QUANTITATIVE APTITUDE

Solved Paper of IRMA Anand MBA Exam, 2002

Qs. 1-4. In each of the following questions a number series is given. After the series a number is given followed by (a), (b), (c), (d) and (e). You have to complete the series starting with the number given following the sequence of the given series and answer the question given below the series.

| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | |
|---|--|
| What will come in place of (b) ? (1) 32 (2) 30 (3) 34 (4) 36 (5) None of these 2 3 4 16 75 364 1945 | |
| (1) 32 (2) 30 (3) 34 (4) 36 (5) None of these 2 3 4 16 75 364 1945 | |
| (4) 36 (5) None of these 2 3 4 16 75 364 1945 | |
| 2 3 4 16 75 364 1945 | |
| 2.0 1 10 70 001 1710 | |
| 1 (a) (b) (c) (d) (e) | |
| What will come in place of (<i>c</i>)? | |
| (1) 72 (2) 63 (3) 66 | |
| (4) 69 (5) None of these | |
| 3. 2 6 16 38 84 178 | |
| 3 (<i>a</i>) (<i>b</i>) (<i>c</i>) (<i>d</i>) (<i>e</i>) | |
| What will come in place of (<i>d</i>)? | |
| (1) 92 (2) 88 (3) 98 | |
| (4) 96 (5) None of these | |
| 4. 6 10 7 12 8 14 | |
| 4 (a) (b) (c) (d) (e) | |
| What will come in place of (<i>d</i>)? | |
| (1) 9 (2) 5^{-1} (3) 8 | |
| (4) 6 (5) None of these | |

Qs. 5-9. In each of these questions, a question is followed by information in three statements. You have to study the question alongwith the information given in the statements and decide the information in which of the statement(s) is necessary and sufficient to answer the question.

5. What is the total number of employees in the company?

- I. Number of male employees is more than the number of the female employees by 25.
- II. Total number of officers is three-fourth of the clerks.
- III. Number of male officers is 126.
- (1) All I, II and III
- (2) I and II only
- (3) I and III only
- (4) II and III only
- (5) Question cannot be answered even with the information in all three statements

6. What is the area of the right angled triangular garden?

- I. Perimeter of the garden is Y cms.
- II. Length of the diagonal side is X cms.
- III. Perpendicular sides of the garden are in the ratio of 5 : 12.
- (1) Only I and III or only II and III
- (2) All I, II and III
- (3) Any two of the three
- (4) Only I and III
- (5) None of these
 - 7. What is Sangita's present age?
 - I. Five years ago Sangita's age was double that of her son's age that time.
 - II. Present ages of Sangita and her son are in the ratio of 11 : 6 respectively.
 - III. Five years hence the respective ratio of Sangita's age and her son's age will become 12 : 7.
- (1) Only I and III
- (2) Only II and III
- (3) Only I and II
- (4) Any two of the three
- (5) None of these
- 8. What is the two-digit number?
 - I. Sum of the digits is 17.
 - II. Difference between the number and the number obtained by interchanging the digits is 9.
- III. Digit in the unit's place is bigger than the digit in the ten's place by 1.
- (1) Only I and II
- (2) Only I and III
- (3) Only II and III
- (4) All I, II and III
- (5) None of these
- 9. What is the speed of the train?
 - I. The train crosses 300 metres long platform in 21 seconds.
 - II. The train crosses another stationary train of equal length in 19½ seconds.
- III. The train crosses a signal pole in 9³/₄ seconds.
- (1) Only I and II
- (2) Only II and either I or III
- (3) Only I and either II or III
- (4) Only III and either I or II
- (5) None of these

10. Surendra, Rajendra and Manindra invested some amount in a business in the ratio of 5 : 7 : 6 respectively. In the next year they increased their investments by 26%, 20% and 15% respectively. The profit earned during the second year should be distributed in what ratio among Surendra, Rajendra and Manindra respectively?

