

**PRELIMINARY INTERVIEW BOARD**  
**TERRITORIAL ARMY COMMISSION : 31 JULY 2016**  
**PAPER-1: REASONING & ELEMENTARY MATHEMATICS**



Max Time : 2 Hours

Max Marks : 100

Roll No.....

(Please Read The Instructions Carefully)

**INSTRUCTIONS**

- Paper 2 has two parts: Part I & Part II
  - Part I : Reasoning (50 marks)
  - Part II: Elementary Mathematics (50 marks)
- Each section carries 50 objectives type of questions.
- There will be four possible answers to every question. Candidates are required to fill correct answer in the OMR sheet with Black ball pen only.
- For each correct answer, 1 mark will be granted and 0.5 mark will be deducted for every wrong answer.
- If a candidate gives more than one answer, it will be treated as a wrong answer and 0.5 mark will be deducted. There will be no penalty for questions left unanswered.
- Candidates should not mark in the question paper. They can use blank pages provided in the question paper for rough work.
- To be eligible to qualify, a candidate must obtain minimum 40% marks each in Section I & II separately and a minimum of 50% aggregate in total.

**PART-1 : REASONING**

In each of the following series determine the order of the letters. Then from the given options select the one which will complete the given series.

- Q1. B A D C ? H G J I  
(a) EF (b) FE (c) FG (d) DF
- Q2. ADG, XVT, BEH, WUS, ?  
(a) VTR (b) CFI (c) DFJ (d) FTU
- Q3. GMSY, IOUA, KQWC, ?  
(a) MSYE (b) NSYE (c) MTYE (d) MSYF

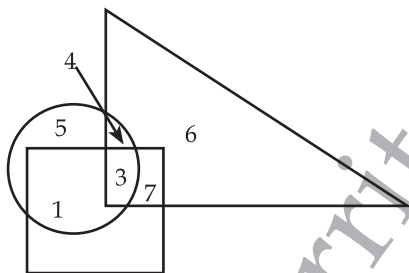
In the following question, select the number (s) from the given options for completing the given series.

- Q4. 3, 1/3, 14, 1/4, 25, 1/25, ?  
(a) 1/36 (b) 34 (c) 35 (d) 36
- Q5. 96, 90, 78, ?, 36, 6  
(a) 60 (b) 72 (c) 48 (d) 54

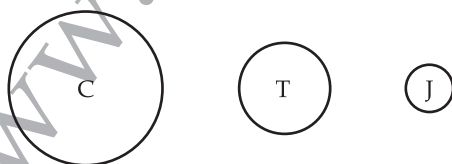
In the questions given below establish the relationship between the two words. Then from given options select one which has the same relationship as of the given two words.

- Q6. Gum is ..... as Socket is to Eye.  
(a) Tree (b) Paper (c) Tooth (d) Stick
- Q7. Stars are to Night as Sun is to.....  
(a) Noon (b) Dawn (c) Day (d) Light
- Q8. If 'light' is called 'morning', 'morning' is called 'dark', 'dark' is called 'night', 'night' is called 'sunshine' and 'sunshine' is called 'dusk', when do we sleep?  
(a) Morning (b) Night (c) Dusk (d) Sunshine
- Q9. Horse: Mare. Find the most appropriate pair below  
(a) Cow : Bull (b) Cow : Calf (c) Dog : Puppy (d) Tiger : Horse
- Q10. What Bank : Money, in the same way, Transport: \_\_\_\_\_  
(a) Traffic (b) Goods (c) Speed (d) Road
- Q11. Find the odd one out  
(a) crusade (b) expedition (c) cruise (d) campaign

