Profit
(c) Producers' surplus
(d) Consumer's surplus
81. Silver halides are used in photo-graphic plates because they are
(a) oxidised in air
(b) soluble in hyposolution
(c) reduced by light
(d) totally colourless
82. Tetra ethyle lead (TEL) is
(a) a catalyst in burning fossil fuel
(b) an antioxidant
(c) a reductant
(d) an antiknock compound
83. Curie point is the temperature at which
(a) Matter becomes radioactive
(b) A metal loses magnetic properties.
(c) A metal loses conductivity
(d) Transmutation of metal occurs.
84. The isotope used for the production of atomic energy is
(a) U-235 (b) U-238
(c) U-234 (d) U-236
85. The acceleration due to gravity at the equator
(a) is less than that at the poles
(b) is greater than that at the poles
(c) is equal to that at the poles
(d) does not depend on the earth's centripetal acceleration
86. Which of the following is not a nucleon?
(a) Proton (b) Neutron
(c) Electron (d) Positron
87. The material used in the manufacture of lead pencil is
(a) Graphite (b) Lead
(c) Carbon (d) Mica
88. Angle of friction and angle of re-pose are
(a) equal to each other
(b) not equal to each other
(c) proportional to each other
(d) None of the above
89. Processor's speed of a computer is measured in
(a) BPS (b) MIPS
(c) Baud (d) Hertz
90. 'C' language is a
(a) Low level language
(b) High level language
(c) Machine level language
(d) Assembly level language
91. What happens to a person who receives the wrong type of blood?
(a) All the arteries constrict
(b) All the arteries dialates
(c) The RBCs agglutinate
(d) The spleen and lymphnodes deteriorate
92. NIS stands for
(a) National Infectious diseases Seminar
(b) National Irrigation Schedule
(c) National Immunisation Schedule
(d) National Information Sector

93. If all bullets could not be removed from gun shot injury of a man, it may cause poisoning by
 (a) Mercury (b) Lead
 (c) Iron (d) Arsenic
94. Ringworm is a....disease.
 (a) Bacterial (b) Protozoan
 (c) Viral (d) Fungal
95. Pituitary gland is situated in
 (a) the base of the heart
 (b) the base of the brain
 (c) the neck
 (d) the abdomen
96. Who discovered cement?
 (a) Agassit (b) Albertus Magnus
 (c) Joseph Aspdin (d) Janseen
97. According to RBRs Report on the trend and progress of banking, the Non-performing Assets (NPA's) in India for 2008-09 for Indian Banks in 2008 have stood at
 (a) 2.3 per cent (b) 2.6 per cent
 (c) 3.5 per cent (d) 5.2 per cent
98. Window 7, the latest operating system from Microsoft Corporation has.....Indian languages fonts.
 (a) 14 (b) 26
 (c) 37 (d) 49
99. TRIPS and TRIMS are the terms associated with
 (a) IMF (b) WTO
 (c) IBRD (d) IDA
100. A Presidential Ordinance can remain in force
 (a) For three months (b) For six months
 (c) For nine months (d) Indefinitely
103. A train, 240 m long crosses a man walking along the line in opposite direction at the rate of 3 kmph in 10 seconds. The speed of the train is
 (a) 63 kmph (b) 75 kmph
 (c) 83.4 kmph (d) 86.4 kmph
104. A boatman rows 1 km in 5 minutes, along the stream and 6 km in 1 hour against the stream. The speed of the stream is
 (a) 3 kmph (b) 6 kmph
 (c) 10 kmph (d) 12 kmph
105. A can complete $\frac{1}{3}$ of a work in 5 days and B, $\frac{2}{5}$ of the work in 10 days. In how many days both A and B together can complete the work ?
 (a) 10 (b) $9\frac{3}{8}$
 (c) $8\frac{4}{5}$ (d) $7\frac{1}{2}$
106. 7 men can complete a piece of work in 12 days. How many additional men will be required to complete double the work in 8 days ?
 (a) 28 (b) 21
 (c) 14 (d) 7
107. One pipe fills a water tank three times faster than another pipe. If the two pipes together can fill the empty tank in 36 minutes, then how much time will the slower pipe alone take to fill the tank ?
 (a) 1 hour 21 minutes
 (b) 1 hour 48 minutes
 (c) 2 hours (d) 2 hour 24 minutes
108. In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. A student attempted all the 200 questions and scored, in all 200 marks. The number of questions, he answered correctly was
 (a) 82 (b) 80
 (c) 68 (d) 60
109. The average of odd numbers upto 100 is
 (a) 50.5 (b) 50
 (c) 49.5 (d) 49

NUMERICAL APTITUDE

101. In how many years will a sum of Rs. 800 at 10% per annum compound interest, compounded semiannually becomes Rs. 926.10 ?
 (a) $1\frac{1}{2}$ (b) $1\frac{2}{3}$
 (c) $2\frac{1}{3}$ (d) $2\frac{1}{2}$
102. In a 100m race, Kamal defeats Bimal by 5 seconds. If the speed of Kamal is 18 Kmph, then the speed of Bimal is