- (1) 31:27:21
- (2) 21 : 28 : 23
- (3) 26 : 20 : 15
- (4) Cannot be determined
- (5) None of these

11. Four of the following five parts numbered (1), (2), (3), (4) and (5) are exactly equal. The number of the part which is not equal to the remaining four parts is your answer. $36 \times 15 \div 27 \times 13 = 53 \times 4 + 64 \div 16 \times 7 = 328 \div 41 \times 21 + 9 \times 2^{3}$

12. A shopkeeper sold an article for Rs 6,750 after giving a discount of 10% on the labelled price. He would have earned a profit of 50%, had there been no discount. What was the actual percentage of profit earned?

- (1) 36
- (2) 40
- (3) 35
- (4) Cannot be determined
- (5) None of these

13. Salary of an officer increases every year by 20%. His salary in the year 2001 was Rs 26,640. What was his salary in 1999?

- (1) Rs 20,000
- (2) Rs 19,028
- (3) Rs 18,500
- (4) Rs 18,840
- (5) None of these

14. Which of the following expression are exactly equal in value?

(a) $(3x - y)^2 - (5x^2 - 2xy)$

- (b) $(2x y)^2$
- (c) $(2x + y)^2 2xy$
- (d) $(2x + 3y)^2 8y(2x + y)$
- (1) (*a*) and (*b*) only
- (2) (*a*), (*b*) and (*c*) only
- (3) (*b*) and (*d*) only
- (4) (*a*), (*b*) and (*d*) only
- (5) None of these

15. What **approximate** value should come in place of the question mark (?) in the following equation?

96

 $95.975^{3.5} \div 16.001^{3.5} \times 6.002^{1.5} \div 35.99^2 = ?$

| (1) | 36 | (2) | 16 | (3) |
|-----|----|-----|----|-----|
| (4) | 32 | (5) | 6 | |

16. From a group of 7 men and 6 women 5 persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many different ways can it be done?

| (1) | 756 | (2) | 735 | (3) | 564 |
|-----|-----|-----|---------------|-----|-----|
| (4) | 645 | (5) | None of these | | |

17. A car starts running with the initial speed of 40 kmph, with its speed increasing every hour by 5 kmph. How many hours will it take to cover a distance of 385 kms?

(1) $8\frac{1}{2}$ hrs (2) $9\frac{1}{2}$ hrs (3) 9 hrs

(4) 7 hrs (5) None of these

18. In a class of 80 children, 35% children can play only cricket, 45% children can play only table-tennis and the remaining children can play both the games. In all how many children can play cricket?

(3) 36

- (1) 55 (2) 44
- (4) 28 (5) None of these

19. Milk sold by a milkman contains 5% water. What quantity of pure milk should be added to 20 litres so that water content comes down to 2%?

- (1) 16 litres (2) 20 litres (3) 25 litres
- (4) 10 litres (5) None of these

Qs. 20-24. In each of these questions, two equations I and II are given. You have to solve both the equations and give answer 1 if p < q

2 if
$$p \le q$$

3 if $p = q$
4 if $p \ge q$
5 if $p > q$
20. I. $p^2 - 18p + 77 = 0$
II. $3q^2 - 25q + 28 = 0$
21. I. $6q^2 + q - 1 = 0$
II. $6p^2 - 7p + 2 = 0$
22. I. $7p^2 + 6p - 1 = 0$
II. $32q^2 - 20q + 3 = 0$
23. I. $4p^2 = 9$
II. $2q^2 - 9q + 10 = 0$
24. I. $2n^2 - 12n + 16 = 0$

24. I.
$$2p^2 - 12p + 16 = 0$$

II. $q^2 - 9q + 20 = 0$

Qs. 25-29. Study the following graph carefully to answer these questions.