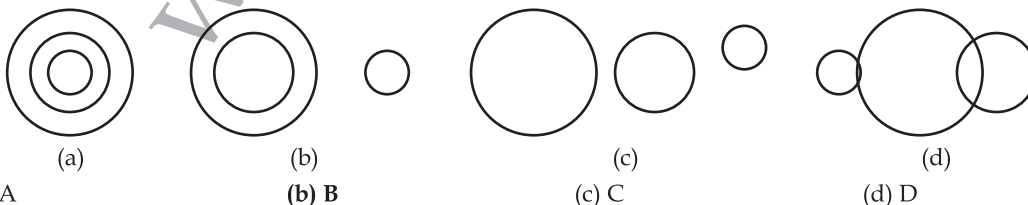
- Q12. Find the odd one out  
 (a) flourish (b) **renovate** (c) blossom (d) thrive
- Q13. Find the odd one out  
 (a) **Vapour** (b) Mist (c) Hailstone (d) Fog
- Q14. Find the odd one out  
 (a) Circle: Arc (b) Chair : Leg (c) Flower : Petal (d) **Cover : Page**
- Q15. If PALE is coded as 2134, EARTH is coded as 41590, how can is PEARL be coded in that language?  
 (a) 25430 (b) 29530 (c) 25413 (d) **24153**
- Q16. If ROSE is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for SEARCH?  
 (a) 216473 (b) 246173 (c) **214673** (d) 214763
- Q17. If in a certain code, GLAMOUR is written as IJCNMWP and MISRULE is written as OGUSSNC, then how will TOPICAL be written in that code?  
 (a) VMRJECN (b) VMRHAGJ (c) **VMRJACJ** (d) VNRJABJ
- Q18. A woman introduces a man as the son of the brother of her mother. How is the man related to the woman?  
 (a) Uncle (b) Grandson (c) **Cousin** (d) Son
- Q19. What Doctor : Patient, in the same way a Politician : \_\_\_\_\_  
 (a) Voter (b) Chair (c) Money (d) **Public**
- Q20. What Ignorance: Education, in the same way Disease: \_\_\_\_\_  
 (a) Hospital (b) Doctor (c) **Medicine** (d) Nurse
- Q21. What Guilt : Past, in the same way Hope : \_\_\_\_\_  
 (a) Present (b) Sorrow (c) Past (d) **Future**
- Q22. Carefully study the diagram given below. The circle indicates 'strong', square indicates 'tall' and triangle indicates 'army officers'



- The strong army officers who are not tall are shown as  
 (a) **4** (b) 3 (c) 5 (d) 6
- Q23. The circles 'C', 'T', and 'J', given below depict criminals, thieves and judges.



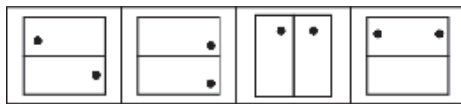
Which of the following figures best depicts the relationship among criminals, thieves and judges?



- Q24. In a family there are husband wife, two sons and two daughters. All the ladies were invited to a dinner. Both sons went out to play. Husband did not return from office. Who was at home?  
 (a) Only wife was at home (b) All ladies were at home  
 (c) Only sons were at home (d) **No body was at home**
- Q25. Artists are generally whimsical. Some of them are frustrated. Frustrated people are prone to be drug addicts. Based on these statements which of the following conclusions is true?  
 (a) All frustrated people are drug addicts (b) **Some artists may be drug addicts**  
 (c) All drug addicts are artists (d) Frustrated people are whimsical

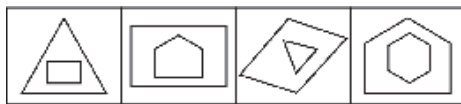
- Q26. If A is the son of Q. Q and Y are sisters. Z is the mother of Y, P is the son of Z, then which of the following statements is correct?  
 (a) **P is the maternal uncle of A** (b) P and Y are sisters  
 (c) A and P are cousins (d) None of the above
- Q27. There are five books A, B, C, D and E placed on a table. If A is placed below E, C is placed above D, B is placed below A and D is placed above E, then which of the following books touches the surface of the table?  
 (a) C (b) **B** (c) A (d) E
- Q28. Three ladies X, Y and Z marry three men A, B and C. X is married to A, Y is not married to an engineer, Z is not married to a doctor, C is not a doctor and A is a lawyer. Then which of the following statements is correct?  
 (a) Y is married to C who is an engineer (b) Z is married to C who is a doctor  
 (c) X is married to a doctor (d) **None of these**

Q29. Choose the figure which is different



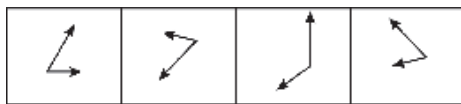
- (1) (2) (3) (4)  
 (a) 1 (b) 2 (c) 3 (d) **4**

Q30. Choose the figure which is different



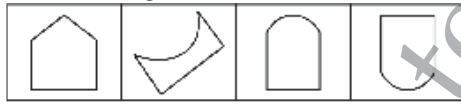
- (1) (2) (3) (4)  
 (a) 1 (b) 2 (c) 3 (d) **4**

Q31. Choose the figure which is different



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

Q32. Choose the figure which is different



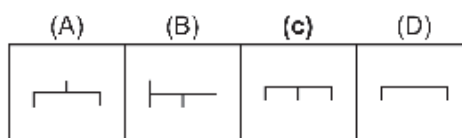
- (1) (2) (3) (4)  
 (a) 1 (b) 2 (c) 3 (d) **4**

Suggest the next figure in each of the following

Q33.



