CHAPTER
20

Foundation Exercises

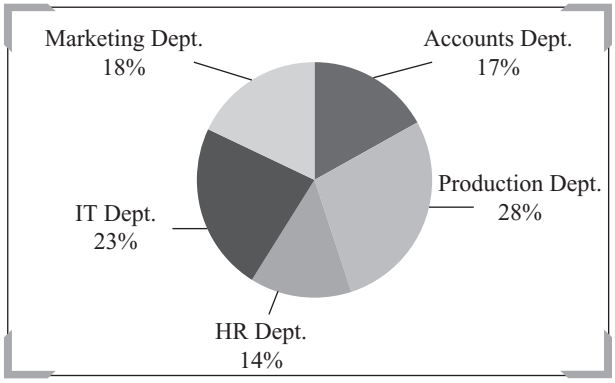
PRACTICE EXERCISES

Exercise 1

Directions for questions 1 to 5: ***Go through the data set given below and solve the questions based on it.***

Following pie chart shows the break-up of employees working in various departments of an organization. Table provides the ratio of men to women. It is given that Total Number of Employees = 1800

Percentage Break up of employees



Ratio of Men to Women

Department	Men	Women
Production	11	1
HR	1	3
IT	5	4
Marketing	7	5
Accounts	2	7

Q.1 What is the number of men working in the Marketing department?
(a) 132 (b) 174
(c) 126 (d) 189
(e) None of these

Q.2 The number of women working in the IT department of the Organization forms **approximately** what per cent of the total number of employees in the Organization from all departments together?
(a) 7 (b) 5
(c) 19 (d) 15
(e) 10

Q.3 What is the respective ratio of the number of women working in the HR department of the organization and the total number of employees in that department?
(a) 3:4 (b) 2:5
(c) 2:9 (d) 3:7
(e) None of these

Q.4 What is the respective ratio of the number of men working in the Accounts department to the total number of employees working in that department?
(a) 9:2 (b) 7:6
(c) 2:9 (d) 6:7
(e) None of these

Q.5 The number of men working in the Production department of the organization forms what percentage of total number of employees working in that department? (Rounded off to two digits after decimal)
(a) 89.76 (b) 91.67
(c) 88.56 (d) 94.29
(e) None of these

Directions for questions 6 to 10: ***Go through the data set given below and solve the questions based on it.***

Per cent profit earned by six companies over the years						
Company/Year	P	Q	R	S	T	U
2004	11	12	3	7	10	6
2005	9	10	5	8	12	6
2006	4	5	7	13	12	5
2007	7	6	8	14	14	7
2008	12	8	9	15	13	5
2009	14	12	11	15	14	8

Q.6 If the profit earned by Company R in the year 2008 was ₹18.9 lakhs, what was the income in that year?
(a) ₹303.7 lakhs (b) ₹264.5 lakhs
(c) ₹329.4 lakhs (d) ₹228.9 lakhs
(e) None of these

Q.7 What is the percentage rise in per cent profit of Company T in year 2009 from the year 2004?
(a) 42 (b) 35
(c) 26 (d) 48
(e) None of these

Q.8 If the profit earned by Company P in the year 2007 was ₹2.1 lakhs, what was its expenditure in that year?
(a) ₹30 lakhs (b) ₹15 lakhs
(c) ₹23 lakhs (d) ₹27 lakhs
(e) ₹None of these

Q.9 What was the average per cent profit of Company S over all the years together?
(a) 13.5 (b) 11
(c) 12 (d) 14
(e) None of these

Q.10 What is the difference between the per cent profit earned by Company Q in the year 2005 and the average of the per cent profits earned by the remaining companies together in that year?
(a) 4 (b) 2
(c) 1 (d) 3
(e) None of these

Directions for questions 11 to 15: ***Go through the data set given below and solve the questions based on it.***

Following table provides the data regarding the number of tickets sold (Number in thousands) in a week at multiplexes of six cities. Data has been given corresponding to five movies – A, B, C, D and E.