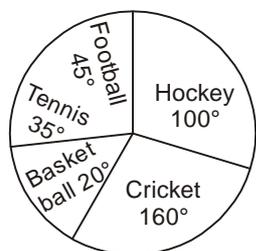
110. If A's income is 25% less than B's income, by how much per cent is B's income more than that of A ?
 (a) 25 (b) 30
 (c) $33\frac{1}{3}$ (d) $66\frac{2}{3}$
111. $(1^2 + 2^2 + 3^2 + \dots + 10^2)$ is equal to
 (a) 380 (b) 385
 (c) 390 (d) 392
112. The sixth term of the sequence 2, 6, 11, 17... is
 (a) 24 (b) 30
 (c) 32 (d) 36
113. Two number are in the ratio 7 : 1. If 7 is added to each of the numbers, the ratio becomes 2 : 3. The smaller number is
 (a) 39 (b) 49
 (c) 66 (d) 77
114. $\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)\left(1 - \frac{1}{5}\right)\dots\left(1 - \frac{1}{25}\right)$ is equal to
 (a) $\frac{2}{25}$ (b) $\frac{1}{25}$
 (c) $1\frac{19}{25}$ (d) $\frac{1}{325}$
115. A number, when divided by 136, leaves remainder 36. If the same number is divided by 17, the remainder will be
 (a) 9 (b) 7
 (c) 3 (d) 2
116. Simplified form of $\left[\left(\sqrt[5]{x^{-3/5}}\right)^{-5/3}\right]^5$ is
 (a) x^5 (b) x^{-5}
 (c) x (d) $\frac{1}{x}$
117. A 4-digit number is formed by repeating a 2-digit number such as 1515, 3737, etc. Any number of this form is exactly divisible by
 (a) 7 (b) 11
 (c) 13 (d) 101
118. $(0.1 \times 0.01 \times 0.001 \times 10^7)$ is equal to
 (a) 100 (b) 10
 (c) 100 (d) 10
119. If $2p + \frac{1}{p} = 4$ the value of $p^3 + \frac{1}{8p^3}$ is
 (a) 4 (b) 5
 (c) 8 (d) 15
120. If p and q represent digits, what is the possible maximum value of q in the statement $5p9 + 327 + 2q8 = 1114$?
 (a) 9 (b) 8
 (c) 7 (d) 6
121. The least among the fractions $\frac{15}{16}, \frac{19}{20}, \frac{24}{25}, \frac{34}{35}$ is
 (a) $\frac{34}{35}$ (b) $\frac{15}{16}$ (c) $\frac{19}{20}$ (d) $\frac{34}{35}$
122. $1.\overline{27}$ in the form $\frac{p}{q}$ is equal to
 (a) $\frac{127}{100}$ (b) $\frac{73}{100}$ (c) $\frac{14}{11}$ (d) $\frac{11}{14}$
123. $\frac{3.25 \times 3.20 - 3.20 \times 3.05}{0.064}$ is equal to
 (a) 1 (b) $\frac{1}{2}$ (c) $\frac{1}{10}$ (d) 10
124. Out of six consecutive natural numbers, if the sum of first three is 27, what is the sum of the other three ?
 (a) 36 (b) 35
 (c) 25 (d) 24
125. The H.C.F and L.C.M of two numbers are 12 and 336 respectively. If one of the numbers is 84, the other is
 (a) 36 (b) 48
 (c) 72 (d) 96
126. The sum of two numbers is 36 and their H.C.F and L.C.M. are 3 and 105 respectively. The sum of the reciprocals of two numbers is
 (a) $\frac{2}{35}$ (b) $\frac{3}{25}$ (c) $\frac{4}{35}$ (d) $\frac{2}{25}$
127. If 'n' be any natural number. then by which largest number $(n^3 - n)$ is always divisible ?
 (a) 3 (b) 6
 (c) 12 (d) 18

128. If $1.5a = 0.04b$ then $\frac{b-a}{b+a}$ is equal to
(a) 77 (b) 33
(c) 75 (d) 2
129. How many perfect squares lie between 120 and 300 ?
(a) 5 (b) 6
(c) 7 (d) 8
130. $\left\{ \frac{(0.1)^2 - (0.01)^2}{0.0001} + 1 \right\}$ is equal to
(a) 1010 (b) 110
(c) 101 (d) 100
131. If there is a profit of 20% on the cost price of an article, the percentage of profit calculated on its selling price will be:
(a) 24 (b) $16\frac{2}{3}$ (c) $8\frac{1}{3}$ (d) 20
132. If the cost price of 15 books is equal to the selling price of 20 books, the loss percent is:
(a) 16 (b) 20
(c) 24 (d) 25
133. If an article is sold at 200% profit, then the ratio of its cost price to its selling price will be:
(a) 1 : 2 (b) 2 : 1
(c) 1 : 3 (d) 3 : 1
134. If on a marked price, the difference of selling prices with a discount of 30% and two successive discounts of 20% and 10% is Rs. 72, then the marked price (in rupees) is:
(a) 3,600 (b) 3,000
(c) 2,500 (d) 2,400
135. If an electricity bill is paid before due date, one gets a reduction of 4% on the amount of the bill. By paying the bill before due date a person got a reduction of Rs. 13. The amount of his electricity bill was:
(a) Rs. 125 (b) Rs. 225
(c) Rs. 325 (d) Rs. 425
136. Successive discounts of 10%, 20% and 30% is equivalent to a single discount of:
(a) 60% (b) 49.6%
(c) 40.5% (d) 36%
137. The price of an article was first increased by 10% and then again by 20%. If the last increased price be IRS. 33, the original price was:
(a) Rs. 30 (b) RS. 27.50
(c) Rs. 26.50 (d) Rs. 25
138. If each side of a square is increased by 10%. its area will be increased by:
(a) 10% (b) 21%
(c) 44% (d) 100%
139. The ratio of milk and water in mixtures of four containers are 5 : 3, 2 : 1, 3 : 2 and 7 : 4 respectively. In which container is the quantity of milk, relative to water, minimum?
(a) First (b) Second
(c) Third (d) Fourth
140. Two numbers are in the ratio 1 : 3. If their sum is 240, then their difference is:
(a) 120 (b) 108
(c) 100 (d) 96
141. The ratio of income and expenditure of a person is 11 : 10. If he saves IRS. 9,000 per annum. his monthly income is:
(a) Rs. 8,000 (b) Rs. 8,800
(c) Rs. 8,500 (d) Rs. 8,250
142. If $W_1 : W_2 = 2 : 3$ and $W_1 : W_3 = 1 : 2$ then $W_2 : W_3$ is:
(a) 3 : 4 (b) 4 : 3
(c) 2 : 3 (d) 4 : 5
143. A copper wire of length 36 m and diameter 2 mm is melted to form a sphere. The radius of the sphere (in cm) is:
(a) 2.5 (b) 3
(c) 3.5 (d) 4
144. The ratio of the radii of two wheels is 3 : 4. The ratio of their circumferences is:
(a) 4 : 3 (b) 3 : 4
(c) 2 : 3 (d) 3 : 2
145. If the length of a rectangle is increased by 10% and its breadth is decreased by 10%, the change in its area will be:
(a) 1% increase (b) 1% decrease
(c) 10% increase (d) No change
146. In how many years will a sum of money double itself at $6\frac{1}{4}\%$ simple interest per annum ?
(a) 24 (b) 20 (c) 16 (d) 12

147. A sum of Rs. 12,000, deposited at compound interest becomes double after 5 years. How much will it be after 20 years ?
 (a) Rs. 1,44,000 (b) Rs. 1,20,000
 (c) Rs. 1, 50,000 (d) Rs. 1,92,000

Directions (148-150): The pie-chart, given here, shows the amount of money spent on various sports by a school administration in a particular year.