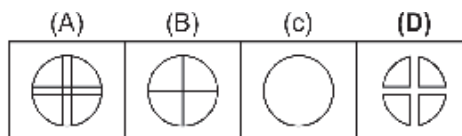
?



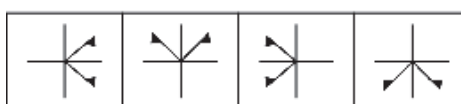
Q34.



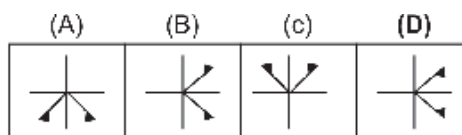
?



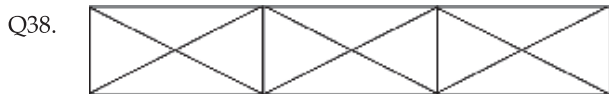
Q35.



?



- Q36. In a meeting, the map of a village was placed in such a manner that southeast becomes north, northeast becomes west and so on. What will south become?  
 (a) North (b) **North-east** (c) North-west (d) West
- Q37. A person travelled a distance of 50 km in 8 hours. He covered a part of the distance on foot at the rate of 4 km per hour and a part on a bicycle at the rate of 10 km per hour. How much distance did he travel on foot?  
 (a) 10 km (b) **20 km** (c) 30 km (d) 40 km

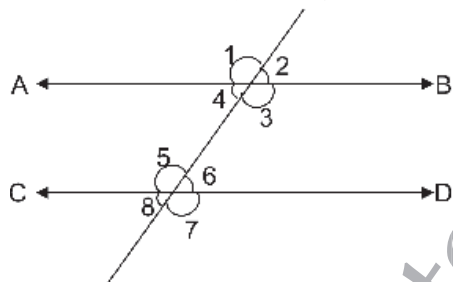


- How many different triangles are there in the figure shown above?  
 (a) **28** (b) 24 (c) 20 (d) 16
- Q39. If Rs 8,000 can maintain a family of 4 persons for 40 days, for how long will Rs. 10, 500 maintain a family of 6 persons?  
 (a) 30 days (b) **35 days** (c) 25 days (d) 28 days
- Q40. X works twice as fast as Y. If Y can complete a job alone in 12 days, then in how many days can X and Y together finish the job?  
 (a) 18 (b) **4** (c) 6 (d) 8
- Q41. In a class of 60 students 45 play cricket, 30 play football, 5 play none. How many students play both the games?  
 (a) **20** (b) 15 (c) 10 (d) 5
- Q42. A person whose house is facing east, comes out of his house, takes a left turn and travels in that direction for 7 kilometres, after which he takes another left turn and travels for 6 kilometres. He again takes a left turn and travels for 3 kilometres, and again takes a left turn and travels for 3 kilometres. From this point what is the shortest distance to his house?  
 (a) 19 km (b) 10 km (c) **5 km** (d) 30 km
- Q43. A card is drawn from a well-shuffled pack of cards. This probability of getting a queen of club or king of heart is?  
 (a) 1/52 (b) 1/26 (c) **1/13** (d) 1/56
- Q44. Gangaram started walking towards South. After walking 15 metres he turned to the left and walked 15 metres. He again turned to his left and walked 15 metres. How far is he from his original position and in which direction?  
 (a) 15 metres, North (b) **15 metres, East** (c) 30 metres, South (d) 15 metres, West
- Q45. I go 10 m to the East, then I turn left and go 5 m, I turn left again and go 10 m and then again I turn left and go 10 m. In which direction am I from the starting point?  
 (a) East (b) West (c) North (d) **South**
- Q46. A 260 metre long train runs at a speed of 55 kmph. How much time will it take to cross a platform 290 metre long?  
 (a) 20 seconds (b) **36 seconds** (c) 18 seconds (d) 60 seconds
- Q47. My uncle shall visit me after 64 days of my father's birthday. If my father's birthday falls on Tuesday, what shall be the day on my Uncle's visit?  
 (a) **Wednesday** (b) Sunday (c) Tuesday (d) Monday
- Q48. Rakesh ranked 9<sup>th</sup> from the top and 38<sup>th</sup> from the bottom in a class. How many students are there in the class?  
 (a) 47 (b) 45 (c) **46** (d) 48
- Q49. If the following words are arranged in natural order, what will come in the last place in ascending order?  
 (a) Captain (b) Subedar Major (c) Major (d) **Lieutenant Colonel**
- Q50. If day-after-tomorrow is Sunday, what was day-before-yesterday?  
 (a) **Wednesday** (b) Thursday (c) Friday (d) Saturday