Movie → / City ↓	A	B	C	D	E
Mumbai	20	15	35	26	18
Delhi	17	19	21	25	28
Kolkata	32	24	19	21	17
Chennai	18	21	32	28	34
Hyderabad	16	34	26	29	22
Lucknow	15	27	20	35	26

Q.11 The number of tickets to movie B sold in Hyderabad was approximatelywhat percentage of the total number of tickets of the same movie sold in all the cities together?
(a) 15 (b) 18
(c) 12 (d) 20
(e) 24

Q.12 What is the difference between the number of tickets of movie D sold in Kolkata and the number of tickets of movie B sold in Lucknow?
(a) 700 (b) 7,000
(c) 14,000 (d) 9,000
(e) None of these

Q.13 What is the average number of tickets of movie C sold in all the six cities?
(a) 15,500 (b) 2,550
(c) 24,000 (d) 25,500
(e) None of these

Q.14 The number of tickets of movie E sold in Chennai is what percentage of number of tickets of movie A sold in Mumbai?
(a) 170 (b) 70
(c) 30 (d) 130
(e) None of these

Q.15 In which city was the total number of tickets of all the five movies together sold the minimum?
(a) Delhi (b) Chennai
(c) Lucknow (d) Kolkata
(e) None of these

Directions for questions 16 to 20: ***Go through the data set given below and solve the questions based on it.***

Number of Entertainment shows held in various cities in a year (Number in Hundreds)

	Shows				
Cities	Dance	Music	Drama	Standup Comedy	Mimicry
M	15	21	24	0.8	0.9
N	12.4	13	26	2	0.5
O	5.7	8	12	0.3	0.2
P	11.3	6	18	1	1.5
Q	17	12.4	11	3	0.4
R	14	10.5	9.8	0.7	0.1

Q.16 The mimicry shows held in city M are what per cent of the drama shows held in city O?
(a) 7 (b) 8.5
(c) 6.5 (d) 8
(e) None of these

Q.17 What is the average number of entertainment shows held in city P?
(a) 756 (b) 678
(c) 786 (d) 698
(e) None of these

Q.18. If the number of music shows in cities N and Q is increased by 5%, what will be the total number of music shows in both the cities together?
(a) 2.602 (b) 2.667
(c) 2.540 (d) 2.605
(e) None of these

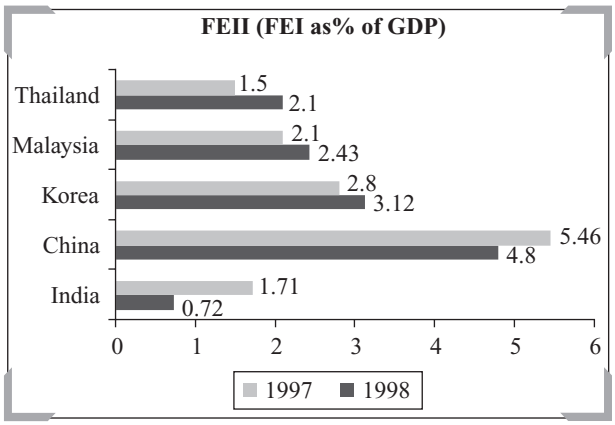
Q.19 What is the respective ratio of the number of dance shows held in city N to the number of drama shows held in city R?
(a) 49:62 (b) 49:51
(c) 62:45 (d) 62:49
(e) None of these

Q.20 What is the total number of standup comedy shows held in all the cities together?
(a) 820 (b) 740
(c) 780 (d) 810
(e) None of these

Exercise 2

Directions for questions 1 to 5: ***Go through the data set given below and solve the questions based on it.***

The following graph gives the data about foreign equity inflow index (FEII) for five countries for two years 1997 and 1998. FEII is taken as the ratio of foreign equity inflow (FEI) to the country's GDP. FEII is expressed as percentage in the graph.



Q.1 Which country has shown the maximum percentage change in FEII in 1998 relative to 1997?
(a) India (b) China
(c) Korea (d) Malaysia

Q.2 IF China's FEI is 10 times that of India in the year 1998, which of the following is true for 1998?
(a) China's GDP is 70% more then India.
(b) China's GDP is 40% more than India.
(c) China's GDP is 50% more than India.
(d) Nothing can be inferred.

Q.3 If GDP of India increased by 5%, GDP of China increased by 7% and that of Korea decreased by 2% from year 1997 to 1998, which of the following is/ are true?
I. FEI to china was higher in 1998 than in 1997.
II. FEI to china was lower in 1998 than in 1997.
III. India's FEI has increases from 1997 to 1998.
IV. FEI to Korea was lower in 1998 than in 1997.
V. Korea's FEI has increased in 1998 from 1997.
(a) I and III (b) II and V
(c) II, III and V (d) All of these