Observe the pie chart and answer the questions based on this graph.



148. If the money spent on football was Rs. 9,000 how much more money was spent on hockey than on football ?
 (a) Rs. 11,000 (b) Rs. 11,500
 (c) Rs. 12,000 (d) Rs. 12,500
149. If the money spent on football was Rs. 9,000, what amount was spent on Cricket ?
 (a) Rs. 31,000 (b) Rs. 31,500
 (c) Rs. 32,000 (d) Rs. 32,500
150. If the money spent on football is Rs. 9,000, then what was the total amount spent on all sports ?
 (a) Rs. 73,000 (b) Rs. 72,800
 (c) Rs. 72,500 (d) Rs. 72,000

ENGLISH COMPREHENSION

Directions (151-155): In the following questions sentences are given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four.

151. The court _____ cognisance of the criminal's words.
 (a) took (b) made
 (c) gave (d) allowed

152. _____ wins this civil war there will be little rejoicing at the victory.
 (a) Whichever (b) Whoever
 (c) Whatever (d) Wherever
153. As he got older his belief in these principles did not _____.
 (a) wither (b) shake
 (c) waver (d) dither
154. Everyone in this world is accountable to God _____ his actions.
 (a) about (b) for
 (c) to (d) over
155. Your father used to be the principal of this college,
 (a) did he ? (b) does he ?
 (c) didn't he? (d) doesn't he ?

Directions (156 - 160): In the following questions, choose the word opposite in meaning to the given word.

156. JETTISON
 (a) accept (b) reward
 (c) preserve (d) consent
157. AMELIORATE
 (a) improve (b) depend
 (c) soften (d) worsen
158. GROTESQUE
 (a) natural (b) odd
 (c) whimsical (d) sinful
159. DEVIOUS
 (a) straight (b) obvious
 (c) simple (d) superficial
160. EVANESCENT
 (a) imminent (b) permanent
 (c) pervasive (d) immanent

Directions (161-165): In the following questions, out of the four alternatives, choose the one which best expresses the meaning of the given word.

161. DEBACLE
 (a) decline (b) downfall
 (c) discomfiture (d) degeneration
162. OSTRACISE
 (a) banish (b) belittle
 (c) beguile (d) besiege

163. PROPHYLACTIC
 (a) antagonistic (b) toxic
 (c) preventive (d) purgative
164. CODDLE
 (a) huddle (b) satisfy
 (c) protect (d) cheat
165. FLIMSY
 (a) funny (b) irrational
 (c) weak (d) partisan

Directions (166-170): In the following questions, a part of the sentence is printed in bold. Below are given alternatives to the bold part at (a), (b) and (c) which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is (d).

166. To get into the building I'll disguise as a reporter.
 (a) disgtuse to he (b) disguise as one
 (c) disguise myself (d) No improvement
167. He denied that he had not forged my signature.
 (a) would not forge (b) had forged
 (c) did not forge (d) No improvement
168. If I had played well, I would have won the match.
 (a) I played well (b) I play well
 (c) lam playing will (d) No improvement
169. Since the records are missing, the possibility of paying more than one compensation for the same piece of land cannot be ruled aside.
 (a) out (b) off
 (c) away (d) No improvement
170. A callous system generates noth-ing but a mica-mope
 (a) develops (b) induces
 (c) produces (d) No improvement

Directions (171-175): In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/ sentence.

171. One who hides away on a ship to obtain a free passage
 (a) Compositor (b) Stoker
 (c) Stowaway (d) Shipwright
172. Clines available at a scene
 (a) circumstantial (b) derivative
 (c) inferential (d) suggestive

173. An unexpected piece of good for-tune
 (a) windfall (b) philanthropy
 (c) benevolence (d) turnstile
174. An emolument over and above fixed income or salary
 (a) Honorarium (b) Sinecure
 (c) Perquisite (d) Prerogative
175. The animals of a particular region
 (a) Flora (b) Museum
 (c) Zoo (d) Fauna

Directions (176-180): In the following questions, groups of four words are given. In each group, one word is correctly spelt. Find the correctly spelt word.

176. (a) parapharnelia (b) parsimonious
 (c) peccadilo (d) peadiatrics
177. (a) measureable (b) manageable
 (c) marriagable (d) manoevrable
178. (a) tussel (b) tunnle
 (c) tumble (d) trable
179. (a) populus (b) pompuous
 (c) prelious (d) presumptuous
180. (a) impromptue (b) illustrious
 (c) illusery (d) impetous

Directions (181-185): In the following questions, the 1st and the las sentences of the passage are numbered I and 6. The rest of the passage f split into four parts and named P, Q, and S. These four parts are not giver in their proper order. Read the sen tence and find out which of the fou combinations is correct. Then find th correct answer.

181. 1. The most vulnerable section of the society are the students.
 P. Revolutionary and new fledged ideas have a great appeal to them.
 Q. Agitations may be non-violent methods of protest.
 R. They cannot resist the charm of persuasion.
 S. They are to be taught that without discipline they cannot get proper education.
 6. However if these become vio-lent, the antisocial elements get encouraged and they put all proper working out of gear.
 (a) PRSQ (b) RSQP
 (c) SRPQ (d) RPQS