% Profit =
$$\frac{\text{Profit}}{\text{Expenditure}} \times 100$$

Per cent Profit Earned Over the Years by two Companies A and B



25. If the expenditure of Company A in the years 1999 and 2000 are in the ratio of 3 : 4 respectively, what was the respective ratio of their incomes in these two years?

| (1) | 8:11 | (2) 6:11 | (3) | 21:31 |
|-----|--------------|-----------|-----|---------------|
| (4) | Cannot be de | etermined | (5) | None of these |

26. If the total expenditure of companies A and B in 1996 is Rs 85 lakh. What was the total income of the two companies in that year?

(1) Rs 10.2 million

- (2) Rs 11.05 million
- (3) Rs 10.625 million
- (4) Cannot be determined
- (5) None of these

27. The income of Company B in 1997 was Rs 42 lakh, which increased by 40% in the year 1998. Approximately, what was the expenditure (in lakh Rs.) of Company B in 1998?

| (1) | 58 | (2) | 49 | (3) | 54 |
|-----|----|-----|----|-----|----|
| (4) | 60 | (5) | 45 | | |

28. If the expenditures of companies A and B in 2001 were equal and their total income in that year was Rs 15.75 million, what is the expenditure of each company in that year?

- (1) Rs 73 lakh (2) Rs 50 lakh
- (3) Rs 68 lakh (4) Rs 49 lakh

(5) None of these

29. If the incomes of the two companies in 1997 were equal, what was the ratio between expenditures of companies A and B respectively in that year?

(1) $9:\bar{8}$ (2) 8:9(3) 4 : 7

(4) 7:4(5) None of these

Qs. 30.-34. Study the following table carefully to answer these questions:

Percentage of marks obtained by six students in different subjects

| Sub | History | Geography | Maths | Science | English | Hindi |
|---------|---------|-----------|-------|---------|---------|-------|
| Student | (75) | (80) | (120) | (150) | (75) | (50) |
| A | 80 | 85 | 89 | 79 | 69 | 76 |
| B | 74 | 79 | 92 | 84 | 72 | 67 |
| C | 86 | 65 | 76 | 82 | 82 | 87 |
| D | 69 | 72 | 62 | 90 | 78 | 68 |
| E | 64 | 64 | 75 | 86 | 65 | 62 |
| F | 76 | 82 | 95 | 78 | 60 | 73 |

NOTE: Figure in bracket indicates the maximum marks assigned for the subject.

30. What is the average percentage of marks obtained by all the students in Maths?

(3) 74.5

(2) 81.5 (4) 89.25 (5) None of these

31. What are the total marks obtained by 'D' in all the subjects together?

(1) 415

(1) 97.8

(4) 439

(2) 402.75 (3) 427.25 (5) None of these

32. **Approximately**, what is the percentage of marks obtained by 'C' in Maths, Science and Hindi together?

(2) 85 (1) 76 (3) 75

(4) 80 (5) 87

33. What are the average marks obtained by the six students in Geography?

- (2) 75.4 (1) 74.5 (3) 59.6
 - (4) 58.9 (5) None of these

34. What is the overall percentage of marks obtained by 'A' in all the subjects together? (rounded off to two digits after decimal).

(2) 78.50 (1) 80.55 (3) 79.67

(4) 81.33 (5) None of these

35. Mr Anand deposited a total amount of Rs 65,000 in three different schemes A, B and C with rates of interest 12 p.c.p.a., 16 p.c.p.a. and 18 p.c.p.a. respectively and earned a total interest of Rs 10,180 in one year. If the amount invested in Scheme A was 72% of the amount invested in Scheme 'C', what was the amount invested in Scheme B?

(1) Rs 25.000

- (2) Rs 22,000
- (3) Rs 18.000

(4) Cannot be determined

(5) None of these

36. In how many different ways can the letters of the word TRAINER be arranged so that the vowels always come together?

- (2) 120 (3) 720 (1) 1440
 - (4) 360 (5) None of these
- 37. The volume of a cylindrical tank is 12320 litres and its radius and the height are in the ratio of 7:10 respectively. What is the height of the tank?
 - (1) 1.4 metres (2) 2.8 metres (3) 2 metres

(4) 8 metres (5) None of these

Os. 38.-39. These questions are based on the following information:

Out of the total 390 students studying in a college of Arts and Science, boys and girls are in the ratio of 7:6 respectively and the number of students studying Arts and Science are in the ratio of 3 : 7 respectively. The boys and girls studying Arts are in the ratio of 4 : 5 respectively.