**PART-II : ELEMENTARY MATHEMATICS**

- Q51. The value of  $0.99 \times 14 \div 11 + 0.7$  is  
 (a) 2.9 (b) 1.6 (c) **1.8** (d) 2.8
- Q52. What is the value of  $11^2 - 6^2 \div 6 \times \frac{5}{2} + 2$  of 10?  
 (a) **126** (b) 108 (c) 110 (d) 125
- Q53. Which of the following is the standard form of  $\frac{(24 \times 13) + (28 + 7)}{(24 + 13) - \frac{14}{3} \text{ of } \frac{5}{8}}$  ?  
 (a)  $\frac{3792}{409}$  (b)  $\frac{4790}{309}$  (c)  $\frac{3792}{411}$  (d)  $\frac{3092}{409}$
- Q54. L.C.M. of 6, 9, 12, 18 is.....  
 (a) 28 (b) **36** (c) 38 (d) 42
- Q55. If 'X' and 'Y' are both odd numbers, which of the following numbers must be an even number?  
 (a) **X + Y** (b)  $X \times Y$  (c)  $X Y + 2$  (d)  $2 X + Y$
- Q56.  $12.1212 + 17.0005 - 9.1102 = ?$   
 (a) 20.1015 (b) **20.0115** (c) 20.0105 (d) 20.0015
- Q57.  $1 + 0.1 + 0.01 + 0.001 = ?$   
 (a) **1.111** (b) 1.003 (c) 1.011 (d) 1.001
- Q58. One man adds 3 litres of water to 12 litres of milk and another 4 litres of water to 10 litres of milk. What is the ratio of the strengths of the milk in the two mixtures?  
 (a) 15 : 25 (b) 25 : 28 (c) **28 : 25** (d) None of these
- Q59. Gold is 19 times as heavy as water and copper 9 times as heavy as water. The ratio in which these two metals be mixed so that mixture is 15 times as heavy as water is:  
 (a) 1 : 2 (b) **2 : 3** (c) 3 : 2 (d) 19 : 135
- Q60. A certain amount was divided between Kavita and Reema in the ratio 4 : 3. If Reema's share was Rs. 2400, the amount is:  
 (a) **Rs. 5600** (b) Rs. 3200 (c) Rs.9600 (d) None of these
- Q61. A batsman has a certain average of runs for 16 innings. In the 17<sup>th</sup> innings, he makes a score of 85 runs thereby increasing his average by 3. What is the average after the 17<sup>th</sup> inning?  
 (a) 33 runs (b) 34 runs (c) **37 runs** (d) 36 runs
- Q62. What is the value of  $a^5 \times a^7$ ?  
 (a)  $a^{35}$  (b)  $a^2$  (c)  **$a^{12}$**  (d)  $a^{5/7}$
- Q63.  $(100)^0$  is equivalent to?  
 (a) 0 (b) 10 (c) **1** (d) 100
- Q64. The value of  $6a^3 b^3 c^2 \div 2ab^2 c$  is:  
 (a)  **$3a^2 bc$**  (b)  $3a b^2 c$  (c)  $3a^2 b^2 c^2$  (d)  $3a^3 b^3 c^3$
- Q65. The value of  $\frac{x^{-2} \cdot y^{-4}}{x^{-3} \cdot y^{-1}} \div \frac{y^{-2}}{x^{-1}}$  is ?  
 (a) y (b)  $\frac{1}{y}$  (c) xy (d)  $\frac{1}{xy}$
- Q66. What is 170% of 1140?  
 (a) 1824 (b) 1881 (c) **1938** (d) 1995
- Q67. 14% of 280 + 18% of 350 = ?  
 (a) **102.2** (b) 103.4 (c) 105 (d) 108.4
- Q68. A person walks from his house to this office at a speed of  $X_1$  km/h and return by the same route at a speed of  $X_2$  km/h. His average speed is  
 (a)  $\frac{X_1 + X_2}{2}$  (b)  $\frac{X_1 + X_2}{2}$  (c)  $\frac{3}{4} \left( \frac{X_1 X_2}{X_1 + X_2} \right)$  (d)  **$\frac{2X_1 X_2}{X_1 + X_2}$**
- Q69. A house of height 100m subtends a right angle at the window of an opposite house. If the height of the window be 64m, then the distance between the two houses is  
 (a) **48 m** (b) 36 m (c) 54 m (d) 72 m
- Q70. Some portion of a 20m long tree is broken by the wind and the top struck the ground at an angle of 30°. The height of the point where the tree is broken, is  
 (a) 10 m (b)  $(2\sqrt{3} - 3) 20$  m (c)  **$\frac{20}{3} m$**  (d) None of this