182. 1. Venice is a strange city.
 P. There are about 400 odd bridges connecting the islands of Venice.
 Q. There are no motor cars, no horses and no buses there.
 R. These small islands are close to one another.
 S. It is not one island but a hundred islands.
 6. This is because Venice has no streets.
 (a) SRPQ (b) PSRQ
 (c) RAPS (d) QSRP
183. 1. One of the most terrible battles of the American Civil War was fought in July 1863, at Gettysburg.
 P. The chief speech on that occasion was given by Edward Everett, a celebrated orator.
 Q. Lincoln was asked to make a few remarks.
 R. In November of that year a portion of the battlefield was dedicated as a final resting place for men of both armies who died there.
 S. Everett's speech lasted 2 hours. Lincoln's for 2 minutes; it was over almost before the crowd realized that it e had begun.
 6. But the Gettysburg speech is now one of the world's immortal pieces of literature.
 (a) SQRP (b) RPQS
 (c) PQRS (d) QPSR
184. 1. The teacher training agency in England hopes to make teaching ing one of the top three professions.
 P. They have also demanded that the campaign should be matched by improved pay scales, work load and morale so as to avoid recruitment problems with an aim to raise the image of the teaching pro-fession.
 Q. A series of advertisements are now being screened showing famous people speaking about teachers they remember and admire.
 R. An amount of \$100 million has been set aside to combat the shortage of applicants for teacher training.
 S. Teacher Unions have wel-comed this campaign.
 6. It is high time for the Indian Government also to think on similar lines and take steps to lift up the sinking morale of the teaching profession.
 (a) QRPS (b) RPSQ
 (c) RQSP (d) QPSR

185. 1. Some say that failure is like toxic waste.
 P. I see failure more as a fertilizer.
 Q. Thinking about it pollutes and undermines the attitudes needed for success.
 R. The seeds of success must he planted afresh.
 S. It can be used to enrich the soil of your mind.
 6. Turning failure into a fertilizer is accomplished by using your errors as steps in learning.
 (a) SRQP (b) PQSR
 (c) SPQR (d) QPSR

Directions (186-190): In the following questions, a sentence has been given in Active Voice/Passive Voice, Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/ Active Voice.

186. The agent had disclosed the secret before it was evening.
 (a) The secret was disclosed by the agent before it was evening.
 (b) The secret had disclosed by the agent before it had been evening.
 (c) The secret had been disclosed by the agent before it was evening.
 (d) The secret was disclosed by the agent before it had been evening.
187. Surely the lost child must have been found by now.
 (a) Surely must have found the lost child by now.
 (b) Surely someone must have found the lost child by now.
 (c) Surely now must have found the lost child
 (d) Now must have found the lost child surely.
188. We serve hot meals till 10.30 guests can order, coffee and sandwiches upto 11.30.
 (a) Hot meals are serving till 10.30 ; coffee and sandwiches are ordering by guests till 11.30.
 (b) Hot meals are being served till 10.30 coffee and sandwiches are being ordered till 11-30.
 (c) Hot meals are served till 10.30; coffee and sandwiches may be ordered till 11.30.
 (d) Hot meals will be served till 10.30; coffee and sandwiches will be ordered upto 11.30.
189. Lie facedown; stretch your arms in front.
 (a) You are face down, arms are to be outstretched

- (b) You should be lying face down, with arms outstretched.
 (c) You should be lying face down; let arms stretch out.
 (d) Let face be down; let arms be stretched out.
190. The Greeks expected to win the international trophy.
 (a) It was expected that the Greeks would win the inter-national trophy.
 (b) The international trophy was expected to be won by the Greeks.
 (c) It was expected that the Greeks will win the international trophy.
 (d) It was expected by the Greeks that they would win the inter-national trophy.

Directions (191-195): In the following questions, you have one brief passage with 5 questions following the passage. Read the passage carefully and choose the best answer to each question out of the four alternatives.

In May 1966, the World Health Organisation was authorised to initiate a global campaign to eradicate small pox. The goal was to eradicate the disease in one decade. Because similar projects for malaria and yellow fever had failed, few believed that smallpox could actually be eradicated, but eleven years after the initial organisation of the campaign, no cases were reported in the field.

The strategy was not only to provide mass vaccinations, but also to isolate patients with active small-pox in order to contain the spread of the disease and to break the chain of human transmission. Rewards for reporting small-pox assisted in motivating the public to aid health workers. One by one, each small-pox victim was sought out, removed from contact with others and treated. At the same time, the entire, village where the victim had lived was vaccinated. Today small-pox is no longer a threat to humanity. Routine vaccinations have been stopped worldwide.

191. Which of the following is the best title for the passage ?
 (a) The World Health Organisation
 (b) The Eradication of Small-pox
 (c) Small-pox Vaccinations
 (d) Infectious Diseases
192. What was the goal of the campaign against small-pox ?

- (a) To decrease the spread of small-pox worldwide.
 (b) To eliminate small-pox world-wide in ten years.
 (c) To provide mass vaccinations against small-pox worldwide.
 (d) To initiate worldwide projects for small-pox, malaria and yellow fever at the same time.
193. According to the paragraph what was the strategy used to eliminate the spread of small-pox ?
 (a) Vaccination of the entire village
 (b) Treatment of individual victims.
 (c) Isolation of victims and mass vaccinations
 (d) Extensive reporting of outbreaks.
194. Which statement doesn't refer to small-pox?
 (a) Previous projects had failed.
 (b) People are no longer vaccinated for it.
 (c) The World Health Organisation mounted a worldwide campaign to eradicate the disease.
 (d) It was a serious threat.
195. ii. can be inferred that
 (a) no new cases of 'small-pox have been reported this year.
 (b) malaria and yellow fever have been eliminated.
 (c) small-pox victims no longer die when they contract the disease,
 (d) small-pox is not transmitted from one person to another.

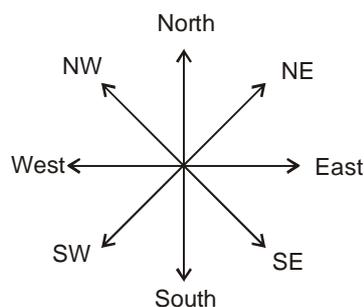
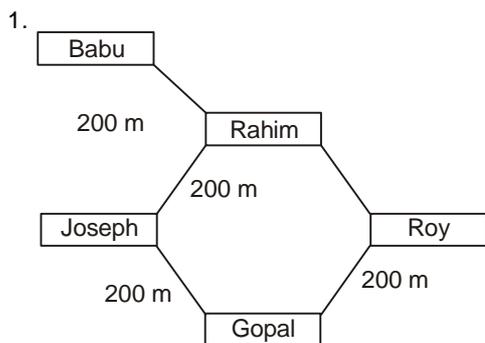
Directions (196- 200): Some of the sentences have errors and some have none. Find out which part of a sentence has an error. The number of that part is your answer. If there is no error, your answer is (d).

