

Q.4.(1) D

Q.5.(3) Required ratio = 4:20 = 1 : 5

Q.6-10. Study the following table carefully to answer the questions that follows.  
 Number of Articles (in thousands) Manufactured (M) and Defective (D) by 5 units of a company over the years -

Year	I		II		III		IV		V	
	M	D	M	D	M	D	M	D	M	D
2001	63	11	55	07	86	28	66	11	56	8
2002	59	08	42	10	55	14	73	14	46	11
2003	60	08	58	8	65	6	78	20	44	5
2004	75	10	78	5	67	10	64	9	58	3
2005	80	21	82	3	92	12	58	17	68	10
2006	54	05	66	12	48	22	50	5	70	11

- Q.6. What is the ratio between total number of articles manufactured by unit - II to that of unit V for all the years together ?  
 (1) 127 : 114      (2) 121 : 117      (3) 111 : 109  
 (4) 99 : 83      (5) None of these
- Q.7. What is the average number of defective items from unit - IV for all the given years ? (approx)  
 (1) 11233      (2) 11667      (3) 12667  
 (4) 10333      (5) 15333
- Q.8. During which year the largest percentage of articles were defective out of the articles manufactured by unit III ?  
 (1) 2002      (2) 2004      (3) 2006      (4) 2001      (5) None of these
- Q.9. What was the percentage of defective articles over the number of articles manufactured by all units together in the year 2005 ?  
 (1)  $16\frac{9}{19}\%$       (2)  $16\frac{11}{19}\%$       (3)  $15\frac{11}{17}\%$       (4)  $12\frac{9}{17}\%$       (5) None of these
- Q.10. During which year was the percentage increase/decrease in manufacture from the previous year the highest for unit II ?  
 (1) 2001      (2) 2002      (3) 2003      (4) 2004      (5) 2005

## SOLUTION

Q.6.(1) Required Ratio =  $381 : 342$   
 $= 127 : 114$

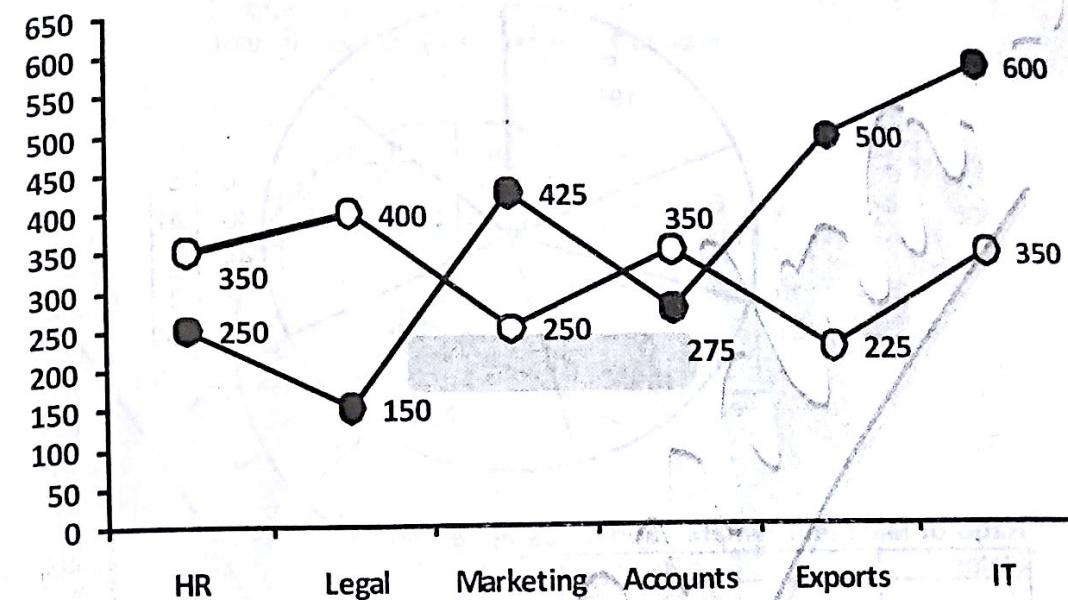
Q.7.(3) Required average =  $\frac{76000}{6}$   
 $= 12667$  (approx)

Q.8.(3)

2006  
 Q.9.(2) Required % =  $\frac{63}{380} \times 100$   
 $= 16\frac{11}{19}\%$

Q.10.(3) 2003

Q.11-15. Study the following graph carefully and answer the questions given below it :-  
 Number of people working in various departments of two different organisations :



- Q.11. What is the respective ratio of the number of people working in the IT department of organisation A and the number of people working in exports department of organisation B ?  
 (1) 4 : 3      (2) 3 : 8      (3) 8 : 3      (4) 5 : 2      (5) None of these
- Q.12. The number of people working in legal department of organisation B is approximately what percent of the total number of people working in organisation A ?  
 (1) 29.19%      (2) 9.09%      (3) 13.13%      (4) 24.14%      (5) 18.18%
- Q.13. What is the total number of people working in organisation B ?  
 (1) 1925      (2) 1950      (3) 1975  
 (4) 1875      (5) None of these
- Q.14. What is the difference between the number of people working in HR, Legal and Marketing departments of organisation B and the number of people working in Accounts, Export and IT department of organisation A ?  
 (1) 50      (2) 150      (3) 125  
 (4) 375      (5) None of these
- Q.15. If there is 25% increase in the existing number of people in the exports department of organisation A, what will be the total number of people working in the exports department of both the organisation together ?  
 (1) 750      (2) 850      (3) 825  
 (4) 900      (5) None of these

## SOLUTION

Q.11.(3) Required ratio =  $600 : 225 = 8 : 3$

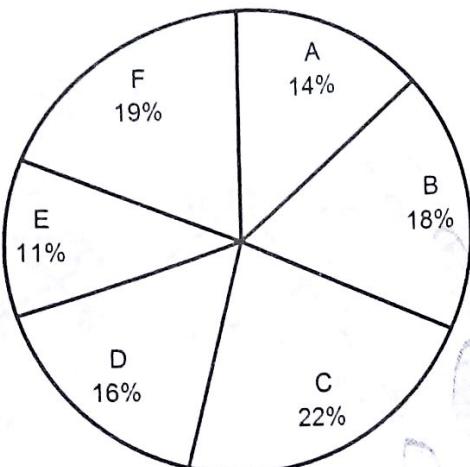
Q.12.(5) Required % =  $\frac{400}{2200} \times 100 = 18.18\%$

Q.13.(1) Required number = 1925

Q.14.(4) Required difference =  $1375 - 1000 = 375$

Q.15.(2) Required number =  $500 \times \frac{25}{100} + 500 + 225 = 125 + 500 + 225 = 850$

Q.16-20. These questions are based on the following graphs:  
**Details of statewise distribution of candidates appeared in an examination.**  
Total appeared candidates = 1,00,000



Ratio of Male and female candidates appeared

States	M	:	F
A	3	:	2
B	5	:	4
C	5	:	6
D	11	:	5
E	6	:	5
F	11	:	8

- Q.16. The number of female candidates appeared from state C is double to the number of male candidates appeared in the examination from which state ?  
(1) F      (2) D      (3) B      (4) A      (5) None of these
- Q.17. What is the respective ratio of the number of male candidates appeared in the examination from state A to that from state E ?  
(1) 7 : 5      (2) 5 : 7      (3) 3 : 4      (4) 4 : 3      (5) 5 : 6
- Q.18. The total number of female candidates appeared from state D and F together is what percent of the total number of candidates appeared in the examination from all the states ?  
(1) 20%      (2) 15%      (3) 10%  
(4) 5%      (5) None of these
- Q.19. What is the total number of male candidates appeared in the examination from state B and C together ?  
(1) 30000      (2) 25000      (3) 15000  
(4) 20,000      (5) None of these
- Q.20. The number of female candidates appeared from state E is what percent of the total number of candidates appeared in the examination from all the states ?  
(1) 10%      (2) 5%      (3) 15%  
(4) 20%      (5) None of these

## SOLUTION

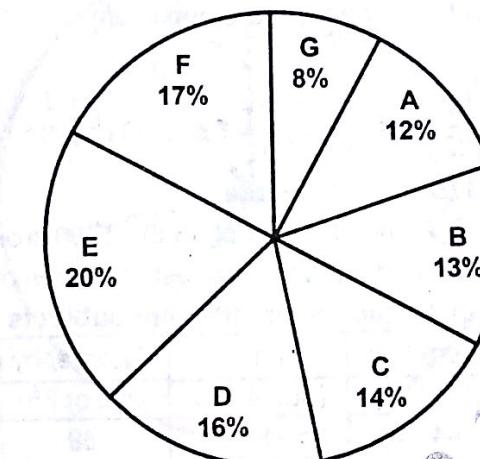
Q.16.(5) E  
Required ratio = 8400 : 6000  
= 7 : 5

Q.18.(5) Required % =  $\frac{13000}{100000} \times 100 = 13\%$

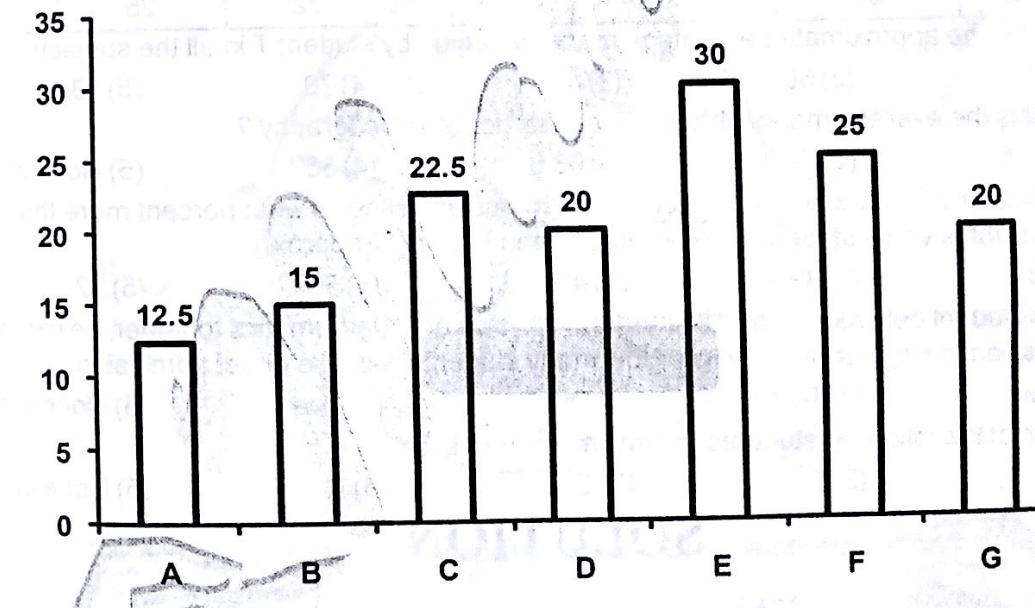
Q.19.(4) Required number =  $10000 + 10000 = 20,000$

Q.20.(2) Required % =  $\frac{5000}{100000} \times 100 = 5\%$

Q.21-25. Read the following pie and bargraph carefully and answer the questions given below.  
Income of seven companies in a state in the year 2001  
Total income of all companies = ₹ 3500 cr.



Profit percent of these companies in 2001



- Q.21. What was expenditure of company F in 2001 ?  
(1) ₹ 450 cr.      (2) ₹ 456 cr.      (3) ₹ 476 cr.      (4) ₹ 480 cr.      (5) None of these
- Q.22. Which of the following companies has made maximum profit (in terms of ₹) in 2001 ?  
(1) E      (2) F      (3) D      (4) G      (5) C
- Q.23. Which of the following two companies has made the same profit in 2001 ?  
(1) B and G      (2) B and A      (3) A and G      (4) D and C      (5) D and G
- Q.24. What is the total expenditure of companies C and G together ?  
(1) ₹ 500 cr.      (2) ₹ 700 cr.      (3) ₹ 750 cr.  
(4) ₹ 733.33 cr.      (5) ₹ 633 cr.

- Q.25. Half of the combined income of all the seven companies consists of total incomes of which combination of companies ?  
 (1) C, D, E and G (2) A, B, C and D (3) E, F and G (4) A, B, F and G (5) B, C, D and E

## SOLUTION

Q.21.(3) Expenditure =  $595 \times \frac{100}{125} = ₹ 476$  cr.

Q.22.(1) Because income and % profit of company E are maximum.

Q.23.(3) Company A and G

Q.24.(5) Total expenditure =  $490 \times \frac{100}{122.5} + 280 \times \frac{100}{120} = ₹ 633.33$  cr.