38. How many boys are studying Science?

| 1) 52 (2) 65 | (3) 115 |
|--------------|---------|
|--------------|---------|

(4) 180 (5) None of these

39. What is the ratio between the girls studying Arts and Science respectively?

(3) 8:13

(1) 13 : 23 (2) 26 : 79

(4) 23:36(5) None of these

Qs. 40-44. Study the following table to answer these questions:

Number of candidates appeared and qualified in a competitive examination from different States

over the years

| Year | 1997 | 1998 | 1999 | 2000 | 2001 |
|-----------------------|-------------------------------------|--|--------------------------------------|---------------------------------------|---|
| State | App. Qual. | App. Qual. | App. Qual. | App. Qual. | App. Qual. |
| A B C D E | 52007207500840640078081009507800870 | 85009809200105088001020950012407600940 | 740085084509207800890870098098001350 | 6800775920098087501010970012007600945 | 9500 1125 8800 1020 9750 1250 8950 995 7990 885 |

App. = Appeared

Qual. = Qualified

40. What is the percentage of candidates gualified from State B for all the years together, over the candidates appeared during all the years together? (rounded off to two digits after decimal).

| (1) | 12.36 | (2) 11.47 | (3) 12.16 |
|-----|-------|-----------|-----------|
| | | | |

(4) 11.15 (5) None of these41. During which year was the percentage of qualified candidates over the appeared candidates is the highest for

- State 'B'? (1) 1997 (2) 1998 (3) 1999
 - (4) 2000 (5) 2001

42. What is the percentage (rounded off to nearest integer) of total number of qualified candidates from all the States together over the total number of candidates appeared from all the States together in 1997?

(3) 16

(1) 12 (2) 11

(4) 14 (5) None of these

43. During which year the percentage of candidates qualified over the candidates appeared from State 'E' is the **lowest**?

- (1) 2000
 (2) 2001

 (3) 1998
 (4) 1997
- (5) 1999

44. Total number of candidates qualified from all the States together in 1997 is **approximately** what percentage of the total number of candidates qualified from all the States together in 1998?

(1) 70 (2) 75 (3) 80 (4) 85 (5) 72

Qs. 45.49. Study the following graph carefully to answer these questions (in lakh tons):

Production of two products over the given years by

Company ABC Ltd.



45. What is the respective ratio between total production of product A during the years 1995, 1996 and 1997 and the total production of product B during these three years?

- (1) 13:12 (2) 12:13
- (3) 25:24 (4) 24:25
- (5) None of these

46. Total production of products A and B together for years 1995, 1997 and 1999 is what percentage of the total production of the two products together for years 1996, 1998 and 2000? (rounded off to two digits after decimal)

| (1) | 77.42 | (2) | 78.41 |
|-----|-------|-----|-------|
| (3) | 81.72 | (4) | 83.64 |

| (5) | None | of | these |
|-----|------|----|-------|
|-----|------|----|-------|

47. What is the percentage increase in production of the two products together from year 1999 to 2000? (rounded off to the nearest integer)

- (4) 24 (5) None of these

48. What is the average production of product 'A' (in lakh tons) for the given years?

(1)
$$456\frac{2}{3}$$
 (2) $458\frac{1}{3}$
(3) $475\frac{1}{6}$ (4) $469\frac{2}{3}$

(5) None of these

49. Which of the following combination of percentage and year indicate the lowest percentage rise/fall from the previous year in the production of product 'B'?