196. Judge in him (a)/ prevailed upon the father (b) / and he sentenced his son to death(c)/No error (d).
 197. Nine tenths (a) / of the pillar (b) / have rotted away. (c) /No error (d).
 198. One major reason (a) / for the popularity of television is (b) /that most people like to stay at home (c) / No error (d).
 199. Our efforts are (a) / aimed to bring about (b) / a reconciliation. (c) / No error (d).
 200. Three conditions (a) / critical for growing (b) / plants are soil, temperature, chemical balance or amount of moisture. (c) / No error (d) .

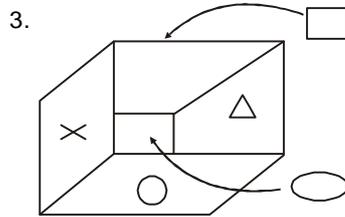
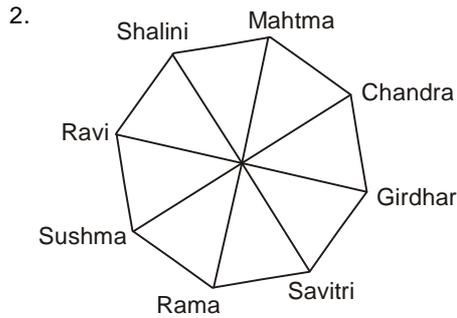
ANSWERS

1. (a)	2. (a)	3. (d)	4. (c)	5. (a)	6. (c)	7. (b)	8. (0)	9. (d)	10. (d)
11. (b)	12. (c)	13. (d)	14. (c)	15. (c)	16. (c)	17. (d)	18. (d)	19. (b)	20. (b)
21. (c)	22. (a)	23. (b)	24. (b)	25. (d)	26. (c)	27. (c)	28. (d)	29. (b)	30. (b)
31. (d)	32. (b)	33. (a)	34. (b)	35. (c)	36. (d)	37. (*)	38. (b)	39. (a)	40. (d)
41. (a)	42. (b)	43. (a)	44. (d)	45. (d)	46. (d)	47. (a)	48. (a)	49. (c)	50. (a)
51. (b)	52. (a)	53. (b)	54. (d)	55. (b)	56. (b)	57. (c)	58. (b)	59. (b)	60. (a)
61. (b)	62. (b)	63. (b)	64. (c)	65. (c)	66. (b)	67. (c)	68. (b)	69. (b)	70. (a)
71. (a)	72. (d)	73. (d)	74. (c)	75. (d)	76. (d)	77. (a)	78. (b)	79. (a)	80. (c)
81. (c)	82. (d)	83. (b)	84. (a)	85. (a)	86. (d)	87. (a)	88. (a)	89. (b)	90. (b)
91. (c)	92. (d)	93. (d)	94. (d)	95. (b)	96. (c)	97. (a)	98. (d)	99. (b)	100. (b)
101. (a)	102. (c)	103. (c)	104. (a)	105. (b)	106. (c)	107. (d)	108. (b)	109. (b)	110. (c)
111. (b)	112. (c)	113. (b)	114. (a)	115. (d)	116. (c)	117. (d)	118. (d)	119. (b)	120. (c)
121. (b)	122. (c)	123. (d)	124. (a)	125. (b)	126. (c)	127. (b)	128. (a)	129. (c)	130. (d)
131. (b)	132. (d)	133. (c)	134. (a)	135. (c)	136. (b)	137. (d)	138. (b)	139. (c)	140. (a)
141. (d)	142. (a)	143. (b)	144. (b)	145. (b)	146. (c)	147. (d)	148. (a)	149. (c)	150. (d)
151. (a)	152. (b)	153. (a)	154. (b)	155. (c)	156. (a)	157. (d)	158. (a)	159. (a)	160. (b)
161. (b)	162. (a)	163. (c)	164. (b)	165. (c)	166. (c)	167. (b)	168. (d)	169. (a)	170. (c)
171. (c)	172. (a)	173. (a)	174. (a)	175. (d)	176. (b)	177. (b)	178. (c)	179. (d)	180. (c)
181. (a)	182. (a)	183. (b)	184. (c)	185. (d)	186. (c)	187. (b)	188. (c)	189. (d)	190. (d)
191. (b)	192. (b)	193. (c)	194. (a)	195. (c)	196. (a)	197. (b)	198. (c)	199. (b)	200. (c)

EXPLANATIONS

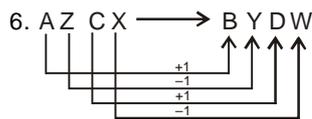


The house of Roy is in South-East direction with respect to the house of Babu.

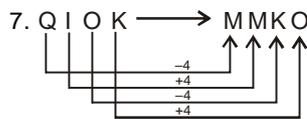
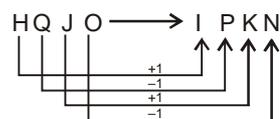


The circle as at the bottom.

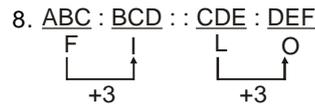
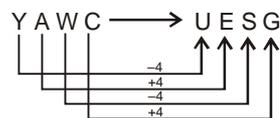
4. Here animal-behaviour relationship has been shown. Fox is characterised by its cunningness. Similarly, rabbit is considered as timid.
5. Flexible is antonym of Rigid. Similarly, Confidence is antonym of Diffidence.



Similarly,



Similarly,

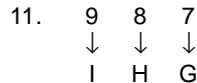


9. $(1)^3 = 1$; $(2)^3 = 8$

$(3)^3 = 27$; $(4)^3 = 64$

10. $5^2 - 1 = 24$; $5^3 + 1 = 126$

$7^2 - 1 = 48$; $7^3 + 1 = 344$



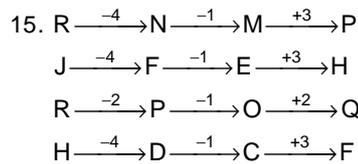
Simialrly,



12. Except Veranda, all others are surrounded by four walls.

13. Except Sonata, all others are instruments. Sonata is a piece of music composed for one instrument or two.

14. Except D, all others are Vowels.



16. Except in A p q r L, in all others the first and the last letters given in Capital are Vowels.

17. $6 + 2 = 8$; $4 + 3 = 7 \Rightarrow 8 - 7 = 1$

$2 + 6 = 8$; $4 + 3 = 7 \Rightarrow 8 - 7 = 1$

$8 + 4 = 12$; $6 + 5 = 11 \Rightarrow 12 - 11 = 1$

$4 + 8 = 12$; $6 + 7 = 13 \Rightarrow 12 - 13 = -1$

18. $49 - 33 = 16$; $62 - 46 = 16$; $83 - 67 = 16$

But, $70 - 55 = 15$

19. $6 + 8 = 14$; $14 + (8 \times 2) = 30$

$7 + 5 = 12$; $12 + (5 \times 2) = 22$

20. Meaningful order of the words 3. Member →

1. Family → 2. Community → 4. Locality → 4. Country

21. Arrangement of words according to Dictionary

3. Toronto → 4 3. Torped → 5. Torsel → 1. Tortoise → 4. Torus

22. $\boxed{a} \boxed{a} \boxed{b} a / aaba / \boxed{aa} \boxed{ba} / \boxed{a} \boxed{ab} \boxed{a}$