Q.25.(4) Half of the total income = ₹ 1750 cr. = 50% crore

Total income of company A, B, F and G = 50% of 3500 = 1750 crore

Q.26-30. Read the following table carefully and answer the questions given below

Percentage marks obtained by 6 students in different subjects

Subject Students	Physics (out of 80)	Mathematics (out of 150)	Hindi (out of 100)	Geography (out of 75)	English (out of 120)	History (out of 50)
P	70	44	88	88	70	38
Q	90	40	54	92	65	40
R	85	32	70	64	55	30
S	75	70	58	80	60	35
T	65	60	45	88	50	42
U	60	50	60	72	25	48

Q.26. What is the approximate percentage marks obtained by student T in all the subjects together?  
 (1) 52 (2) 65 (3) 47 (4) 70 (5) 58

Q.27. What is the average marks obtained by all students in Geography ?  
 (1) 60.5 (2) 58.2 (3) 63.8 (4) 65.5 (5) None of these

Q.28. The total marks obtained by student Q in Physics and Hindi is what percent more than the total marks obtained by student T in Geography and History ? (approx.)  
 (1) 38 (2) 49 (3) 45 (4) 56 (5) 32

Q.29. If any student gets more than 125 marks in Physics and Mathematics together, he can get direct admission in Engineering college. How many students will take direct admission ?  
 (1) Two (2) Three (3) One (4) Five (5) None of these

Q.30. Which of the following students got minimum marks ?  
 (1) U (2) T (3) S (4) R (5) None of these

## SOLUTION

Q.26.(5) Percentage marks =  $\frac{334}{575} \times 100 = 58$  (approx.)

Q.27.(1) Average marks =  $\frac{363}{6} = 60.5$

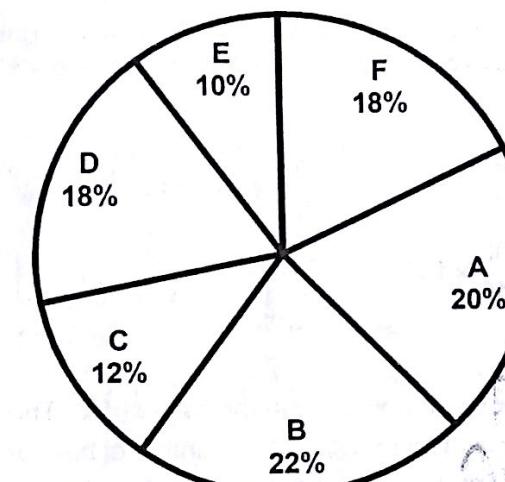
Q.28.(3) Percentage increase =  $\frac{39}{87} \times 100 = 45$  (approx.)

Q.29.(2) Students Q, S and T

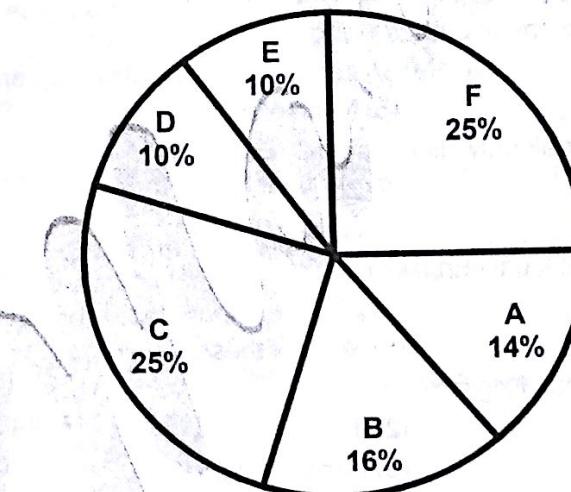
Q.30.(1) Student U = 291

- Q.31-35. Read the following pie-chart carefully and answer the questions given below :  
 Distribution of total voters from six different cities and the distribution of female voters among these cities.

Total number of voters=64000  
 Ratio of males and females = 5 : 3



Percentage distribution of female voters



Q.31. The number of male voters in city F is approximately what percent of the total number of voters in the same city ?(approx.)  
 (1) 48 (2) 44 (3) 53 (4) 57 (5) 40

Q.32. What is the average number of female voters in city A, B and E together ?  
 (1) 4200 (2) 2300 (3) 3200 (4) 2400 (5) None of these

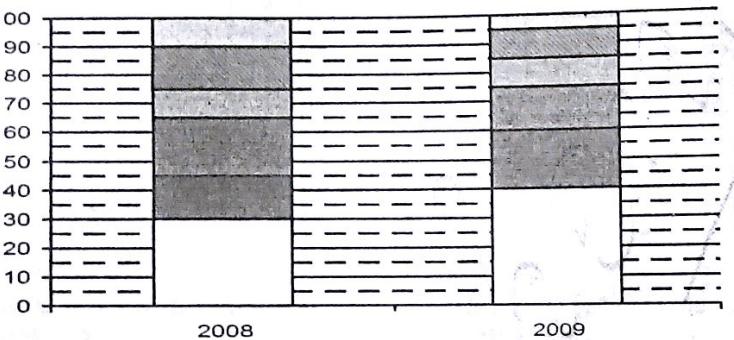
Q.33. The number of male voters in city C is what percent of the number of male voters in city D ? (approx.)  
 (1) 25 (2) 48 (3) 30 (4) 34 (5) 18

Q.34. The number of female voters in city D is what percent of the male voters in city A ? (approx)  
 (1) 20 (2) 25 (3) 28 (4) 33 (5) 37

Q.35. In which two cities the ratio between the female voters is 7 : 8 ?  
 (1) B and C (2) A and B (3) A and C (4) C and D (5) None of these

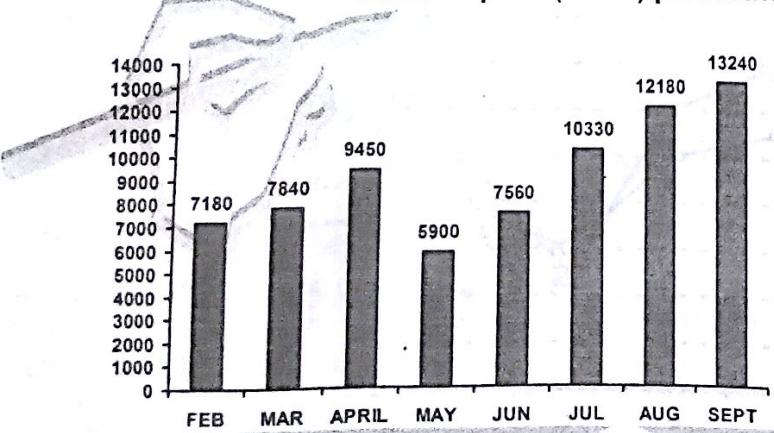


- Q.6. What is the average number of passed girls in all colleges together ?  
 (1) 17000 (2) 15000 (3) 16000 (4) 20000 (5) None of these
- Q.7. The number of passed boys in college C is approximately what percent of the total number of passed boys in all colleges together ?  
 (1) 20% (2) 35% (3) 24% (4) 29% (5) 15%
- Q.8. What is the difference between total number of passed students from college B to that of from college E ?  
 (1) 10,000 (2) 21,000 (3) 10,500 (4) 20,500 (5) None of these
- Q.9. What is the respective ratio of number of passed boys from college F to that of girls from college C ?  
 (1) 9 : 11 (2) 11 : 13 (3) 9 : 13 (4) 10 : 11 (5) None of these
- Q.10. The total number of passed girls from college E and F together is approximately what percent of total number of passed boys from college B and C together ?  
 (1) 58 (2) 70 (3) 82 (4) 55 (5) 64
- Q.11-15. Read the following graph carefully and answer the questions given below.  
 Percentage of cars of 6 different models produced by a company in two years.



- Q.11. What is the total number of cars of P, Q and T models in year 2008 ?  
 (1) 2,85,000 (2) 2,18,000 (3) 2,70,000 (4) 2,50,000 (5) None of these
- Q.12. What is the percentage increase in a number of car of Q model from 2008 to 2009 ?  
 (1) 68 (2) 65 (3) 60 (4) 62 (5) None of these
- Q.13. If 85% of the S type cars produced in each year were sold by the company, how many S model cars remain unsold ?  
 (1) 14,850 (2) 12,750 (3) 13,350 (4) 11,850 (5) None of these
- Q.14. What is the difference between number of T model cars in year 2008 and 2009 ?  
 (1) 12500 (2) 14500 (3) 15000 (4) 14000 (5) None of these
- Q.15. In 2009 the number of P model cars is what percent that of U model cars ?  
 (1) 400 (2) 800 (3) 600 (4) 200 (5) None of these
- Q.16-20. Read the following graph carefully and answer the questions given below.

Crude oil price (in Rs.) per metric tonne



- Q.16. How many months experienced more than 10 percent increase in crude oil price over the earlier month ?  
 (1) One (2) Two (3) Three (4) Four (5) None of these
- Q.17. Which month experienced more than 10 percent but less than 20 percent increase in the price of crude oil over the earlier month ?  
 (1) April (2) August (3) September (4) June (5) None of these
- Q.18. What is the approximate percentage increase in the price of crude oil from February to September ?  
 (1) 84% (2) 93% (3) 89% (4) 76% (5) 69%
- Q.19. What is the respected ratio of crude oil price of May to the price of crude oil of April ?  
 (1) 117 : 187 (2) 189 : 118 (3) 187 : 117 (4) 118 : 189 (5) None of these
- Q.20. What is the average crude oil price if all the months taken together ?  
 (1) ₹ 9010 (2) ₹ 9180 (3) ₹ 9210 (4) ₹ 9340 (5) None of these
- Q.21-25. Study the following table carefully to answer these questions.  
 Income and expenditure of company A during the period 2001 to 2006.  
 Profit/Loss = Income - Expenditure
- $$\% \text{ Profit/Loss} = \frac{\text{Income} - \text{Expenditure}}{\text{Expenditure}} \times 100$$
- | Year | Income (Rs. in crores) | Expenditure (Rs. in crores) |
|------|------------------------|-----------------------------|
| 2001 | 350                    | 250                         |
| 2002 | 300                    | 150                         |
| 2003 | 450                    | 350                         |
| 2004 | 550                    | 500                         |
| 2005 | 400                    | 300                         |
| 2006 | 500                    | 350                         |
- Q.21. What is the approximate average profit earned in the given years ?  
 (1) Rs. 121 crores (2) Rs. 82 crores (3) Rs. 135 crores (4) Rs. 96 crores (5) 108 crores

Q.22. What is approximately percent profit earned during the year 2003 ?  
 (1) 15% (2) 29% (3) 21% (4) 44% (5) 36%

Q.23. Which of the following years has the maximum percent increase/decrease in income from the previous year ?  
 (1) 2002 (2) 2003 (3) 2005 (4) 2006 (5) None of these

Q.24. What is the percentage increase in expenditure from 2002 to 2003 ?  
 (1)  $133\frac{1}{3}\%$  (2)  $33\frac{1}{3}\%$  (3)  $66\frac{2}{3}\%$  (4) 50% (5) None of these

Q.25. What is the average income for the given years ?  
 (1) Rs. 415 crores (2) Rs. 425 crores (3) Rs. 430 crores (4) Rs. 475 crores (5) None of these

Q.26-30. Study the following table carefully and answer the questions given below :

**Number of students studying in different faculties in seven institutions**

Institutions	Faculty				
	Arts	Commerce	Science	Engineering	Management
A	135	207	236	155	84
B	106	162	188	134	37
C	154	245	130	184	66
D	175	148	255	86	137
E	225	222	275	112	99
F	194	216	165	178	158
G	235	123	216	256	

Q.26. What is the percentage of students studying Management with respect to the total number of students studying in the institute B ?

- (1) 10% (2) 20% (3) 30% (4) 5% (5) 42%

Q.27. Out of the total students of the institute D, approximately what percentage of students are studying Science ?

- (1) 25% (2) 30% (3) 45%  
(4) 35% (5) 40%

Q.28. The total number of students studying Arts in institutes A, B and C together is approximately what percent of the total number of students studying Engineering in Institutes D, E and G together ?

- (1) 87% (2) 79% (3) 63%  
(4) 98% (5) 58%

Q.29. What is the percentage of students studying Science in institute C with respect to the total students of all institutions studying Science ?

- (1) 2% (2) 19% (3) 5% (4) 14% (5) 9%

Q.30. In which institution, the percentage of students studying Commerce with respect to the total students of the institution maximum ?

- (1) A (2) B (3) C (4) D (5) E

Q.31-34. Read the following table carefully and answer the questions given below.