- (1) 1996–20% rise
- (2) 1999-27.27% fall
- (3) 1997–25% fall
- (4) 2000-17.5% rise
- (5) 1997-20% fall

ANSWERS AND EXPLANATIONS

- 1. (3) Multiply each term by 1, 2, 3.... and then add 7, 6, 5, 4, to get the next term. $3 \times 1 + 7 = 10, 10 \times 2 + 6 = 26, 26 \times 3 + 5 = 83,$ $83 \times 4 + 4 = 336, 336 \times 5 + 3 = 1683$ $7 \times 1 + 7 = 14, 14 \times 2 + 6 = 34$ $\therefore (b) = 34$
- 2. (2) $3 \times 1 + 1^3 = 4$, $4 \times 2 + 2^3 = 16$, $16 \times 3 + 3^3 = 75$, $75 \times 4 + 4^3 = 364$, $364 \times 5 + 5^3 = 1945$ $1 \times 1 + 1^3 = 2$, $2 \times 2 + 2^3 = 12 = (b)$ $12 \times 3 + 3^3 = 63$ \therefore (c) = 63
- 3. (5) Multiply each by 2 and add 2, 4, 6, 8,.... to get the next term.
 3 × 2 + 2 = 8, 8 × 2 + 4 = 20, 20 × 2 + 6 = 46, 46 × 2 + 8 = 100

4. (4) 6+4=10, 10-3=7, 7+5=12, 12-4=8, 8+6=14 4+4=8, 8-3=5, 5+5=10, 10-4=6 \therefore (*d*) = 6

6. (2)
$$a + b + X = Y$$

 $\therefore a + b = Y - X$...(*i*)
 $a^2 + b^2 = X^2$...(*ii*)

Solving (*i*) and (*ii*) we get the values of a and b then Area of a rt $\Delta = \frac{1}{2}$ ab

 $\therefore \text{ Using } (i) \text{ and } (ii) \text{ only we can find area}$ or Let a = 5c, b = 12c $<math display="block">\therefore 5c + 12c + X = Y$ From this eqn. we can find c then area = $\frac{1}{2} \times 5c \times 12c$

 \therefore By using (*i*), (*ii*) and (*iii*) we can find area But we can't find area by using (*i*) and (*iii*) only

7. (4) By using (*i*) and (*ii*) (11x - 5) = 2 (6x - 5) we can find x then Sangita's present age = 11xBy using (*ii*) and (*iii*) $\frac{11x+5}{6x+5} = \frac{12}{7}$, find x and then age

> By using (*ii*) and (*iii*) Let their present ages be x and y resp. ATS x - 5 = 2(y - 5) ...(*i*) $\frac{x + 5}{y + 5} = \frac{12}{7}$...(*ii*)

Solving (i) and (ii) we can find x

- 8. (1) We can find the no. by using any two of three.
- 9. (1) Let the length of train be x m

ATS Speed =
$$\frac{x+300}{21} = \frac{x+x}{\frac{39}{2}} \Rightarrow x=260$$

 \therefore Speed = $\frac{260+300}{21} = 26\frac{2}{3}$ m/sec

10. (2) Ratio of profits = Ratio of investments ATC

$$415 = 5x \times \frac{126}{100} = 7x \times \frac{120}{100} = 6x \times \frac{115}{100} = 21 : 28 : 23$$

11. (1)
$$36 \times 15 \times \frac{1}{27} \times 13 = 260$$

 $53 \times 4 + \frac{64}{16} \times 7 = 240$
 $\frac{328}{41} \times 21 + 9 \times 8 = 240$
 $\frac{17 \times 18 - 11 \times 6 = 240}{\sqrt{1024} \times 11 - 112} = 32 \times 11 - 112 = 240$

12. (2)

13. (3)
$$26640 = x \left[1 + \frac{20}{100} \right]^2 \Rightarrow x = \text{Rs } 18500$$

14. (3) (a)
$$6x^2 + y^2 - 6xy - 5x^2 + 2xy = x^2 + y^2 - 4xy$$

(b) $4x^2 + y^2 - 4xy$
(c) $4x^2 + y^2 + 4xy - 2xy = 4x^2 + y^2 + 2xy$
(d) $4x^2 + 9y^2 + 12xy - 16xy - 8y^2 = 4x^2 + y^2 - 4xy$
b = d