23. There are two alternating series :

$$a \xrightarrow{+2} c \xrightarrow{+2} e \xrightarrow{+2} g \xrightarrow{+2} i$$

$$r \xrightarrow{+1} s \xrightarrow{+1} t \xrightarrow{+1} u$$

Therefore, ? = *ui*

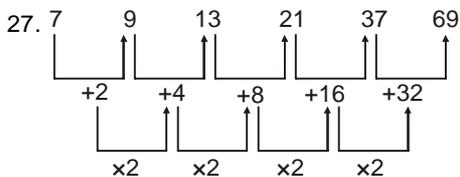
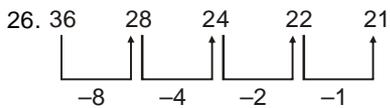
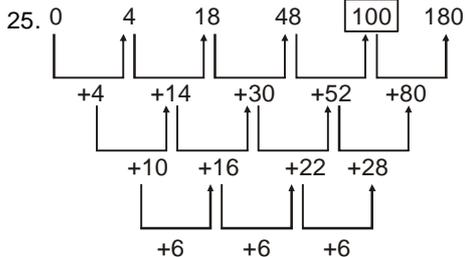
24. $P \xrightarrow{+3} S \xrightarrow{+3} V \xrightarrow{+3} Y \xrightarrow{+3} B$
 $E \xrightarrow{+3} H \xrightarrow{+3} K \xrightarrow{+3} N \xrightarrow{+3} Q$
 $T \xrightarrow{+3} W \xrightarrow{+3} Z \xrightarrow{+3} C \xrightarrow{+3} F$
 $I \xrightarrow{+3} L \xrightarrow{+3} O \xrightarrow{+3} R \xrightarrow{+3} U$

Now, $P \xrightarrow{+4} T, E \xrightarrow{+4} I$

$A \xrightarrow{+3} D \xrightarrow{+3} G \xrightarrow{+3} J \xrightarrow{+3} M$

Therefore, the first letter of the first term should be

$E \xrightarrow{-4} A$



28. $232 + 111 = 343$

$343 + 111 = 454$

$454 + 111 = 565$

$565 + 111 = 676$

The number 564 does not belong to the series.

29. Suppose there were *x* passengers initially

Number of passengers after first stop = $\frac{x}{2} + 35$

Number of passengers after second stop

$$= \frac{4}{5} \left(\frac{x}{2} + 35 \right) + 40 = 80$$

$$\Rightarrow \frac{x}{2} + 35 = \frac{(80 - 40)}{4} \times 5$$

$$\Rightarrow \frac{x}{2} = 50 - 35 = 15$$

$\therefore x = 30$

30. The day after tomorrow is Sunday.

Therefore, today is Friday.

The day on tomorrow's day before yesterday = Friday-1 = Thursday

31. Suppose the present age of son is *x* years.

Therefore, present age of the father = $4x$ years
 According to question $x + 3 = 15$

$\therefore x = 15 - 3 = 12$ years

The present age of father

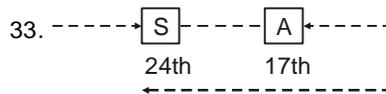
= $4x = 4 \times 12 = 48$ years

The present age of man's wife

= $48 - 3 = 45$ years

32. R is father of X and Y.

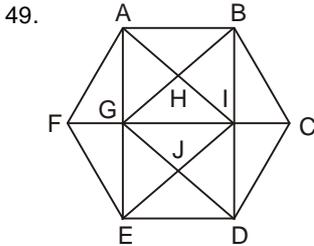
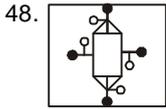
S is maternal uncle of X and Y. Considering the given options, it may be assumed that T is wife of R.



34. There is no 'U' letter in the given word.

35. $S \quad H \quad A \quad R \quad K$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $5 \quad 3 \quad 2 \quad 1 \quad 4$

36. Neither 1 nor 2 is implicit in the statement. The statement does not indicate that confidence and economic development are related.



The triangle are:

$\triangle FEB : \triangle CBD : \triangle FAG : \triangle FEG : \triangle ABCI : \triangle CDI :$
 $\triangle AFI : \triangle EFI : \triangle CGC : \triangle DCG : \triangle AGI : \triangle BIH :$
 $\triangle SGB : \triangle SBI : \triangle HAB : \triangle HBI : \triangle HGI : \triangle HAG :$
 $\triangle GEI : \triangle GED : \triangle IDE : \triangle IDEG : \triangle JGI : \triangle JDI :$
 $\triangle JDE : \triangle JDE : \triangle SIE : \triangle BGD$