**Percentage of passed students from 6 schools over the years.**

School Years	A	B	C	D	E	F
1997	34	32	54	38	32	34
1998	32	57	67	42	57	38
1999	36	63	56	52	35	65
2000	42	40	68	57	40	39
2001	48	48	41	63	21	30
2002	53	64	40	36	45	22

Q.31. If the number of students appeared from school C in each year is 4800, what is the average number of passed students from school C in all the years ?

- (1) 2608 (2) 2618 (3) 2816 (4) 2728 (5) None of these

Q.32. If number of appeared students from school B and F in 1998 and 2000 are 4000 and 5000 respectively, what is the total number of passed students from school B and F in the same years ?

- (1) 4320 (2) 4220 (3) 4360 (4) 4230 (5) None of these

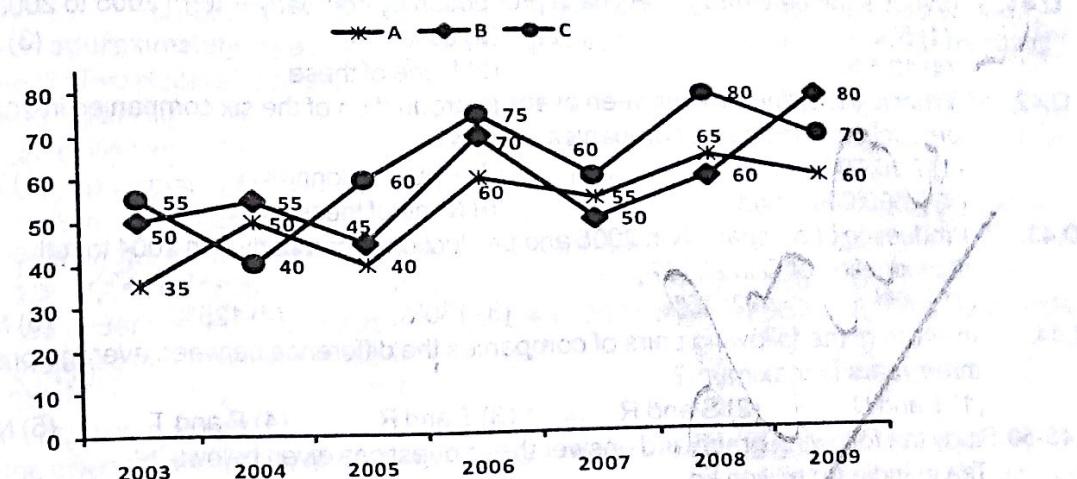
Q.33. If the ratio of number of appeared students from school B in 2000 and that of school F in 1998 is 5 : 7 and number of passed students from school B in 2000 is 1200, what is the number of appeared students from school F in 1998 ?

- (1) 3000 (2) 4200 (3) 4900 (4) 4500 (5) None of these

Q.34. If the number of appeared students from school A in 2000 and number of appeared students from school C in 1999 are equal, what is the respective ratio between the number of passed students from school A in 2000 and number of passed students from school C in 1999 ?

- (1) 3 : 4 (2) 5 : 6 (3) 1 : 2  
(4) Can't be determined (5) None of these

Q.35-39. Read the following graph carefully and answer the questions given below.  
**Production of sugar in three different factories over years (in thousand tonnes)**



Q.35. What was the percentage decrease in production of company C in 2007 from previous year ?

- (1) 20% (2) 22% (3) 18% (4) 15% (5) None of these

Q.36. In which year was the percentage increase/decrease in production of company B maximum ?

- (1) 2008 (2) 2005 (3) 2007 (4) 2009 (5) None of these

Q.37. The average production of company A is approximately what percent of average production of company C ?

- (1) 86% (2) 83% (3) 77% (4) 90% (5) 72%

Q.38. The total production of company B in 2004 and 2006 is what percent of total production of company C in 2006 and 2008 ?

- (1) 30% (2) 98% (3) 56% (4) 70% (5) 81%

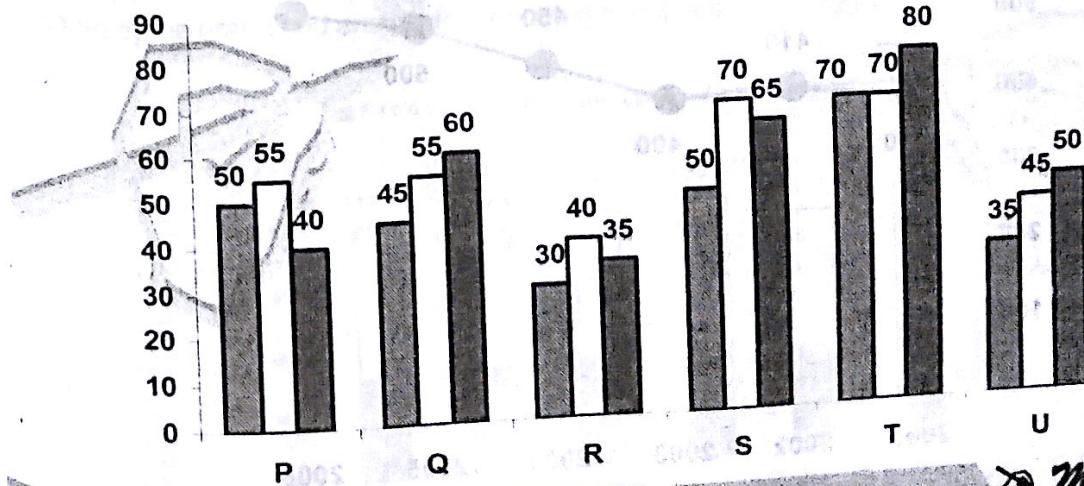
Q.39. What is the average production of company C in all the years ?

- (1)  $54\frac{2}{7}$  thousand tonnes (2)  $52\frac{1}{7}$  thousand tonnes (3)  $58\frac{2}{7}$  thousand tonnes

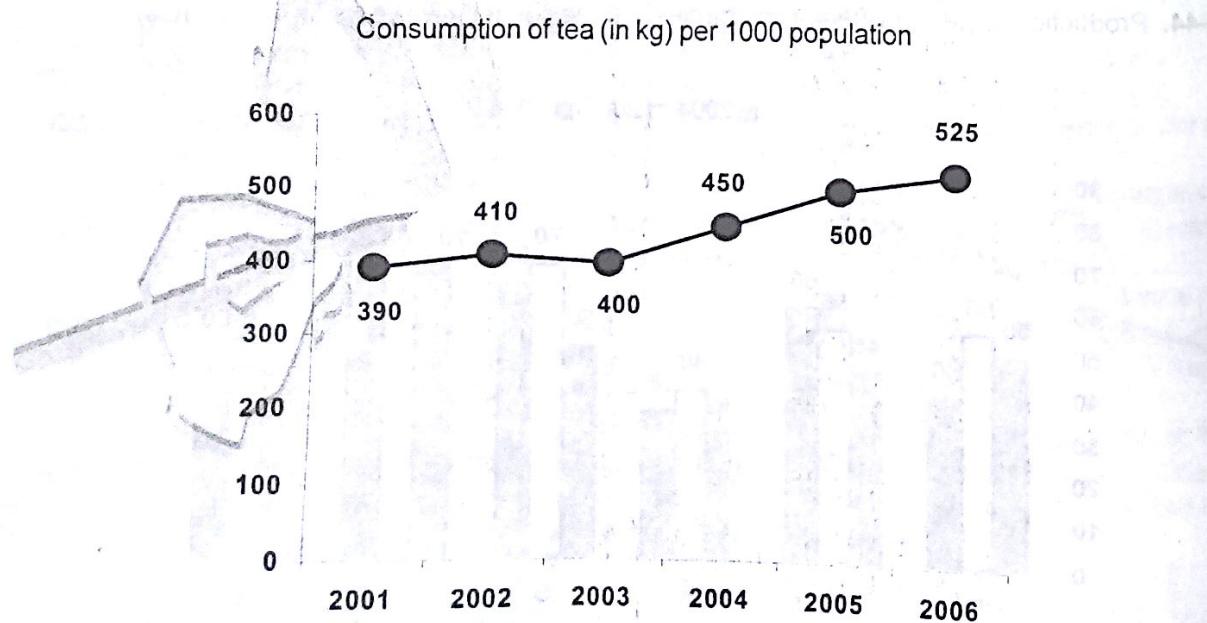
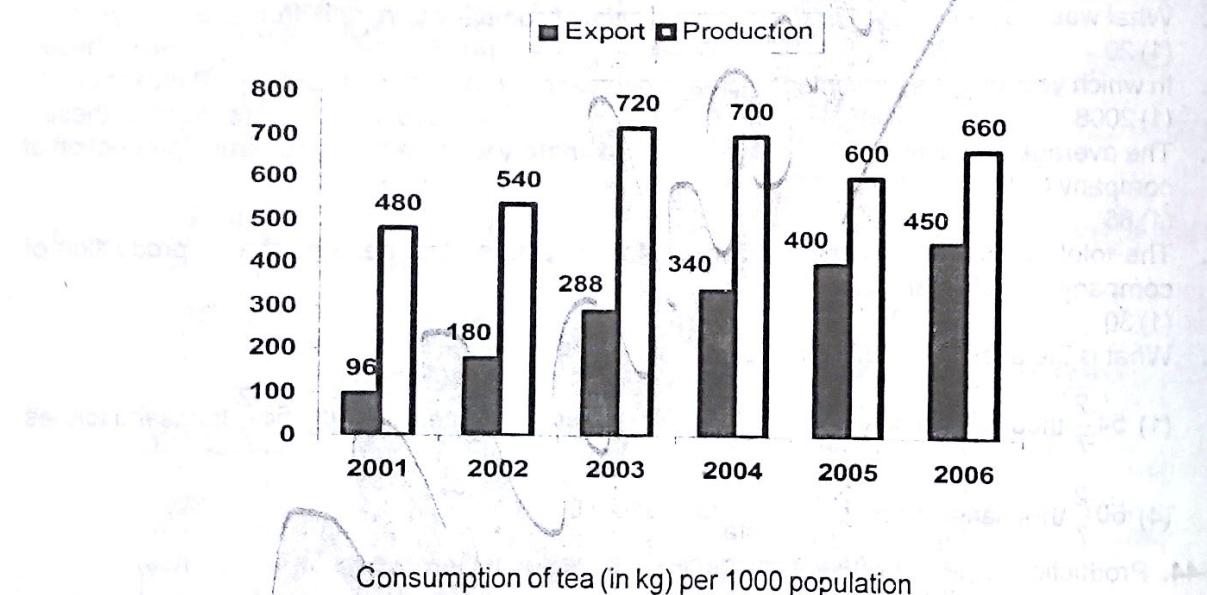
- (4)  $60\frac{2}{7}$  thousand tonnes (5) None of these

Q.40-44. Production of steel in different companies in three consecutive years (in lakh tonnes)

■ 2004 □ 2005 ■ 2006



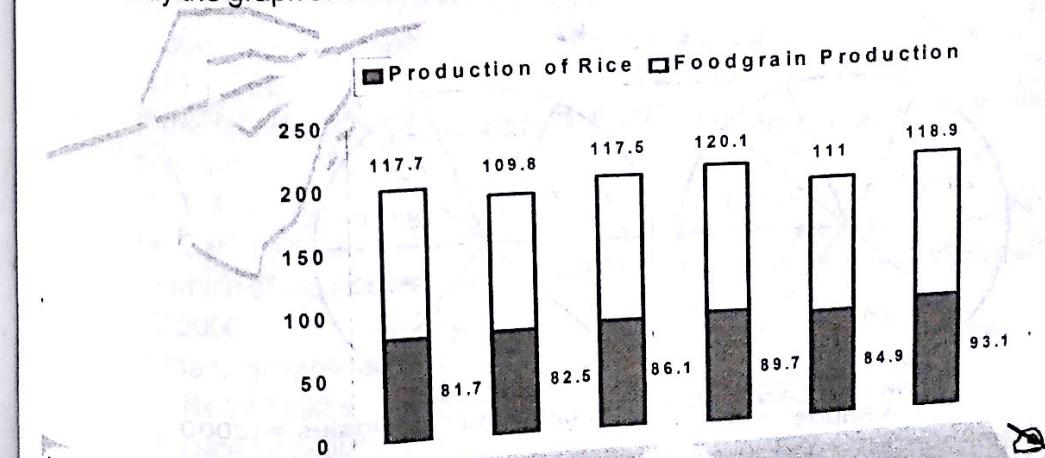
- Q.40. Which of the following companies recorded the minimum growth% from 2004 to 2005?  
 (1) P (2) Q (3) R  
 (4) S (5) U
- Q.41. What is the percentage decline in production by company R from 2005 to 2006?  
 (1) 5% (2) 20% (3) 15%  
 (4) 12.5% (5) None of these
- Q.42. What is the difference between average production of the six companies in 2005 and average production of the same companies in 2004?  
 (1) 7,10,000 tonnes (2) 7,50,000 tonnes (3) 78,000 tonnes  
 (4) 5,500,000 tonnes (5) None of these
- Q.43. Production of company R in 2005 and production of company U in 2004 together is what percent of production of Q in 2006?  
 (1) 100% (2) 75% (3) 130% (4) 125% (5) None of these
- Q.44. In which of the following pairs of companies the difference between average production for the three years is maximum?  
 (1) T and U (2) S and R (3) T and R (4) P and T (5) None of these
- Q.45-50. Study the following graph and answer these questions given below:-  
 Tea in India (in million kg.)