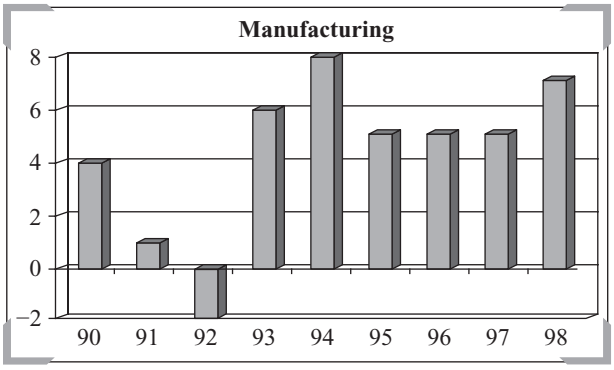
Q.4 Which of the following can be inferred from the given data?
(a) China's GDP is more than India.
(b) China's GDP is less than India
(c) India's GDP is less than Malaysia
(d) Nothing can be deduced

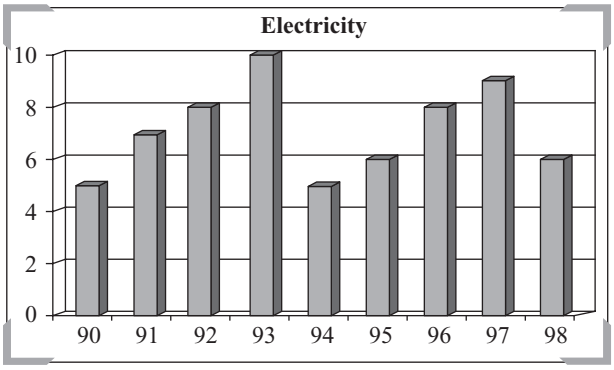
Q.5 In how many countries has the FEI increased from 1997 to 1998?
(a) 1
(b) 2
(c) 3
(d) cannot be determined

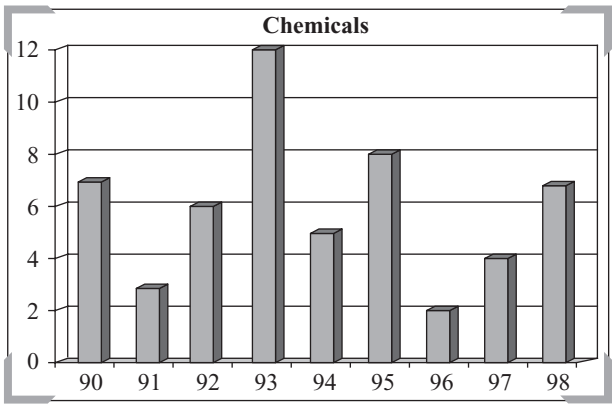
Directions for questions 6 to 12: ***Go through the data set given below and solve the questions based on it.***

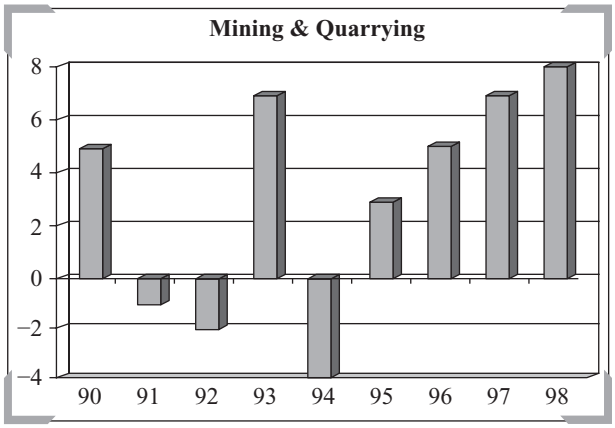
The following graphs provide data about four of the industrial sectors in the Republic of Reposia. Manufacturing constituted 20%, Mining & Quarrying 15%, Electricity 15% and Chemicals 10% of the Republic's total industrial production in 1989. For the period 90-98, the graphs give the percentage change in production over the previous year's production.

1989 production values has been assigned an index of 100 for each of the four sectors.









Q.6 What was the average annual growth rate in production for all four sectors combined between 89 and 98?
(a) 1.2% (b) 6%
(c) 56.6% (d) 104%

Q.7 When during the given period, was the maximum production level in the electricity sector achieved?
(a) 89 (b) 93
(c) 95 (d) 98

Q.8 When, during the given period, was the minimum production level in the manufacturing sector achieved?
(a) 89 (b) 90
(c) 93 (d) 98

Q.9 For the given period, which sector showed the highest growth rate?
(a) Electricity
(b) Manufacturing
(c) Chemical
(d) Mining & Quarrying

Q.10 In 92, the index for the chemical sector as compared to the index for the Electricity sector was
(a) greater by 6 (b) less by 5
(c) greater by 20 (d) less by 20

Q.11 By what percentage was the output of the manufacturing sector more than that of the chemical sector in 91?
(a) 84%
(b) 91%
(c) 98%
(d) Cannot be determined

Q.12 When did the maximum percentage change in the production levels of the mining and quarrying sector take place?
(a) 93-94 (b) 92-93
(c) 96-97 (d) 97-98

Directions for questions 13 to 18: ***Go through the data set given below and solve the questions based on it.***

Following grid presents the percentage composition of five verticals under different sectors.