101. Rate = 10% per annum = 5% half yearly

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

$$\Rightarrow 926.10 = 800 \left(1 + \frac{5}{100} \right)^T$$

$$\Rightarrow \frac{9261}{8000} = \left(\frac{21}{20} \right)^T$$

$$\Rightarrow \left(\frac{21}{20} \right)^3 = \left(\frac{21}{20} \right)^T$$

$$\therefore \text{Time} = 3 \text{ half years} = 1\frac{1}{2} \text{ years}$$

102. Time taken by Kamal

$$= \frac{100}{18 \times \frac{5}{18}} = 20 \text{ seconds}$$

\therefore Time taken by Bimal

$$= 20 + 5 = 25 \text{ seconds}$$

$$\therefore \text{Bimal's speed} = \frac{100}{25} = 4 \text{ m/sec}$$

$$= \frac{4 \times 18}{5} \text{ kmph} = 14.4 \text{ kmph.}$$

103. If the speed of train be x kmph then,
 Its relative speed = $(x + 3)$ kmph

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

$$\Rightarrow \frac{10}{3600} = \frac{\frac{240}{(x+3)}}{1000(x+3)}$$

$$\Rightarrow x + 3 = 86.4$$

$$\Rightarrow x = 83.4 \text{ kmph}$$

104. Speed of current

$$= \frac{1}{2} (\text{Rate downstream} - \text{Rate upstream})$$

$$= \frac{1}{2} (12 - 6) \text{ kmph}$$

$$[\text{Rate downstream} = \frac{1}{5} \times 60$$

$$= 12 \text{ kmph}]$$

$$= 3 \text{ kmph}$$

105. Time taken by A alone in doing the work = 15 days

Time taken by B alone in doing the work

$$= \frac{10 \times 5}{2} = 25 \text{ days}$$

\therefore (A + B)'s 1 day's work

$$= \frac{1}{15} + \frac{1}{25} = \frac{5+3}{75} = \frac{8}{75}$$

\therefore Hence, the work will be completed in $\frac{75}{8}$

$$= 9\frac{3}{8} \text{ days.}$$

106. Work Days Men

1	12	7
2	8	x

$$\therefore \left. \begin{array}{l} 1:2 \\ 8:12 \end{array} \right\} \therefore 7:x$$

$$\Rightarrow 1 \times 8 \times x = 2 \times 12 \times 7$$

$$\Rightarrow x = \frac{2 \times 12 \times 7}{8} = 21$$

\therefore No. of additional men

$$= 21 - 7 = 14$$

OR

$$M_1 D_1 W_2 = M_2 D_2 W_1$$

$$\Rightarrow 7 \times 12 \times 2 = M_2 \times 8 \times 1$$

$$\Rightarrow M_2 = \frac{7 \times 12 \times 2}{8} = 21$$

\therefore No. of additional men

$$= 21 - 7 = 14$$

107. If time taken by the pipe at faster rate to fill the tank be x minutes then

$$\frac{1}{x} + \frac{1}{3x} = \frac{1}{36} \Rightarrow \frac{3+1}{3x} = \frac{1}{36}$$

$$\Rightarrow 3x = 4 \times 36$$

$$\Rightarrow x = 48 \text{ minutes}$$

\therefore Time taken by the slower pipe

$$= 48 \times 3 = 144 \text{ minutes}$$

$$= 2 \text{ hours } 24 \text{ minutes}$$

108. If the number of correct answers be x then

$$x \times 4 - 1 \cdot (200 - x) = 200$$

$$\Rightarrow 4x - 200 + x = 200$$

$$\Rightarrow 5x = 400$$

$$\Rightarrow x = \frac{400}{5} = 80$$

109. Average of the first n natural odd numbers = n

$$\text{Number of odd numbers upto } 100 = 50$$

$$= \text{required average}$$

110. Required percentage

$$= \frac{25}{100 - 25} \times 100 = \frac{100}{3} = 33\frac{1}{3}\%$$

111. $12 + 22 + 32 + \dots + 102$

$$= \frac{10(10+1)(20+1)}{6} = 385$$

112. $2 + 4 = 6$

$$6 + 5 = 11$$

$$11 + 6 = 17$$

$$17 + 7 = 24$$

$$24 + 8 = 32$$

113. Let the numbers be 7x and 11x respectively.

$$\therefore \frac{7x+7}{11x+7} = \frac{2}{3}$$

$$\therefore 22x + 14 = 21x + 21$$

$$\Rightarrow x = 7$$

\therefore Smaller number

$$= 7x = 7 \times 7 = 49$$

$$114. \left(1 - \frac{1}{3}\right) \left(1 - \frac{1}{4}\right) \left(1 - \frac{1}{5}\right) \dots \left(1 - \frac{1}{24}\right) \left(1 - \frac{1}{25}\right)$$

$$= \frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \dots \times \frac{23}{24} \times \frac{24}{25} = \frac{2}{25}$$

115. If the first divisor be a multiple of the second divisor, then required remainder = remainder obtained by dividing the first remainder (36) by the second divisor (17) = 2

$$116. \left[\left(\sqrt[5]{x^{-3/5}} \right)^{-5} \right]^5$$

$$= \left(x^{-3/5} \right)^{1 \times \frac{-5}{3} \times 5}$$

$$= x^{-\frac{3}{5} \times \frac{-5}{3}} = x$$

117. $xyxy = xy \times 100 + xy$

$$= xy(100 + 1) = 101 \times xy$$

Hence, the number is exactly divisible by 101.

118. $0.1 \times 0.01 \times 0.001 \times 10^7$

$$= 10^{-6} \times 10^7 = 10$$

119. $2p + \frac{1}{p} = 4$

$\Rightarrow p + \frac{1}{2p} = 2$

$\therefore \left(p + \frac{1}{2p}\right)^3$

$= p^3 + \frac{1}{8p^3} + 3 \cdot p \cdot \frac{1}{2p} \left(p + \frac{1}{2p}\right)$

$\Rightarrow = p^3 + \frac{1}{8p^3} + \frac{3}{2} \times 2$

$\Rightarrow p^3 + \frac{1}{8p^3} = 8 - 3 = 5$

120. $\begin{matrix} 5 & P & 9 \\ 3 & 2 & 7 \\ \hline 2 & q & 8 \\ \hline 1 & 1 & 1 & 4 \end{matrix}$