- Q.45. In which year was there minimum percentage of export with respect to production?  
 (1) 2001 (2) 2002 (3) 2003 (4) 2004 (5) None of these
- Q.46. In which year we had maximum quantity of tea for domestic consumption?  
 (1) 2004 (2) 2001 (3) 2003 (4) 2006 (5) None of these
- Q.47. What was approximately the average quantity of tea available for domestic consumption during the period? (Two place of decimal)  
 (1) 324.33 million kg. (2) 400 million kg. (3) 408.33 million kg.  
 (4) 350.56 million kg. (5) None of these
- Q.48. What was approximately the average population during the period?  
 (1) 650 million (2) 625 million (3) 600 million (4) 757 million (5) 816 million
- Q.49. Which year shows the maximum percentage of export with respect to production?  
 (1) 2002 (2) 2003 (3) 2006 (4) 2005 (5) None of these
- Q.50. If the area under tea production was less by 10% in 2004 than in 2003, then the approximate rate of increase in productivity of tea in 2004 was  
 (1) 97.22 (2) 3 (3) 35 (4) Cannot be determined (5) None of these
- Q.51-55. Study the given table carefully and answer the questions given below-  
 The given table represents the number of candidates appeared and qualified during 2001 to 2006 from 6 states.

Year → State ↓	2001		2002		2003		2004		2005		2006	
	App.	Qual.										
P	5600	840	7250	925	8250	876	7856	824	8349	932	7964	853
Q	7200	864	8100	840	7865	792	8425	896	7658	878	8107	940
R	4850	588	6450	650	7120	685	7763	735	6984	792	7058	827
S	6325	745	7185	785	8545	842	6987	898	5896	685	6754	746
T	5200	640	6225	685	7962	934	7645	888	7389	843	7766	812
U	6500	820	7380	860	6895	788	7844	762	8109	798	8934	911

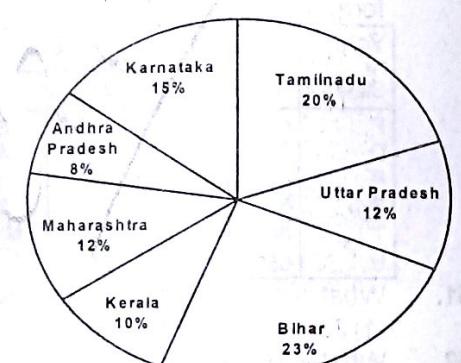
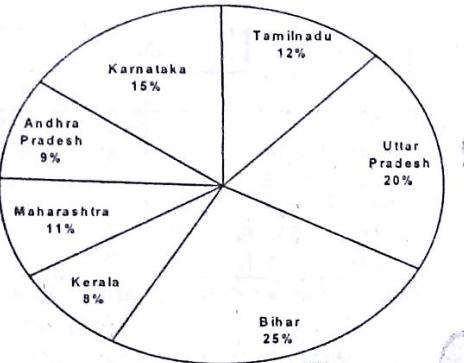
- Q.51. What is the difference between total qualified candidates in six states in years 2003 and 2006?  
 (1) 220 (2) 172 (3) 160 (4) 226 (5) None of these
- Q.52. What is percent of the total qualified candidates to the total number of appeared candidates among all the six states in 2006 is?  
 (1) 15 (2) 11 (3) 19 (4) 13 (5) 14
- Q.53. In which of the given years the number of candidates appeared from state S has maximum percentage of qualified candidates?  
 (1) 2002 (2) 2004 (3) 2006 (4) 2003 (5) None of these
- Q.54. What is the difference between total candidates appeared in the six states in years 2001 and 2003?  
 (1) 8750 (2) 10600 (3) 10962 (4) 9615 (5) None of these
- Q.55. What is the difference between percentage of qualified students of state Q in 2001 to the percentage of qualified students in 2002?  
 (1) 1 (2) 2.25 (3) 1.63 (4) 2.5 (5) None of these
- Q.56-60. Study the graph and answer the following questions-



- Q.56. Over the given years what is average production of rice?  
 (1) 86.33 million tonnes      (2) 88.66 million tonnes  
 (3) 85 million tonnes      (4) 88 million tonnes  
 (5) None of these
- Q.57. What is the maximum percentage of decrease in other food grain production with respect to previous years?  
 (1) 6.25%      (2) 6.44%      (3) 6.63%      (4) 6.86%      (5) None of these
- Q.58. Average production of rice is what percent of the maximum recorded production of food grains over the years?  
 (1) 42.5%      (2) 38.4%      (3) 42.7%      (4) 40.7%      (5) 47.02%
- Q.59. Percentage increase/decrease in production of rice in year 2009-2010 over the year 2006-2007 is about.  
 (1) 10.4%      (2) 6%      (3) 9.8%      (4) 0.98%      (5) 1.02%
- Q.60. In which year the production of rice in total food grain production is the maximum percentage?  
 (1) 2007-2008      (2) 2008-2009      (3) 2009-2010      (4) 2010-2011      (5) None of these

Q.61-65. Read the following pie-chart carefully and answer the questions given below.

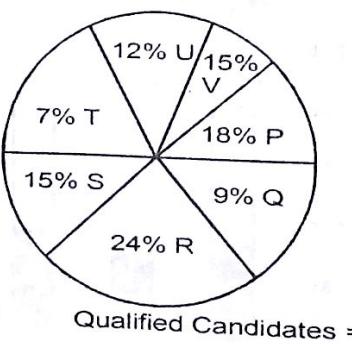
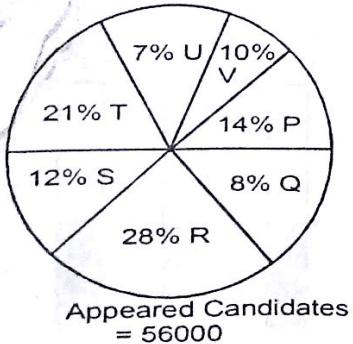
Population of two states in two years  
 Total population in 2008 = 25 lacs      Total population in 2009 = 28 lacs



- Q.61. What is the respective ratio of population of Tamilnadu in 2008 to that of Maharashtra in 2009?  
 (1) 25 : 28      (2) 25 : 23      (3) 23 : 25      (4) 28 : 25      (5) None of these
- Q.62. What was percent increase in population of Bihar from 2008 to 2009?  
 (1) 3.04      (2) 2.28      (3) 3.36      (4) 2.96      (5) None of these
- Q.63. What is difference between population of Maharashtra and Karnataka in year 2009?  
 (1) 74000      (2) 94000      (3) 104000      (4) 84000      (5) None of these
- Q.64. What is total population of Uttar Pradesh in 2008 and 2009?  
 (1) 864000      (2) 836000      (3) 828000      (4) 892000      (5) None of these
- Q.65. The population of Maharashtra in 2008 is approximately what percent of population of the same state in 2009?  
 (1) 86      (2) 82      (3) 75      (4) 70      (5) 90

Q.66-70. Study the following pie chart carefully gives the answer-

Classification of appeared candidates in a competitive test from different institutes and qualified candidates.



What is the difference between the number of qualified candidates of institute R and those of T?  
 (1) 2139      (2) 2030      (3) 2040      (4) 2025      (5) None of these

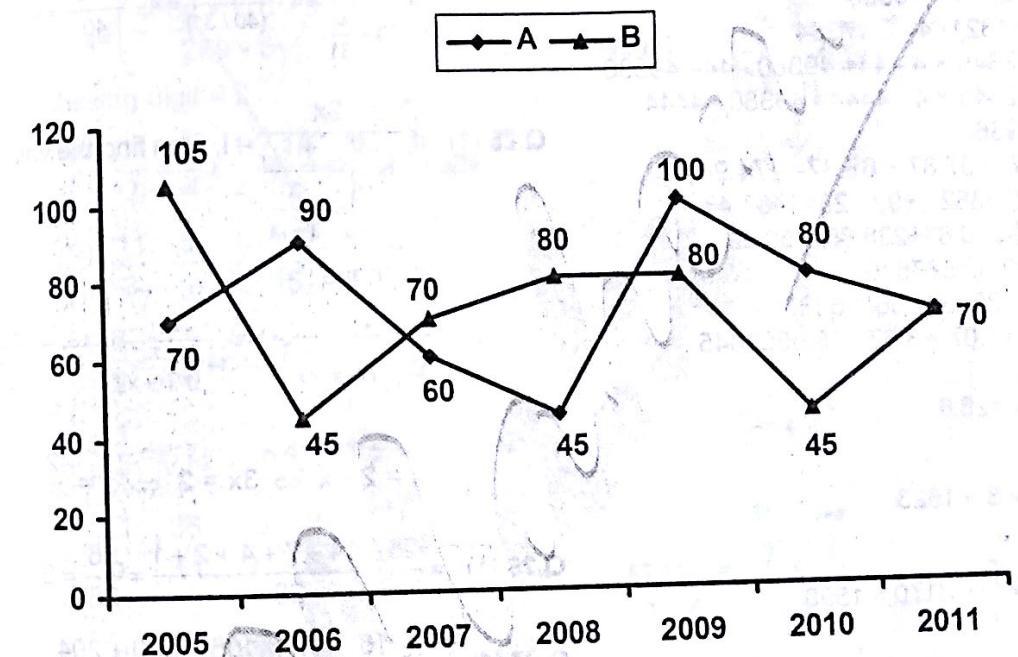
What is the average number of appeared candidates from institutes P, T and V together?  
 (1) 8500      (2) 8400      (3) 8335      (4) 8020      (5) None of these

What is the percentage of qualified candidates with respect to appeared candidates from institutes P and R taken together? (Rounded to two decimal places)  
 (1) 18.43%      (2) 22%      (3) 21%      (4) 21.42%      (5) 25.25

What is the sum total number of appeared students from institute R and total number of qualified students from institute P and S together?  
 (1) 19460      (2) 19064      (3) 19604      (4) 19640      (5) None of these

What is the ratio between the number of candidates who qualified from institutes P and R together to the no. of candidates who appeared from institutes Q and V together?  
 (1) 2 : 3      (2) 1 : 2      (3) 2 : 1      (4) 3 : 14      (5) None of these

Q.71-75. Study the following graph carefully and answer the given questions:-  
 The following graph shows the % profit of two companies over the years:-



Q.71. In which of the following years was the total income more than double the total expenditure in that year for company A?  
 (1) 2010      (2) 2009      (3) 2006      (4) 2008      (5) 2011

Q.72. If income of company A in the year 2006 and 2009 are same then what is the respective ratio of expenditure of company A in both the same years?  
 (1) 11 : 20      (2) 19 : 20      (3) 20 : 19      (4) 20 : 11      (5) None of these

Q.73. If the total income of company B in 2011 was Rs 200 lakhs what was the expenditure of company A in the same year?  
 (1) 114.25 lakh      (2) 120.10 lakh      (3) 100.52 lakh  
 (4) Can't be determined      (5) None of these

Q.74. In which of the following years the ratio of expenditure to income was the least for company B?  
 (1) 2006      (2) 2009      (3) 2008      (4) 2010      (5) 2005

Q.75. If the total expenditure of company A in 2007 was Rs 150 lakhs what was the total income?  
 (1) Rs 240 lakhs      (2) Rs 250 lakhs      (3) Rs 260 lakhs  
 (4) Data inadequate      (5) None of these