15. (5)
$$96^{3.5} \div 16^{3.5} \times 6^{1.5} \div 36^2 = \frac{96^{3.5}}{16^{3.5}} \times \frac{6^{1.5}}{(6^2)^2} = 6$$

16. (1) 3M + 2W, 4M + 1W, 5M only No. of ways = ${^7C_3} \times {^6C_2} + {^7C_4} \times {^6C_1} + {^7C_5} = 756$ 17. (4) In first hour distance covered = 40 km

In 2nd hr = 45 km
40, 45, 50, ... It is an A.P. with a = 40
d = 5 S = 385

$$S_{n} = \frac{n}{2} [2a + (n-1)d]$$

$$385 = \frac{n}{2} [2 \times 40 + (n-1)5] \Rightarrow n = 7$$
t = 7 hrs
18. (2) 35% children play only cricket
45% children play only table termis
 $\therefore 20\%$ play both
Children who play cricket = $80 \times \frac{35}{100} + 80 \times \frac{20}{100} = 44$
19. (5) Milk = $20 \times \frac{95}{100} = 19l$
Let milk added be x l
 \therefore ATS ($20 + x$) $\frac{98}{100} - x = 19 \Rightarrow x = 30l$
20. (4) $p^{2} - 18p + 77 = 0 \Rightarrow (p - 11) (p - 7) = 0$
 $\Rightarrow p = 11, 7$
 $3q^{2} - 25q + 28 = 0 \Rightarrow (3q - 4) (q - 7) = 0$
 $\Rightarrow q = 7, \frac{4}{3}$ $p \ge q$
21. (5) $6q^{2} + q - 1 = 0 \Rightarrow (3q - 1) (2q + 1) = 0$
 $\Rightarrow q = \frac{1}{3}, -\frac{1}{2}$
 $6p^{2} - 7p + 2 = 0 \Rightarrow (3p - 2) (2p - 1) = 0$
 $\Rightarrow p = \frac{1}{2}, \frac{2}{3} \therefore p > q$
22. (1) $7p^{2} + 6p - 1 = 0 \Rightarrow (7p - 1) (p + 1) = 0$
 $\Rightarrow q = \frac{1}{4}, \frac{3}{8} \therefore p < q$
23. (1) $4p^{2} = 9$
 $\therefore p = \pm \frac{3}{2}, 2q^{2} - 9q + 10 = 0$
 $\Rightarrow (2q - 5) (q - 2) = 0$
 $\Rightarrow q = \frac{5}{2}, 2 \therefore p < q$
24. (2) $2p^{2} - 12p + 16 = 0$
 $\Rightarrow (2p - 2) (p - 4) = 0 \Rightarrow p = 2, 4$
 $q^{2} - 9q + 20 = 0 \Rightarrow (q - 4) (q - 5) = 0 \Rightarrow q = 4, 5$
 $\therefore p \le q$

25. (3) Profit in 99 =
$$\frac{0x}{5}$$

$$\therefore 40 = \frac{\text{Profit}}{3x} \times 100$$

$$55 = \frac{\text{Profit} (\text{in } 2000)}{4x} \times 100$$

$$\therefore \text{ Profit in } 2000 = \frac{11}{5} \times \frac{11}{5} \times 100$$

$$\therefore \text{ Profit in } 2000 = \frac{11}{5} \times \frac{11}{5} \times 100$$

$$\therefore \text{ Income in } 99 = 3x + \frac{6x}{5} = \text{Rs } \frac{21}{5} \times 100$$

$$1 \text{ Income in } 2000 = 4x + \frac{11}{5} \times \frac{31}{5} \times \frac{31}{5} \times 100$$

$$1 \text{ Reqd. ratio} = \frac{21x}{5} : \frac{31x}{5} = 21:31$$

$$26. (5) \text{ Total Exp. in A and B = 20 + 30 = 50 in 96} \times 50 = \frac{\text{Profit}}{8500000} \times 100 \Rightarrow \text{Profit} = 4250000$$