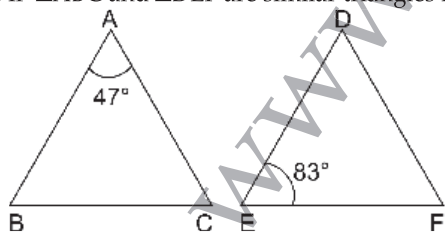
- Q71. A man borrowed Rs. 8000 at 6% per annum simple interest of 5yr. After 3 years he returned Rs. 7000. How much amount should he return at the end to settle the loan?  
 (a) Rs. 2732.80 (b) Rs. 2612.20 (c) Rs. 2824.40 (d) Rs. 2190.50
- Q72. A shop keeper earns a profit of 20% on selling a book at a 16% discount on the printed price. The ratio of the cost price and the printed price is  
 (a) 5 : 6 (b) 5 : 7 (c) 7 : 10 (d) 6 : 11
- Q73. Seats of Physics, Chemistry and Mathematics in a school are in the ratio of 3 : 4 : 6. There is a proposal to increase these seats by 10%, 20% and 50%, respectively. What will the ratio of increased seats?  
 (a) 11 : 16 : 30 (b) 16 : 11 : 30 (c) 16 : 12 : 15 (d) 12 : 16 : 30
- Q74. A well with 14m inside diameter in dug out 15m deep. The earth taken out of it has been evenly spread all around it to a width of 21m to form an embankment. What is the height of the embankment?  
 (a) 1 m (b) 2m (c) 3m (d) 4m
- Q75. The maximum number of boxes, each of length 2m, breadth 4m and height 5m that can be placed in a box of length 20m, breadth 10m and height 5m is  
 (a) 30 (b) 40 (c) 20 (d) 25
- Q76. A fan is listed at Rs. 2400 with a discount of 10%. What additional discount must be offered to the customer to bring the net price to Rs. 2000?  
 (a) 14% (b) 6% (c) 12% (d) 8%
- Q77. If  $a + b + c = 10$  and  $ab + bc + ca = 31$ , then the value of  $a^2 + b^2 + c^2$  is  
 (a) 48 (b) 38 (c) 18 (d) 20
- Q78. If  $\alpha \cos \theta - b \sin \theta = c$ , then  $\alpha \sin \theta + b \cos \theta$  is equal to  
 (a)  $\pm\sqrt{b^2 + c^2 - a^2}$  (b)  $\pm\sqrt{a^2 + b^2 - c^2}$  (c)  $\pm\sqrt{c^2 + a^2 - b^2}$  (d)  $\pm\sqrt{a^2 + b^2 + c^2}$
- Q79. A toy is in the shape of a hemisphere surmounted by a cone. If radius of base of the cone is 3 cm and its height is 4cm. Total surface area of the toy is  
 (a)  $33 \pi \text{ cm}^2$  (b)  $42 \pi \text{ cm}^2$  (c)  $66 \pi \text{ cm}^2$  (d)  $56 \pi \text{ cm}^2$
- Q80. On the basis of the adjacent figure, consider the statements,