# EXPLANATION

## CHAPTER-1

### SIMPLIFICATION

Q.1.(4)  $50 + 75 + 150 + 250 + 350 = 875$

Q.2.(2)  $236 + 738 + 876 + 1002 = ? = 2852$

Q.3.(3)  $5002 + 2005 + 7667 = ? = 14674$

Q.4.(2)  $3583 + 7862 - 3216 = ? = 8229$

Q.5.(1)  $5762 - 3528 + 7656 = ? = 9890$

Q.6.(2)  $7229 - 3216 - 1738 = ? = 2275$

Q.7.(2)  $12345 \times 4 = 49380$

Q.8.(4)  $? = 54321 \times 4 = 2.17284$

Q.9.(1)  $? = 12345 \times 4 - 44 = 49380 - 44 = 49336$

Q.10.(2)  $? = 12345 \times 4 - 4444 = 49380 - 4444$

$= 44936$

Q.11.(2)  $23.70 + 87.87 + 63.37 = 174.94$

Q.12.(3)  $176.5 + 382.7 + 928.28 = 1487.48$

Q.13.(1)  $236.05 - 316.87 + 238.85 = 158.03$

Q.14.(1)  $2176 \times 316 = 687616$

Q.15.(1)  $3333 \times 333 \times 33 = 36626337$

Q.16.(3)  $2.005 \times 1.07 \times 8.67 = 18.6001845$

Q.17.(2)  $\frac{5005}{35 \times 5} = 28.6$

Q.18.(2)  $\frac{2164}{4} \times 3 = 1623$

Q.19.(2)  $\frac{2}{3} \times \frac{5}{4} \times \frac{6}{7} \times 2170 = 1550$

Q.20.(2)  $(2+3+5) + \left(\frac{1}{7} + \frac{6}{7} + \frac{1}{6}\right)$

$= 10 + 1 + \frac{1}{6} = 11\frac{1}{6}$

Q.21.(2) Sol. Given exp.  $= 12.05 \times \frac{5.4}{0.6} = 12.05 \times 9$

$= 108.45$

Q.22.(3) Sol.  $\frac{1728}{x} = 2 \times 36 \times 2$

$\Leftrightarrow x = \frac{1728}{144} = \frac{1728}{144} = 12$

Q.23.(5)  $\frac{x^2 + y^2}{x^2 - y^2} = \frac{\frac{y^2}{x^2} + 1}{\frac{x^2}{y^2} - 1} = \frac{\left(\frac{6}{5}\right)^2 + 1}{\left(\frac{6}{5}\right)^2 - 1} = \frac{61}{25} \times \frac{25}{11} = \frac{61}{11}$

Q.24.(5) Given exp.

$$= 4 - \frac{5}{1+1} - 4 - \frac{5}{1+1} - 4 - \frac{5}{1+1} \\ = 4 - \frac{5}{3+1} - 4 - \frac{5}{3+4} - 4 - \frac{5}{3+9} \\ = 4 - \frac{5}{(9/4)} - 4 - \frac{5}{(31/9)}$$

$$= 4 - \frac{5}{9} - 4 - \frac{5}{(40/31)} = 4 - \frac{5 \times 31}{40} = 4 - \frac{31}{8} = \frac{1}{8}$$

Q.25.(1) If  $\frac{2x}{1+\frac{1}{1+x}} = 1$ , then find the value of x.

$$\frac{2x}{1+\frac{1}{1+\frac{x}{1-x}}} = 1 \Leftrightarrow \frac{2x}{1+\frac{1}{1+\frac{1}{1/(1-x)}}} = 1 \Leftrightarrow \frac{2x}{1+(1/(1-x))} = 1$$

$$\frac{2x}{1+(1-x)+x} = 1 \Leftrightarrow \frac{2x}{1+\frac{1}{1-x}} = 1 \Leftrightarrow \frac{2x}{1+\frac{1}{x}} = 1 \Leftrightarrow \frac{2x}{1+\frac{1}{x}} = 1$$

$$\frac{2x}{1+\frac{1}{x}} = 1 \Leftrightarrow 2x = x + 1 \Leftrightarrow x = \frac{1}{2}$$

$$2x = 2 - x \Leftrightarrow 3x = 2 \Leftrightarrow x = \frac{2}{3}$$

Q.26.(1)  $= \frac{28+14+7+4+2+1}{28} = \frac{56}{28} = 2$

Q.27.(4)  $\frac{7}{4} + \frac{16}{3} + \frac{17}{5} = \frac{105+320+204}{60} = \frac{629}{60}$

$= 10\frac{29}{60}$

Q.28.(2)  $= \frac{41}{2} + \frac{91}{3} - \frac{91}{6} = \left(\frac{123+182}{6}\right) - \frac{91}{6}$

$= \frac{305}{6} - \frac{91}{6} = \frac{214}{6} = \frac{107}{3} = 35\frac{2}{3}$

Q.29.(5)  $= \frac{1}{(7/3)} + \frac{1}{(7/4)} = \frac{3}{7} + \frac{4}{7} = \frac{7}{7} = 1$

Q.30.(3) Let  $= \frac{35}{6} - \frac{35}{9} - x = 1$

$Then, x = \frac{35}{6} - \frac{35}{9} - 1 = \frac{35}{6} - \left(\frac{35}{9} + 1\right)$

$= \frac{35}{6} - \frac{44}{9} = \frac{105-88}{18} = \frac{17}{18}$

Q.31.(5)  $= \frac{11}{4} \div \frac{8}{3} \div \frac{13}{12} = \frac{11}{4} \times \frac{3}{8} \times \frac{12}{13} = \frac{99}{104}$

Q.32.(4)  $\frac{9}{2} \times \frac{13}{3} - \frac{25}{3} \div \frac{17}{3} = \frac{9}{2} \times \frac{13}{3} - \frac{25}{3} \times \frac{3}{17}$

$= \frac{39}{2} - \frac{25}{17} = \frac{663-50}{34} = \frac{613}{34} = 18\frac{1}{34}$

Q.33.(2)  $\frac{4335}{x} \div \frac{15}{8} = \frac{289}{528} \text{ then,}$

$\frac{4335}{x} = \frac{289}{528} \times \frac{15}{8} \Leftrightarrow \frac{4335}{x} = \frac{289 \times 5}{176 \times 8}$

$\Leftrightarrow x = \left(\frac{4335 \times 176 \times 8}{289 \times 5}\right) = 4224$

Missing digit = 2

Q.34.(5)  $\frac{16}{3} - \frac{11}{3} \times \frac{3}{4} \times \frac{1}{x} + \frac{16}{5} \div \frac{6}{5} = 7 \text{ then}$

$\frac{16}{3} - \frac{11}{3} \times \frac{3}{4} \times \frac{1}{x} + \frac{16}{5} \times \frac{5}{6} = 7$

$\Leftrightarrow \frac{16}{3} - \frac{11}{4x} + \frac{8}{3} = 7 \Leftrightarrow \frac{24}{3} - \frac{11}{4x} = 7$

$\Leftrightarrow \frac{11}{4x} = 8-7=1 \Leftrightarrow 4x=11 \Leftrightarrow x = \frac{11}{4} = 2\frac{3}{4}$

Q.35.(2)  $9 - \frac{11}{9} \text{ of } \frac{36}{11} \div \frac{36}{7} \text{ of } \frac{7}{9} = 9 - 4 \div 4 = 9 - 1 = 8$

Q.36.(2)  $\frac{5}{6} \div \frac{6}{7} \times x - \frac{8}{9} \div \frac{8}{5} + \frac{3}{4} \times \frac{10}{3} = \frac{25}{9}$

$\frac{35}{36}x - \frac{5}{9} + \frac{5}{2} = \frac{25}{9}$

$\Leftrightarrow \frac{35}{36}x = \frac{5}{6} \Leftrightarrow x = \left(\frac{5}{6} \times \frac{36}{35}\right) = \frac{6}{7}$

Q.37.(3)  $= \frac{3}{4} \div \frac{9}{4} \text{ of } \frac{2}{3} - \left(\frac{3-2}{6}\right) \times \frac{10}{3} + \frac{5}{6}$

$= \frac{3}{4} \div \frac{3}{2} - \frac{1}{6} \times \frac{6}{5} \times \frac{10}{3} + \frac{5}{6}$

$= \frac{3}{4} \times \frac{2}{3} - \frac{2}{5} + \frac{5}{6}$

$= \frac{3}{4} \times \frac{2}{3} - \frac{2}{5} + \frac{5}{6} = \left(\frac{1}{2} - \frac{2}{3} + \frac{5}{6}\right)$

Q.43.(2)  $= 3034 - \left(\frac{1002}{2004} \times 100\right) = 3034 - 50 = 2984$

Q.44.(3)  $= \frac{52416}{1872} + 6.28 = 2.8 + 6.28 = 9.08$

$= \left(\frac{3-4+5}{6}\right) = \frac{4}{6} = \frac{2}{3}$

Q.38.(4)  $\frac{1}{3} + \frac{3}{4} \left(\frac{6-5}{15}\right) = \frac{1}{3} + \frac{3}{60} = \frac{20+3}{60}$

$\frac{5}{3} \times \frac{3}{4} - \frac{1}{4} \times \frac{4}{5} = \frac{5}{4} - \frac{1}{5} = \frac{25-4}{20}$

$= \frac{23}{60} \times \frac{20}{21} = \frac{23}{63}$

Q.39.(1)  $\frac{1}{3} \times \frac{3}{4} \times \frac{1}{3} - \frac{1}{9} = \frac{1}{3} - \frac{1}{9} = \frac{1}{3} \times \frac{1}{3} - \frac{1}{9} = \frac{1}{9} - \frac{1}{9} = 0$

Q.40.(3)  $\frac{1}{2} \div \frac{1}{4} = \frac{2}{2+1} = \frac{2}{3} = 2\frac{2}{3}$

Q.41.(3)  $\frac{13}{4} - \frac{4}{5} \text{ of } \frac{5}{6} = \frac{13}{4} - \frac{2}{3} = \frac{13-8}{12} = \frac{5}{12}$

$= \frac{31}{65} = \left(\frac{31}{12} \times 6\right) = \frac{31}{2} = 15.5$

Q.42.(1)  $\frac{15}{2} - \frac{23}{4} \div \frac{1}{6} = \frac{15}{2} + \frac{23}{4} = \frac{6}{5} + \frac{2}{2} = \frac{6}{5} + 1 = \frac{11}{5}$

$\text{Then, } \left[\frac{7}{4} \times \frac{2}{(7+2x)}\right] \div \left[\frac{7}{4} \times \frac{10}{47}\right] = \frac{3}{5}$

$\Leftrightarrow \frac{7}{2(7+2x)} = \frac{3}{5} \times \frac{7}{4} \times \frac{10}{47} = \frac{21}{94}$

$\Leftrightarrow 7+2x = \left(\frac{7}{2} \times \frac{94}{21}\right) = \frac{47}{3}$

$\Leftrightarrow 2x = \frac{47}{3} - 7 = \frac{26}{3} \Leftrightarrow x = \left(\frac{26}{3} \times \frac{1}{2}\right) = \frac{13}{3} = 4\frac{1}{3}$

Mahendra's



## CHAPTER-2 NUMBER SERIES

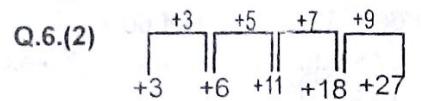
Q.1.(2)  $\times 2+6, \times 2+6, \times 2+6, \dots$

Q.2.(2)  $-1^3, +2^2, -3^3, +4^2, -5^3$

Q.3.(5)  $+11, +33, +55, +77, +99$

Q.4.(3)  $-81, -72, -63, -54, -45$

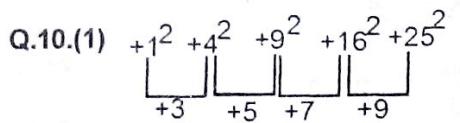
Q.5.(3)  $+14^2, +13^2, +12^2, +11^2$



Q.7.(3)  $+13, +26, +39, +52, +65$

Q.8.(1)  $-224, -112, -56, -28, -14$

Q.9.(2)  $+5^2, +10^2, +15^2, +20^2, +25^2$



Q.11.(1)  $+1^2, +2^2, +3^2, +4^2, +5^2, +6^2$

Q.12.(4)  $\times 2+4, \times 2+4, \times 2+4, \times 2+4,$

Q.13.(4)  $-7, -14, -21, -28, -35, -42$

Q.14.(5)  $+288, +144, +72, +36, +18, +9$

Q.15.(1)  $+5, +10, +15, +20, +25, +30$

Q.16.(2)  $(\div 2-2), (\div 2-2), (\div 2-2), \dots$

Q.17.(4)  $(\times 1+2), (\times 2+3), (\times 3+4)$

Q.18.(5)  $+1^2, +3^2, +5^2, +7^2, \dots$

Q.19.(1)  $\times 1+1^2, \times 2+2^2, \times 3+3^2, \times 4+4^2, \dots$

Q.20.(3)  $(\times 0.5+0.5)(\times 1+1)(\times 1.5+1.5)(\times 2+2), \dots$

Q.21.(1)  $\times 5-10, \times 5-10, \dots$

Q.22.(2)  $\times 1+7, \times 2+12, \times 3+15, \times 4+16, \times 5+15$

Q.23.(4)  $\times 0.5+0.5, \times 1+1, \times 1.5+1.5, \times 2+2, \times 2.5+2.5$