$$1 \text{ Income in } 98 = 42 \text{ lakh } \times \frac{140}{100} = \frac{588}{10} \text{ lakh}$$

$$A.T.S. 30 = \frac{588}{10} - x}{x} \times 100 \Rightarrow x = 45 \text{ lakh (approx.)}$$

$$28. (5) \text{ Total exp. in } 2001 = 60 + 55 = 115$$

$$115 = \frac{15.75 \text{ million} - 2x}{2x} \times 100 \Rightarrow x = \frac{1575}{430} \text{ million}$$

$$= \frac{1575}{430} \times 10 \text{ lakh} = 36.6 \text{ lakh}$$

$$29. (1) \text{ Profit of A in } 97 = 20 = \frac{x - y}{y} \times 100 \Rightarrow \frac{6}{5} = \frac{x}{y} \quad ...(i)$$

$$\text{Profit of B in } 97 = 35 = \frac{x - z}{z} \times 100 \Rightarrow \frac{27}{20} = \frac{x}{z} \quad ...(ii)$$

$$\text{Dividing } (ii) \text{ by } (i) \frac{y}{z} = \frac{27}{20} \times \frac{5}{6} = \frac{9}{8} = 9:8$$

$$30. (2) \text{ Reqd. } \% age = \frac{89 + 92 + 76 + 62 + 75 + 95}{6} = 81.5$$

$$31. (4)$$

$$32. (1) \text{ Reqd } \% age = \frac{76 + 82 + 87}{120 + 150 + 50} \times 100 = 76.56 = 76 \text{ app.}$$

$$33. (1) \text{ Sol} + 85 + 89 + 79 + 69 + 76}{75 + 80 + 120 + 150 + 75 + 50} \times 100 = 86.91$$

$$33. (2) \text{ Let C's investment be Rs x}$$

$$\therefore A's = \frac{72}{100}x$$

$$\text{ Ratio of shares of A and C = \frac{72}{100} \times : x = 18 : 25$$

By inspection we can see Ans (2) satifies the condition. Investment by A and C together = 65000 - 22000= 43000

:. A's money = 18000 C = 25000

$$18000 \times \frac{12}{100} \times 1 + 22000 \times \frac{16}{100} \times 1 + 25000 \times \frac{18}{100} \times 1$$

= 10180

36. (4) There are three vowels (AIE) and two Ns ∴ Total no. of ways = $\frac{5!}{2!} \times 3! = 360$

> (Firstly consider vowels as one letter ∴ We have 5 letters in which 2 are Ns. 3 vowels can be arranged in 3! ways)

37. (3) Vol. of a cylinder = $\pi r^2 h$

$$\therefore \frac{22}{7} \times (7x)^2 \times 10x = 12320 \Rightarrow x = \frac{1}{5}$$
$$\therefore h = 10 \times \frac{1}{5} = 2$$

38. (5) Students (arts) =
$$\frac{3}{10} \times 390 = 117$$

 \therefore Science students = 273

Boys =
$$390 \times \frac{7}{13} = 210$$

. Girls = 180

Boys studying arts =
$$\frac{4}{9} \times 117 = 52$$

39. (1) Girls (Science) = 180 - 65 = 115 \therefore g (Arts) = $\frac{5}{9} \times 117$ = 65

:. Reqd. ratio =
$$\frac{65}{115} = \frac{13}{23}$$

40. (4)
41. (5)
42. (1)
43. (4)
44. (3)
45. (4) 1200 : 1250 = 24 : 25
46. (1)
$$\frac{2400}{3100} \times 100 = 77.42$$

47. (3) $\frac{1150 - 850}{850} \times 100 = 35.3$
48. (2) Reqd. average
 $= \frac{1}{6} (450 + 400 + 350 + 500 + 450 + 600)$
 $= 458\frac{1}{3}$
49. (3)