327

$2q8$

1114

If $p = 0$, then q 's maximum value = 7

121. $\frac{15}{16} = 0.94$; $\frac{19}{20} = 0.95$

$\frac{24}{25} = 0.96$; $\frac{34}{35} = 0.97$

122. $1.\overline{27} = 1\frac{27}{99} = 1\frac{3}{11} = \frac{14}{11}$

123. Expression

$= \frac{3.20(3.25 - 3.05)}{0.064}$

$= \frac{3.20 \times 0.20}{0.064} = 10$

124. $8 + 9 + 10 = 27$

$11 + 12 + 13 = 36$

125. First number \times second number = HCF \times LCM

$\Rightarrow 84 \times$ second number

$= 12 \times 336$

\therefore Second number = $\frac{12 \times 336}{84} = 8$

126. Let the numbers be $3x$ and $3y$.

$\therefore 3x + 3y = 36$

$\Rightarrow x + y = 12 \dots(i)$

and, $3xy = 105 \dots(ii)$

Dividing equation (i) by (ii), we have

$\frac{x}{3xy} + \frac{y}{3xy} = \frac{12}{105}$

$\Rightarrow \frac{1}{3y} + \frac{1}{3x} = \frac{4}{35}$

127. $n^3 - n = n(n^2 - 1)$

$= n(n+1)(n-1)$

For $n = 2$, $n^3 - n = 6$

128. $1.5a = 0.04b$

$\frac{b}{a} = \frac{1.5}{0.04}$

By componendo and dividendo,

$\frac{b-a}{b+a} = \frac{1.5-0.04}{1.5+0.04} = \frac{1.46}{1.54} = \frac{73}{77}$

129. $11^2 = 121$, $12^2 = 144$,

$13^2 = 169$, $14^2 = 196$,

$15^2 = 225$, $16^2 = 256$,

$17^2 = 289$

130. $\frac{0.01-0.0001}{0.0001} + 1 = \frac{0.0099}{0.0001} + 1$

$= 99 + 1 = 100$

131. If the cost price = Rs. 100, then selling price = Rs. 120 and gain = Rs. 20

Required gain % = $\frac{20}{120} \times 100$

$= \frac{50}{3} = 16\frac{2}{3}\%$

132. If the cost price of each book be Re. 1 then

SP of 20 books = Rs. 15

CP of 20 books = Rs. 20

$$\therefore \text{Loss per cent} = \frac{20-15}{20} \times 100$$

$$= 25\%$$

133. Required ratio = 1 : 3

134. Let the marked price be Rs. x .

$$\therefore \text{In case I, SP} = \text{Rs. } \frac{70x}{100}$$

Single discount equivalent to successive discounts of 20% and 10%.

$$= \left(20 + 10 - \frac{20 \times 10}{100} \right) \% = 28\%$$

$$\therefore \text{S.P. in this case} = \text{Rs. } \frac{72x}{100}$$

$$\therefore \frac{72x}{100} - \frac{70x}{100} = \text{Rs. } 72$$

$$\Rightarrow \frac{2x}{100} = 72$$

$$\therefore x = \frac{72 \times 100}{2} = \text{Rs. } 3600$$

135. Let the amount of the bill be Rs. x .

$$\therefore \frac{4x}{100} = 13$$

$$\Rightarrow x = \frac{1300}{4} = \text{Rs. } 325$$

136. Single equivalent discount for successive discounts of 10% and 20%.

$$= \left(10 + 20 - \frac{20 \times 10}{100} \right) \% = 28\%$$

Single equivalent discount for 28% and 30%.

$$= \left(28 + 30 - \frac{28 \times 30}{100} \right) \% = 49.6$$

137. Effective increase percentage

$$= \left(10 + 20 + \frac{20 \times 10}{100} \right) \% = 32\%$$

$$\therefore x \times \frac{132}{100} = 33$$

$$\Rightarrow x = \frac{33 \times 100}{132} = \text{Rs. } 25$$

138. Increase percent in area

$$= \left(10 + 10 + \frac{10 \times 10}{100} \right) \% = 21\%$$

139. Milk in first vessel = $\frac{5}{8} = 0.625$

$$\text{Milk in second vessel} = \frac{2}{3} = 0.66$$

$$\text{Milk in third vessel} = \frac{3}{5} = 0.6$$

$$\text{Milk in fourth vessel} = \frac{7}{11} = 0.636$$

140. Let the numbers be $3x$ and x .

$$3x + x = 240$$

$$\Rightarrow 4x = 240$$

$$\Rightarrow x = \frac{240}{4} = 60$$

$$\therefore \text{Difference} = 3x - x = 2x$$

$$= 2 \times 60 = 120$$

141. Let the income of man be Rs. $= 11x$ and his expenditure be Rs. $10x$.

$$\therefore \text{Savings} = x = \text{Rs. } 9000$$

$$\therefore \text{Monthly income of man}$$

$$= \frac{11 \times 9000}{12} = \text{Rs. } 8250$$

$$142. \frac{W_1}{W_2} = \frac{2}{3}$$

$$\Rightarrow \frac{W_2}{W_1} = \frac{3}{2} \text{ and } \frac{W_1}{W_3} = \frac{1}{2}$$

$$\therefore \frac{W_2}{W_1} \times \frac{W_1}{W_3} = \frac{W_2}{W_3} = \frac{3}{2} \times \frac{1}{2} = \frac{3}{4}$$

143. Volume of the wire = $\pi r^2 h$
 = $\pi \times 0.1 \times 0.1 \times 3600 \text{ cm}^3$
 = $36\pi \text{ cm}^3$

Volume of the sphere = $\frac{4}{3}\pi R^3$
 = 36π

$\Rightarrow R^3 = \frac{36 \times 3}{4} = 27$

$\therefore R = \sqrt[3]{27} = 3 \text{ cm}$

144. Ratio of the circumferences = Ratio = radii
 = 3 : 4

145. Required change in area = $\frac{-10 \times 10}{100} = -1\%$

Negative sign shows a decrease.

146. Time = $\frac{\text{SI} \times 100}{\text{Principal} \times \text{Rate}}$

$= \frac{x \times 100}{x \times \frac{25}{4}} = 16 \text{ years}$

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

$\Rightarrow 24000 = 12000 \left(1 + \frac{R}{100}\right)^5$

$\Rightarrow 2 = \left(1 + \frac{R}{100}\right)^2$

$\Rightarrow 24 = \left(1 + \frac{R}{100}\right)^{20}$

i.e. The sum amounts to Rs. 192000.

148. Q 45° = Rs. 9000

$\therefore 55^\circ = \frac{9000}{45^\circ} \times 55^\circ = \text{Rs. } 11000$

149. Q 45° = Rs. 9000

$\therefore 160^\circ = \frac{9000}{45^\circ} \times 160^\circ = \text{Rs. } 32000$

150. Q 45° = Rs. 9000

$360^\circ = \frac{9000}{45} \times 360^\circ = \text{Rs. } 72000$