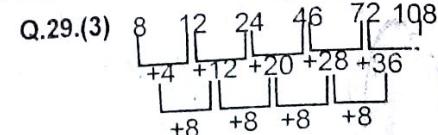
Q.24.(5)  $+7^2, +6^2, +5^2, +4^2, +3^2, +2^2$

Q.25.(3)  $\times 7, \times 6, \times 5, \times 4, \times 3, \times 2$

Q.26.(1)  $-200, -100, -50, -25, \dots$

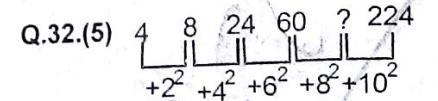
Q.27.(4)  $\times 3, \times 3, \times 3, \times 3, \dots$

Q.28.(3)  $+12, +15, +18, +21, \dots$



Q.30.(1)  $-23, -19, -17, -13, -11, -7$

Q.31.(4)  $\times 7-1, \times 6-1, \times 5-1, \times 4-1, \times 3-1$



Q.33.(1)  $\div 5, \div 5, \div 5, \div 5, \div 5$

Q.34.(2)  $\times 2-3, \times 2-3, \times 2-3, \dots$

Q.35.(3)  $\times 1+1, \times 2+2, \times 3+3, \times 4+4, \dots$

Q.36.(3)  $\times 1+1, \times 2+2, \times 3+3, \times 4+4, \times 5+5$

Q.37.(1)  $+2^2, +3^2, +4^2, +5^2, +6^2, +7^2$

Q.38.(5)  $+7, +11, +13, +17, +19, +23$

Q.39.(4)  $\times 1+(1\times 7), \times 2+(2\times 6), \times 3+(3\times 5)$

Q.40.(2)  $\times 11, \times 9, \times 7, \times 5, \times 3, \times 1$

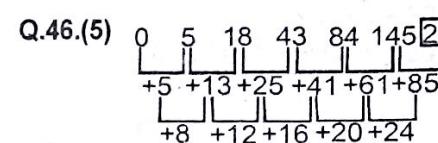
Q.41.(3)  $\times 3+1, \times 3+2, \times 3+3, \times 3+4, \times 3+5$

Q.42.(4)  $\times 7+1, \times 6+2, \times 5+3, \times 4+4, \times 3+5$

Q.43.(1)  $+7\times 1, +6\times 2, +5\times 3, +4\times 4, +3\times 5$

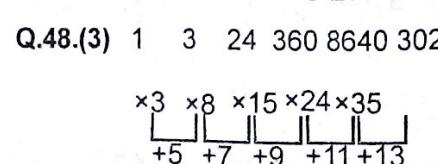
Q.44.(4)  $\div 2-1, \div 2-1, \div 2-1, \dots$

Q.45.(3)  $\times 0.5+0.5, \times 1+1, \times 1.5+1.5, \times 2+2, \times 2.5+2.5$



Q.47.(4)  $10 \quad 17 \quad 48 \quad 165 \quad 688 \quad 3475 \quad 20892$

Q.48.(3)  $1 \quad 3 \quad 24 \quad 360 \quad 8640 \quad 302400$



Q.50.(5)  $+3^2, +7^2, +9^2, +11^2, \dots$

## CHAPTER-3 PERCENTAGE

Q.1.(3)  $\left(\frac{35}{105} \times 100\right)\% = \frac{100}{3}\% = 33\frac{1}{3}\%$

Q.13.(2)  $\frac{12000}{100} \times 110 \times \frac{110}{100} = 14520$

Q.2.(4)  $\frac{7}{3} \times 100 = \frac{7}{8} \times \frac{4}{3} \times 100 = \frac{7}{6} \times 100 = 116\frac{2}{3}\%$

Q.14.(3)  $\frac{140}{160} = \frac{5}{8}$

(?)  $= \frac{5}{8} \times \frac{160}{140} = \frac{5}{7}$

Q.3.(2)  $\frac{24}{120} \times 100 = 20\%$

Q.4.(1)  $\frac{100K}{N}\%$

Q.5.(2)  $\frac{25 \times 16}{1600} \times 100 = 25\%$

Q.6.(3)  $\frac{99}{225} \times 100 = 45.0\%$

Q.7.(2) From unitary method  
 $225\% = 145$

1% =  $\frac{145}{225}$

150% =  $\frac{145}{225} \times 150 = 96.66$

Q.8.(4) (20% + 30%) = 324  
50% = 324

1% =  $\frac{324}{50}$

75% =  $\frac{324}{50} \times 75 = 162 \times 3 = 486$

Q.9.(3) (15×10)% = 250  
150% = 250

25% =  $\frac{250}{150} \times 25 = 41.66$

Q.10.(5)  $\frac{3}{7} \times 100 = \frac{300}{7} = 42\frac{6}{7}\%$

Q.11.(1)  $\frac{5000}{110} \times 100 = 4545.45 = 4545.45$

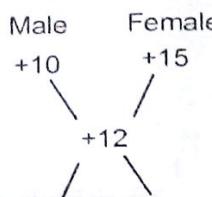
Q.12.(5) saved (Remaining%)  
= 100% - (40% + 6% + 9%)

= 100% - 55% = 45%  
45% = 2250

(For food 9% =  $\frac{2250}{45} \times 9\% = \text{Rs.}450$ )

By alligation method  
 $= \frac{5600 - 5000}{5000} \times 100 = 12\%$

**Mahendra's**



$$= \frac{40}{60} \times 100 = 66 \frac{2}{3}\%$$

Q.26.(4) I : II : III = 70 : 63 : 100

$$\therefore \text{Required \%} = \frac{7}{70} \times 100 = 10\%$$

$$Q.27.(4) I : II : III = 112 \frac{1}{2} : 125 : 100$$

$$= \frac{9}{8} : \frac{5}{4} : 1 = 9 : 10 : 8$$

$$\therefore \text{Required \%} = \frac{9}{10} \times 100 = 90\%$$

$$Q.28.(2) A : B : C = 40 : 100 : 400 = 2 : 5 : 20$$

$$\therefore \text{Required \%} = \frac{2}{20} \times 100 = 10\%$$

$$Q.29.(3) 25\% = 20,000$$

$$40\% = \frac{20,000}{25} \times 40 = 32000 \text{ men}$$

$$Q.30.(1) \text{Less \%} = \frac{7}{107} \times 100$$

$$= \frac{700}{107} = 6.54\%$$

Q.23.(2) Let B = 100  
then A = 125

$\therefore$  B's income in terms of A's income  
 $= \frac{100}{125} \times 100 = 80\%$

Q.24.(3) Let B's income is 100  
Then A's income is 150  
 $\therefore$  B's income is less than A's income  
 $= \frac{50}{150} \times 100 = 33 \frac{1}{3}\%$

Q.25.(4) Ratio of heights of A and B is -  
A : B = 60 : 100  
Then B's height is more than that of A

## CHAPTER-4

### PROFIT & LOSS

Q.1.(4) least C.P. = Rs.  $(200 \times 8)$   
= Rs. 1600.

Greatest S.P. =  $(450 \times 8)$  = Rs. 3600  
Required profit = Rs. (3600 - 1600)

= Rs. 2000

Cannot be determined

Q.3.(2) C.P. = Rs.  $(4700 + 800)$  = Rs. 5500;  
S.P. = Rs. 5800

$$\text{Gain \%} = \left( \frac{300}{5500} \times 100 \right)\% = 5 \frac{5}{11}\%$$

Q.4.(3) C.P. of 1 kg = Rs.  $\left( \frac{420}{70} \right)$  = Rs. 6

S.P. of 1 kg = Rs. 6.50

$$\therefore \text{Gain \%} = \left( \frac{0.50}{6} \times 100 \right)\% = 8 \frac{1}{3}\%$$

Q.5.(3) C.P. of 1 toy = Rs.  $\left( \frac{375}{12} \right)$  = Rs. 31.25

S.P. of 1 toy = Rs. 33

$$\therefore \text{Profit \%} = \left( \frac{175}{3125} \times 100 \right)\% = 28 \frac{2}{5}\%$$

= 5.6%

Q.6.(1) C.P. of 1 orange = Rs.  $\left( \frac{350}{100} \right)$  = 3.50.

S.P. of 1 orange = Rs.  $\left( \frac{48}{12} \right)$  = Rs. 4

$$\therefore \text{Gain \%} = \left( \frac{0.50}{3.50} \times 100 \right)\% = 14 \frac{2}{7}\%$$

Q.7.(3) S.P. = 85% of Rs. 1400

$$= \text{Rs. } \left( \frac{85}{100} \times 1400 \right)$$

$$= \text{Rs. } 1190$$

Q.8.(5) C.P. for B = 120% of Rs. 500

$$= \text{Rs. } \left( \frac{120}{100} \times 500 \right)$$

$$= \text{Rs. } 600$$

C.P. for C = 110% of Rs. 600

$$= \text{Rs. } \left( \frac{110}{100} \times 600 \right)$$

$$= \text{Rs. } 660$$

C.P. = Rs.  $(80000 + 5000 + 1000)$

= Rs. 86000, Profit = 25%

$\therefore$  S.P. = 125% of Rs. 86000

$$= \text{Rs. } \left( \frac{125}{100} \times 86000 \right)$$

$$= \text{Rs. } 107500$$

Q.10.(2) S.P. = Rs. 100, gain = Rs. 30

C.P. = Rs.  $(100 - 30)$  = Rs. 70

$$\therefore \text{Gain} = \left( \frac{30}{70} \times 100 \right)\% = \frac{3000}{70}\%$$

$$= 42 \frac{6}{7}\%$$

Q.11.(4) C.P. = Rs.  $\left( \frac{100}{96} \times 2112 \right)$

$$= \text{Rs. } 22$$

Q.12.(3) C.P. = Rs.  $\left( \frac{100}{122.50} \times 392 \right)$

$$= \text{Rs. } 320$$

$\therefore$  Profit = Rs.  $(392 - 320)$  = Rs. 72

Q.13.(3) Trick SP =  $\frac{18700}{85} \times 115 = 25300$

Hence, S.P. = Rs. 25,300

Q.14.(4)  $75 : 8 = 125 : x$  or  $x = \left( \frac{8 \times 125}{75} \right) = 13.33$

Hence S.P. per kg = Rs. 13.33

Q.15.(1) C.P. = Rs.  $\left( \frac{100}{112.5} \times 900000 \right)$

$$= \text{Rs. } 800000$$

$$\therefore \text{Required loss \%} = \left( \frac{200000}{800000} \times 100 \right)\% = 25\%$$

Q.16.(2) C.P. of 1st 6 transistor = Rs.  $\left( \frac{100}{120} \times 960 \right)$

= Rs. 800

C.P. of 2nd transistor = Rs.  $\left( \frac{100}{96} \times 1152 \right)$

= Rs. 1200

So, total C.P. = Rs.  $(800 + 1200)$

= Rs. 2000

Total S.P. = Rs.  $(1152 + 960)$  = Rs. 2112

$$\therefore \text{Gain \%} = \left( \frac{112}{2000} \times 100 \right)\% = 5 \frac{3}{5}\%$$

Q.17.(3) Let C.P. = Rs. x Then, S.P. = Rs.  $\frac{5x}{4}$

$$\text{Gain} = \text{Rs. } \left( \frac{5x}{4} - x \right)$$

$$= \text{Rs. } \frac{1}{4}x$$

$$\therefore \text{Gain \%} = \left( \frac{x}{4} \times \frac{1}{x} \times 100 \right)\% = 25\%$$

Q.18.(3) Let C.P. Rs. 4x.  
S.P. = Rs. 5x Gain = Rs.  $(5x - 4x)$  = Rs. x

$$\therefore \text{Gain \%} = \left( \frac{x}{4x} \times 100 \right)\% = 25\%$$

Q.19.(5) Let C.P. = Rs. 5x and S.P. = Rs. 7x  
Then, Gain = Rs. 2x  
Required ratio =  $2x : 5x = 2 : 5$

Q.20.(4) Let C.P. = Rs. x Then,  
S.P. = Rs.  $(120\% \text{ of } x)$  = Rs.  $\frac{6x}{5}$

$$\text{New S.P.} = \text{Rs. } \left( 2 \times \frac{6x}{5} \right)$$

$$\text{Profit} = \text{Rs. } \left( \frac{12x}{5} - x \right)$$

$$= \text{Rs. } \frac{7x}{5}$$

$$\text{Profit \%} = \left( \frac{7x}{5} \times \frac{1}{x} \times 100 \right)\% = 140\%$$