- I.  $\angle 1, \angle 5$  and  $\angle 2, \angle 6$  are pairs of corresponding angles.  
 II.  $\angle 4$  and  $\angle 6$  is a alternate angles.  
 $\angle 1, \angle 2$  and  $\angle 8, \angle 7$  are exterior angle.  
 Which of the following statements are true?  
 (a) I and II (b) II and III (c) I and III (d) I, II and III
- Q81. If  $X = \frac{\sqrt{2+1}}{\sqrt{2-1}}$  and  $Y = \frac{\sqrt{2-1}}{\sqrt{2+1}}$  then the value of  $x^2 + y^2$  is  
 (a) 34 (b) 36 (c) 32 (d) 38
- Q82. Kiran purchased a scooter for Rs. 24000. The value of scooter is depreciating at the rate of 5% per annum. Then, its value after three years is  
 (a) 20577 (b) 20977 (c) 20677 (d) 20877
- Q83. When 40% of a number is added to 42, the result is the number itself. The number is  
 (a) 70 (b) 90 (c) 82 (d) 72
- Q84. A circle and a square have same area. Therefore, the ratio of the side of the square and the radius of the circle is  
 (a)  $\sqrt{\pi} : 1$  (b)  $1 : \sqrt{\pi}$  (c)  $1 : \pi$  (d)  $\pi : 1$
- Q85. The greatest six digit number is a perfect square is  
 (a) 998004 (b) 998006 (c) 998049 (d) 998001



- Q86. A mason can build a tank in 12h. After working for 6h, he took the help of a boy and finished the work in another 5h. The time that the boy will take alone to complete the work is  
 (a) 30 Hrs (b) 45 Hrs (c) **60 Hrs** (d) 64 Hrs
- Q87. In an Army camp ration is available for 100 soldiers for 10 days. After 2 days 60 soldiers joined. Then, for how many days will the remaining ration last?  
 (a) 7 days (b) 6 days (c) **5 days** (d) 4 days
- Q88. The value of  $\sec A (1 - \sin A) (\sec A + \tan A)$  is  
 (a) -1 (b) **1** (c) 2 (d)  $\frac{1}{2}$
- Q89. Divide the number 26244 by the smallest number, so that the quotient is perfect cube, so the smallest number is  
 (a) 4 (b) 6 (c) **36** (d) 16
- Q90. A cubical vessel can hold 1331 litre of water. The length of side of the vessel in m is  
 (a) 11 m (b) **1.1m** (c) 0.11m (d) None of these
- Q91. A spherical ball made of iron has diameter 6 cm. If density of iron  $8 \text{ g/cm}^3$  then mass of the ball is nearly (use  $\pi = 3.142$ )  
 (a) **0.9 kg** (b) 0.8 kg (c) 0.7 kg (d) 0.62 kg
- Q92. A hollow sphere of internal and external diameter 4 cm and 8 cm is melted and recasted into a cone of base diameter 8 cm. The height of the cone is  
 (a) **14 cm** (b) 15 cm (c) 28 cm (d) 30 cm
- Q93. If  $\tan \theta = \frac{4}{5}$ , then  $\frac{1 - \cos \theta}{1 + \cos \theta} = \dots\dots\dots$   
 (a)  $\frac{1}{2}$  (b)  $\frac{1}{8}$  (c)  $\frac{1}{16}$  (d)  $\frac{1}{4}$
- Q94.  $2x \sin 60^\circ - 3y \tan 45^\circ = 0$  and  $x \tan 60^\circ + \sqrt{2} y \operatorname{cosec} 45^\circ = 5$  then value of x and y respectively are  
 (a)  $\sqrt{3}$  and  $\frac{1}{2}$  (b)  $\sqrt{3}$  and 1 (c)  $\sqrt{3}$  and 1 (d) None of the above
- Q95. Maximum and minimum value of  $5 \sin X + 3 \cos X$  respectively are  
 (a) -8 and +8 (b) 2 and 8 (c)  **$-\sqrt{34}$  and  $+\sqrt{34}$**  (d) None of the above
- Q96. Mean of 5 number is 22. If one number is excluded, mean becomes 19. The excluded number is  
 (a) 68 (b) **34** (c) 17 (d) 20
- Q97. Mean marks of 60 students of a class are 63 and that of 40 others students are 60. The mean marks of all taken together are  
 (a) **61.8** (b) 61.5 (c) 62 (d) None of the above
- Q98. The median of 7, 11, 23, 36, 42, 50, 61, 73, 110 and 120 is  $\dots\dots\dots$   
 (a) 28.4 (b) **46** (c) 60 (d) 55.5
- Q99. In the given figure,  $CD \parallel AB$ . Find y  
 (a)  $79^\circ$  (b)  **$72^\circ$**  (c)  $74^\circ$  (d)  $77^\circ$
- Q100. If  $\triangle ABC$  and  $\triangle DEF$  are similar triangles in which  $\angle A = 47^\circ$  and  $\angle E = 83^\circ$  then  $\angle C$  is



- (a)  $50^\circ$  (b)  $70^\circ$  (c)  $60^\circ$  (d)  $80^\circ$

ANSWERS ARE BOLD