Q.21.(2) Let C.P. = Rs. x. Then,  $900 - x = 2(x - 450)$

$\Rightarrow 3x = 1800 \Rightarrow x = 600$

$\therefore$  Required S.P. = 125% of Rs. 600

$$= \text{Rs. } \left( \frac{125}{100} \times 600 \right)$$

$$= \text{Rs. } 750$$

Q.22.(4) Let C.P. be Rs. x

Then  $(1060 - x) = \frac{120}{100}(x - 950)$

$\Rightarrow 106000 - 100x = 120x \times 950$

$\Rightarrow 220x - 220000 \Rightarrow x = 1000$

$$\therefore \text{Desired S.P.} = \text{Rs. } \left( \frac{120}{100} \times 1000 \right)$$

$$= \text{Rs. } 1200$$

Q.23.(4) Let C.P. of each article be Rs. 1  
Then, C.P. of 16 articles = Rs. 16,

S.P. of 16 articles = Rs. 20

$$\text{Gain \%} = \left( \frac{4}{16} \times 100 \right)\% = 25\%$$

Q.24.(4) Let C.P. of each article be Rs. 1  
Then C.P. of 50 articles = Rs. 50,

S.P. of 40 articles = Rs. 50

$$\text{Profit \%} = \left( \frac{10}{40} \times 100 \right) \% = 25\%$$

Q.25.(3) Clearly, the retailer get 1 dozen out of 6 dozens free.

$$\therefore \text{Equivalent discount} = \left( \frac{1}{6} \times 100 \right) \%$$

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

## CHAPTER-5

### SIMPLE INTEREST & COMPOUND INTEREST

Q.1.(1) Time = 9 months =  $\frac{3}{4}$  years

$$\therefore \text{S.I.} = \text{Rs.} \left( 16800 \times \frac{25}{4} \times \frac{3}{4} \times \frac{1}{100} \right)$$

$$= \text{Rs.} 787.50$$

Q.2.(2) Time = (22 + 30 + 21) days = 73 days

$$\Rightarrow \frac{73}{365} = \frac{1}{5} \text{ year.}$$

$$\therefore \text{S.I.} = \text{Rs.} \left( 1820 \times \frac{15}{2} \times \frac{1}{5} \times \frac{1}{100} \right)$$

$$= \text{Rs.} 27.30$$

Q.3.(1) Gain in 2 yrs.

$$= \text{Rs.} \left[ \left( 5000 \times \frac{25}{4} \times \frac{2}{100} \right) - \left( \frac{5000 \times 4 \times 2}{100} \right) \right]$$

$$= \text{Rs.} (625 - 400)$$

$$\therefore \text{Gain in 1 year} = \text{Rs.} \left( \frac{225}{2} \right) = \text{Rs.} 112.50$$

Q.4.(2) Time =  $\left( \frac{100 \times 81}{450 \times 4.5} \right)$  years = 4 years

Q.5.(4) Time = 2 years 4 months =  $2 \frac{1}{3}$  years

$$= \frac{7}{3} \text{ years}$$

$$\text{Rate} = \left( \frac{100 \times 252 \times 3}{1600 \times 7} \right) \% = 6 \frac{3}{4} \%$$

Q.6.(2) Let rate = R% and time = R years. then,

$$\left( \frac{1200 \times R \times R}{100} \right) = 432 \Leftrightarrow 12R^2 = 432$$

$$\Leftrightarrow R^2 = 36 \Leftrightarrow R = 6\%$$

Q.7.(4) Principal = Rs.  $\left( \frac{100 \times 401625}{9 \times 5} \right) = \left( \frac{401625}{45} \right)$   
= Rs. 8925

Q.8.(2) Sum =  $\left( \frac{100 \times \text{S.I.}}{R \times T} \right) = \text{Rs.} \left( \frac{100 \times x}{x \times x} \right) = \text{Rs.}$

$$\text{Rs.} \left( \frac{100}{x} \right)$$

Q.9.(3) S.I. = Rs. (956 - 800) = Rs. 156

$$\text{Rate} = \left( \frac{100 \times 156}{800 \times 3} \right) \% = 6 \frac{1}{2} \%$$

$$\text{New rate} = \left( 6 \frac{1}{2} + 4 \right) \% = 10 \frac{1}{2} \%$$

$$\text{New S.I.} = \text{Rs.} \left( 800 \times \frac{21}{2} \times \frac{3}{100} \right)$$

$$= \text{Rs.} 252$$

$$\therefore \text{New amount} = \text{Rs.} (800 + 252) = \text{Rs.} 1052$$

Q.10.(4) We need to know the S.I., principal and time to find the rate. Since the principal is not given, So data is inadequate.

Q.11.(2) S.I. = Rs. 840, R = 5%, T = 8 years.

Principal = Rs.  $\left( \frac{100 \times 840}{5 \times 8} \right) = \text{Rs.} 2100$

Now, P = Rs. 2100, S.I. = Rs. 840, T = 5 years.

$$\therefore \text{Rate} = \left( \frac{100 \times 840}{2100 \times 5} \right) \% = 8\%$$

Q.12.(2) S.I. = Rs. 202.50, R = 4.5%, T = 1 year.

Principal = Rs.  $\left( \frac{100 \times 202.50}{4.5 \times 1} \right)$

$$= \text{Rs.} 4500$$

Now, P = Rs. 4500, R = 5%, T = 1 year

$$\text{S.I.} = \text{Rs.} \left( \frac{4500 \times 5 \times 1}{100} \right) = \text{Rs.} 225$$

$\therefore$  Difference in interest = Rs. (225 - 202.50) = Rs. 22.50

Q.13.(3) Let the sum be Rs. x. Then, S.I. = Rs. (504-x)

$$\therefore \left( \frac{x \times 5 \times 4}{100} \right) = 504 \Leftrightarrow 20x = 50400 - 100x$$

$$\Leftrightarrow 120x = 50400 \Leftrightarrow x = 420$$

Now, P = Rs. 420, R = 10%, T =  $\frac{5}{2}$  years

$$\text{S.I.} = \text{Rs.} \left( \frac{420 \times 10}{100} \times \frac{5}{2} \right) = \text{Rs.} 105$$

$$\therefore \text{Amount} = \text{Rs.} (420 + 105) = \text{Rs.} 525$$

Q.14.(3) Let the principal be P and rate of interest be R%

$$\therefore \left[ \frac{P \times R \times 6}{100} : \frac{P \times R \times 9}{100} \right] = \frac{6PR}{9PR} = \frac{6}{9} = 2 : 3$$

Q.15.(3) Let the sum be Rs. x. Now, S.I. = Rs. 600, T = 10 years.

$$\text{Rate} = \left( \frac{100 \times 600}{x \times 100} \right) \% = \left( \frac{6000}{x} \right) \%$$

S.I. for first 5 years = Rs.

$$\left( \frac{x \times 5 \times 6000}{x \times 100} \right) = \text{Rs.} 300$$

S.I. for last 5 years = Rs.

$$\left( 3x \times 5 \times \frac{6000}{x \times 100} \right) = \text{Rs.} 900$$

$\therefore$  Total interest = Rs. 1200

Q.16.(5) Amount = Rs.  $\left[ 25000 \times \left( 1 + \frac{12}{100} \right)^3 \right]$  = Rs.

$$\left( 25000 \times \frac{28}{25} \times \frac{28}{25} \times \frac{28}{25} \right) \text{ Rs.} 35123.20$$

$$\text{C.I.} = \text{Rs.} (35123.20 - 25000)$$

$$= \text{Rs.} 10123.20$$

Q.17.(1) Time =  $2 \frac{73}{365}$  years =  $2 \frac{1}{5}$  years

$\therefore$  Amount

$$= \text{Rs.} \left[ 20480 \times \left( 1 + \frac{25}{4 \times 100} \right)^2 \left( 1 + \frac{1}{5} \times \frac{25}{4} \right) \right]$$

$$= \text{Rs.} \left( 20480 \times \frac{17}{16} \times \frac{17}{16} \times \frac{81}{80} \right)$$

$$= \text{Rs.} 23409$$

$\therefore$  C.I. = Rs. (23409 - 20480) = Rs. 2929

Q.18.(3) P = Rs. 15000, R = 10% p.a = 5% per half-year, T = 1 year = 2 half-year  
 $\therefore$  Amount

$$= \text{Rs.} \left[ 15000 \times \left( 1 + \frac{5}{100} \right)^2 \right]$$

$$= \text{Rs.} \left( 15000 \times \frac{21}{20} \times \frac{21}{20} \right) = \text{Rs.} 16537.50$$

Q.19.(1) C.I. when interest is compounded yearly

$$= \text{Rs.} \left[ 5000 \times \left( 1 + \frac{4}{100} \right) \times \left( 1 + \frac{2}{100} \right) \right] = \text{Rs.}$$

$$\left( 5000 \times \frac{26}{25} \times \frac{51}{50} \right) = \text{Rs.} 5304$$

C.I. when interest is compounded half-yearly

$$= \text{Rs.} \left[ 5000 \times \left( 1 + \frac{2}{100} \right)^3 \right] = \text{Rs.}$$

$$\left( 5000 \times \frac{51}{50} \times \frac{51}{50} \times \frac{51}{50} \right) = \text{Rs.} 5306.04$$

Difference = Rs. (5306.04 - 5304)  
= Rs. 2.04

P = Rs. 15625, n = 9 months = 3 quarters,  
R = 16% p.a = 4% per quarter year

Amount

$$= \text{Rs.} \left[ 15625 \times \left( 1 + \frac{4}{100} \right)^3 \right] = \text{Rs.}$$

$$\left( 15625 \times \frac{26}{25} \times \frac{26}{25} \times \frac{26}{25} \right) = \text{Rs.} 17576$$

$$\therefore \text{C.I.} = \text{Rs.} (17576 - 15625) = \text{Rs.} 1951$$

Q.21.(2) Let the time be n years. Then,

$$800 \times \left( 1 + \frac{5}{100} \right)^{2n} = 926.10 \text{ or}$$

$$\left( 1 + \frac{5}{100} \right)^{2n} = \frac{9261}{8000}$$

$$\text{or } \left( \frac{21}{20} \right)^{2n} = \left( \frac{21}{20} \right)^3 \text{ or } 2n = 3 \text{ or } n = \frac{3}{2}$$

$$n = 1 \frac{1}{2} \text{ years.}$$

Q.22.(4) Let the sum be Rs. P. Then,

$$P \left( 1 + \frac{25}{2 \times 100} \right)^2 - P = 510 \text{ or}$$

$$P \left[ \left( \frac{9}{8} \right)^2 - 1 \right] = 510 \text{ or } P = \left( \frac{510 \times 64}{17} \right) \\ = 1920 \\ \therefore \text{Sum} = \text{Rs. } 1920$$

$$\text{So, S.I.} = \text{Rs. } \left( \frac{1920 \times 25 \times 2}{2 \times 100} \right) = \text{Rs. } 480$$

Q.23.(2) Let the sum be Rs. P. Then,

$$P \left( 1 + \frac{10}{100} \right)^2 - P = 525$$

$$\Rightarrow P \left[ \left( \frac{11}{10} \right)^2 - 1 \right] = 525 \Rightarrow P =$$

$$P = \left( \frac{525 \times 100}{21} \right) = 2500$$

$\therefore \text{Sum} = \text{Rs. } 2500$

$$\text{So, S.I.} = \text{Rs. } \left( \frac{2500 \times 5 \times 4}{100} \right) = \text{Rs. } 500$$

$$\text{Q.24.(3) C.I.} = \text{Rs. } \left[ 4000 \times \left( 1 + \frac{10}{100} \right)^2 - 4000 \right] = \text{Rs. }$$

$$\left[ 4000 \times \frac{11}{10} \times \frac{11}{10} - 4000 \right] = \text{Rs. } 840$$

$$\therefore \text{Sum} = \text{Rs. } \left( \frac{420 \times 100}{3 \times 8} \right) = \text{Rs. } 1750$$

Q.25.(3) Let  $P = \text{Rs. } 100$ . Then, S.I.  $\text{Rs. } 60$  and  $T = 6$  years.

$$\therefore R = \frac{100 \times 60}{100 \times 6} = 10\% \text{ p.a.}$$

Now,  $P = \text{Rs. } 12000$ ,  $T = 3$  years and  $R = 10\% \text{ p.a.}$

$$\therefore \text{C.I.} = \text{Rs. } \left[ 12000 \times \left( \left( 1 + \frac{10}{100} \right)^3 - 1 \right) \right] = \text{Rs. }$$

$$\left( 12000 \times \frac{331}{1000} \right) = \text{Rs. } 3972$$

Q.26.(5) S.I. on  $\text{Rs. } 4624$  for 1 year =  $\text{Rs. } (4913 - 4624) = \text{Rs. } 289$

$$\therefore \text{Rate} = \left( \frac{100 \times 289}{4624 \times 1} \right) \% = 6 \frac{1}{4}\%$$

$$\text{Now, } x \left( 1 + \frac{25}{4 \times 100} \right)^2 = 4624$$

$$\text{or } x \times \frac{17}{16} \times \frac{17}{16} = 4624$$

$$\therefore x = \left( 4624 \times \frac{16}{17} \times \frac{16}{17} \right) = \text{Rs. } 4096$$

$$\text{Q.27.(3) } A = P \left( 1 + \frac{R}{100} \right)^n = 2P \Rightarrow \left( 1 + \frac{R}{100} \right)^5$$

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

$$\text{Let } P \left( 1 + \frac{R}{100} \right)^n = 8$$

$$\Rightarrow (2)^3 = \left( 1 + \frac{R}{100} \right)^n$$

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

$$\Rightarrow \left( 1 + \frac{R}{100} \right)^n = \left( 1 + \frac{R}{100} \right)^{15}$$

$\Rightarrow n = 15$  years.  
Required time = 15 years.

Q.28.(4) Rs. 33000/-  
Let the amount borrowed at 15% p.a. is  $x$

$$15000 \times \frac{2 \times 12}{100} + \frac{15 \times x \times 2}{100} = 9000$$

$$3600 + \frac{3x}{10} = 9000$$

$$\frac{3x}{10} = 5400$$

$$x = 18000$$

$\therefore$  Total amount Borrowed is  
 $= 15000 + 18000 = \text{Rs. } 33000/-$

Q.29.(5) Short cut

When a money is divided in such two part so that SI on 1st part at  $x\%$  for  $T_1$  equal to SI on 2nd part at  $X_2\%$  for  $T_2$ . Then Ratio of Money to be divided = 1st : 2nd

$$X_2 \times T_2 : X_1 \times T_1 \\ \text{Ratio} = 5.25 \times 4 : 4.5 \times 3.5 \\ 4 : 3$$

Therefore money of 2nd part =  $2100 \times \frac{3}{7}$

$$= \text{Rs. } 900$$

Q.30.(5) From S.I.

$$P = \frac{410 \times 100}{5 \times 2} = \text{Rs. } 4100$$

From C.I.

$$P = \frac{410}{\frac{5}{50} + \left( \frac{5}{100} \right)^2}$$

$$= \frac{410}{\frac{1}{10} + \frac{1}{400}} = \frac{410}{\frac{41}{400}}$$

$$= \frac{410 \times 400}{41} = \text{Rs. } 4000$$

$$\therefore \text{Difference} = 4100 - 4000 = \text{Rs. } 100$$

## CHAPTER-6 AVERAGE

Q.1.(1) The five multiples of 3 is 3, 6, 9, 12, 15

$$\frac{n+1}{2} \Rightarrow \frac{5+1}{2} \text{ th term}$$

$\Rightarrow 6/2$  the term = 3rd term

Here 3rd term is 9

$$\text{Q.2.(4)} \quad \frac{510 \times 5 + 240 \times 25}{30} = \frac{8550}{30} = 285$$

Q.3.(2) Total sum of 48 numbers

$$= (50 \times 30 - (35 + 40))$$

$$= 1500 - 75$$

$$= 1425$$

$$\therefore \text{Average} = 1425/48 = 29.68$$

Q.4.(3) Total sum of last 4 matches

$$= (10 \times 38.9) - (6 \times 42)$$

$$= 389 - 252 = 137$$

$$\therefore \text{Average} = 137/4 = 34.25$$

Q.5.(4) Ten + ve number in  $\bar{x}$  is

$$\frac{10 + 10 + 10 + 10 + 10 + \dots + 10}{10} = \bar{x}$$

$$\bar{x} = 10$$

It is increased by 10%

Q.6.(2) Given 40 students average 14.5 years

$$(40 + 32) = 72 \text{ students average } 14.2 \text{ years}$$

$\therefore$  The total age of 32 students

$$= (72 \times 14.2 - 40 \times 14.5) \text{ years}$$

$$= (1022.4 - 580) \text{ years}$$

$$= 442.4 \text{ years}$$

$$\therefore \text{The average} = 442.4/32 = 13.825 \text{ years}$$

Q.7.(1) The total sum of 48 numbers

$$= [(50 \times 38) - (45 + 55)]$$

$$= 1900 - 100$$

$$= 1800$$

$$\therefore \text{Average} = 1800/48 = 37.5$$

Q.8.(1) Given mean of 100 = 40

$$\text{One is } 53 - 83 = -30$$

$$\therefore \text{Correct sum} = (40 \times 100) + (53 - 83)$$

$$= 4000 - 30$$

$$= 3970$$

$$\therefore \text{Correct mean} = 3970/100 = 39.7$$

Q.9.(1) Given average of 6 numbers = 30

Average of first 4 is = 25

Average of last 3 is = 35

The fourth number is

$$= (4 \times 25) + (3 \times 35) - (6 \times 30)$$

$$= 100 + 105 - 180$$

$$= 205 - 180 = 25$$

Q.10.(1) Given Average of 25 results = 18

Average of first 12 result = 14

Average of last 12 result = 17

$$\therefore \text{The thirteenth result} = (25 \times 18) - ((12 \times 14) + (12 \times 17)) \\ = 450 - (168 + 204) = 450 - 372 = 78$$

Q.11.(3) Given average of first three = 16

$$\text{Average of last three} = 15$$

$$\text{And last number} = 18$$

$$\therefore \text{Sum of 2nd and 3rd number} = (3 \times 15) - 18$$

$$= 45 - 18 = 27$$

$$\text{The first number} = (3 \times 16) - 27$$

$$= 48 - 27$$

$$= 21$$

Q.12.(4) Suppose Pankaj has Rs. X Then, Sohan has 150% of Rs. X

$$\text{Then, Sohan has 150% of Rs. } x$$

$$= \left( \frac{150}{100} \times x \right) = \text{Rs. } \left( \frac{3x}{2} \right)$$

$$\text{Then Mukesh has Rs. } 3x$$

$$\therefore x + 3x/2 + 3x = (110 \times 3)$$

$$\Rightarrow 2x + 3x + 6x = 660$$

$$= 11x = 660$$

$$\Rightarrow x = 660/11 = 60$$

$$\therefore \text{Mukesh has Rs. } 3 \times 60 = \text{Rs. } 180$$

By ratio

$$M : S = 2 : 1 \times 3$$

$$S : P = 3 : 2 \times 1$$

$$M : S : P = 6 : 3 : 2$$

$$\text{Average money} = 110$$

$$\text{Total} = 110 \times 3$$

$$= 330$$

$$\text{Money of Mukesh} = \frac{330 \times 6}{11} = \text{Rs. } 180$$

Q.13.(2) Given average of 30 students = 9 years

$$\text{Average of 31 members} = 10 \text{ years}$$

$$\therefore \text{The age of teacher} = (31 \times 10) - (30 \times 9)$$

$$= 310 - 270$$

$$= 40 \text{ years}$$

Shortcut Method By : Formula :

Age of included teacher = old average + increase in Average  $\times$  New strength

$$= 9 + 1 \times 31$$

$$= 9 + 31 = 40 \text{ years}$$

Q.14.(2) Given average weight of 50 balls = 2 lbs

Included container average is  $(50+1)$

$$= \text{increase of } 0.05$$

$$= 2.05 \text{ lbs}$$

$\therefore$  The weight of the container is

$$= 51 \times 2.05 - 50 \times 2$$

$$\text{Given average is } 61$$

$$= 104.55 - 100$$

$$= 4.55 \text{ lbs}$$

Q.15.(3) Given average salary of 30 members

$$= 4000$$

Added one member salary  $(30+1) = 4300$

The salary of the manager is  $= (31 \times 4300) - (30 \times 4000)$

$$= 133300 - 120000$$

$$= 13300$$

Q.16.(2) Total weight increased  $= (8 \times 1.5) \text{ kg}$

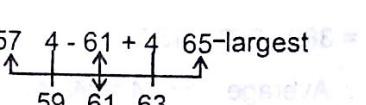
$$= 12 \text{ kg}$$

$\therefore$  The weight of new man  $= (65 + 12) \text{ kg}$

$$= 77 \text{ kg}$$

Shortcut

$$5-1=4$$



$$\text{Sum} = (57 + 65) = 122$$

$$\text{difference} = (65 - 57) = 8$$

Q.17.(4) Let the numbers be

$$x, x+2, x+4, x+6, x+8$$

$$\text{Given average is } 61$$

$$\therefore \frac{x+x+2+x+4+x+6+x+8}{5} = 61$$

$$\frac{5x+20}{5} = 61$$

$$5x + 20 = 305$$

$$5x = 305 - 20 = 285$$

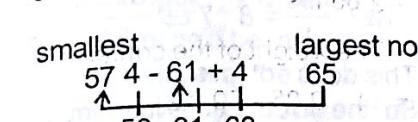
$$x = 57$$

$\therefore$  The highest number  $= x + 8 = 65$

Lower number  $= x = 57$

$\therefore$  The difference is  $65 - 57 = 8$

$5-1=4$  by short cut



$$\text{Sum} = 57 + 65 = 122$$

$$\text{Difference} = 65 - 57 = 8$$

Q.18.(1) Given Average of 22 students = 45

$$\text{Average of first ten} = 55$$

$$\text{Average of last ten} = 40$$

$\therefore$  The marks obtained by 11 candidates are

$$= (22 \times 45) - ((55 \times 10) + (40 \times 11))$$

$$= 990 - (550 + 440)$$

$$= 990 - 990 = 0$$

Q.19.(2) Total weight increased  $= 8 \times 2.5$

$$= 20 \text{ kg}$$

Weight of new man  $= 56 + 20 = 76 \text{ kg}$

Q.20.(5) All I, II and III (5) None of these

I. gives, total marks in 4 subjects

$$= (60 \times 4) = 240.$$

II. gives, E + M = 170

III. gives, M + S = 180. Thus, none of (A), (B), (C), (D) is true.

Q.21.(3) Total age of 11 players  $= (28 \times 11) \text{ years}$

$$= 308 \text{ years.}$$

$$\text{I. } C = Y + 11 \Rightarrow C - Y = 11 \dots \text{(i)}$$

II. Total age of 10 players (excluding captain)  $= (27.3 \times 10) \text{ years} = 273 \text{ years.}$

$\therefore$  Age of captain  $= (308 - 273) \text{ years} = 35 \text{ years.}$

Thus, C = 35. .... (ii)

From (i) and (ii), we get Y = 24

III. Total age of 9 players  $= [(25 \times 3) + (28 \times 3)] + (30 \times 3) \text{ years} = 249 \text{ years.}$

$$\therefore C + Y = (308 - 249) = 59 \dots \text{(iii)}$$

From (i) and (iii), we get C = 35.

Thus, II alone gives the answer.

Also, I and III together give the answer.

$$= (23 \times 2 + 5 \times 2) + 1 = 57 \text{ years}$$

$$\therefore \text{Required average} = \left( \frac{57}{3} \right) = 19 \text{ years}$$

Q.23.(2) Total marks of 10 papers  $= 80 \times 10 = 800$

$$\text{Total marks of 8 papers} = 81 \times 8 = 648$$

$$\text{Total marks of two papers} = (800 - 648)$$

$$= 152$$

If highest score is 92, then the lowest

$$\text{Total score is } (152 - 92) = 60$$

Q.24.(2) Let the number of student in classes X, Y and Z be a, b, & c respectively then total score of

$$X = 83a, Y = 76b \text{ and } Z$$

$$= 85c \text{ and}$$

$$\frac{83a + 76b}{a+b} = 7a \Rightarrow 4a = 3b$$

$$\frac{76b + 85c}{b+c} = 81 \Rightarrow 4c = 5b$$

$$ab = \frac{4}{3}a, c = \frac{5}{3}a$$

Average score of X, Y and Z

$$= \frac{83a + 76b + 85c}{a+b+c} = \frac{978}{12} = 81.5$$

Q.25.(1) Let the number of girl be x

$$\text{Then number of boys} = (600 - x)$$

$$\text{Then } \left( 11\frac{3}{4} \times 600 \right) = 11x + 12(600 - x)$$

$$x = 7200 - 7050$$

$$x = 150$$