Sector	Factories	Employment	Fixed Capital	Variable Cost	Value Added
Government	18	15	14	22	25
Central	8	6	5	7	10
State	4	6	4	8	3
Central/State	6	3	5	7	12
Public	12	8	6	19	8
Private	55	65	72	54	62
Joint	15	12	8	5	5
Total	100	100	100	100	100

Q.13 If the total work force was 76 million whereas the total value added was 225 million, then which of the following had the maximum value addition per worker?
(a) Central (b) State
(c) Central/State (d) Public

Q.14 Which of the following sectors has the maximum fixed capital invested per factory?
(a) Central (b) State
(c) Central/State (d) Public

Q.15 If the variable is proportional to the number of employees and the production per employee, then for which of the following is the production highest?
(a) Government (b) Private
(c) Joint (d) Public

Q.16 If the government has a fixed capital of $200 million in the Iron & Steel industry, which corresponds to 20.012% of its total investment as fixed capital, then how much did the government invest (in ₹million) in Maruti Udyog Ltd which forms 25% of the investment in the joint sector? (1US $ = ₹45)

(a) 6500 (b) 2500
(c) 143 (d) 145

Q.17 Maruti Udyog Ltd is a joint project of the Indian Government and Suzuki Motors Japan, each having equal stake. One fine day, the Indian government decides to disinvest from the venture due to losses occurring from labour problems. How many money will be disinvested?

(a) ₹246 million (b) ₹6500 million
(c) $ 246 million (d) $ 6500 million

Q.18 Which of the following statements is true?

(a) The number of government employees is more than that of the number of factories in the joint sector
(b) The number of employees in the public is same as fixed capital of joint sector
(c) both (a) and (b)
(d) Cannot say

Directions for questions 19 to 21: ***Go through the data set given below and solve the questions based on it.***

Five women decided to go shopping to M.G. Road, Bangalore. They arrived at the designated meeting place in the following order: 1. Archana, 2. Chellamma, 3. Dhenuka, 4. Helen, and 5. Shahnaz. Each women spent at least ₹1000. below are some additional facts about how much they spent during their shopping spree.

i. The women who spent ₹2234 arrived before the lady who spent ₹1193.
ii. One women spent ₹1340 and she was not Dhenuka.
iii. One women spent ₹1378 more than Chellamma.
iv. One women spent ₹2517 and she was not Archana.
v. Helen spent more than Dhenuka.
vi. Shahnaz spent the largest amount and Chellamma the smallest.

Q.19 What was the amount spent by Helen?

(a) ₹1193 (b) ₹1340
(c) ₹2234 (d) ₹2517

Q.20 Which of the following amount was spent by one of them?

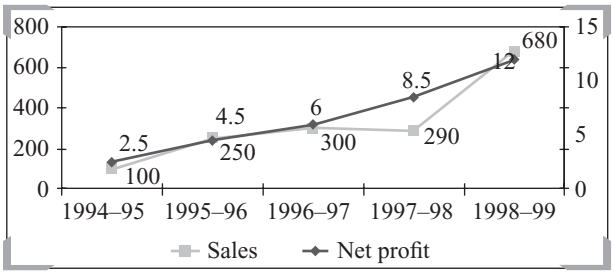
(a) ₹1139 (b) ₹1378
(c) ₹2571 (d) ₹2718

Q.21 The women who spent ₹1193 is

(a) Archana (b) Chellamma
(c) Dhenuka (d) Helen

Directions for questions 22 to 25: ***Go through the data set given below and solve the questions based on it.***

The figure below represents sales and net profit in ₹crore of IVP Ltd for five years from 1994–95 to 1998-99. During this period the sales increased from ₹100 crore to ₹680 crore. Correspondingly, the net profit increased from ₹2.5 crore to ₹12 crore. Net profit is defined as the excess of sales over total costs.



Q.22 The highest percentage of growth in sales, relative to the previous year occurred in

(a) 1995–96 (b) 1996–97
(c) 1997–98 (d) 1998–99

Q.23 The highest percentage growth in net profit, relative to the previous year, was achieved in

(a) 1998–99 (b) 1997–98
(c) 1996–97 (d) 1995–96

Q.24 Defining the profitability as the ratio of net profit to sales, IVP Ltd, recorded the highest profitability in

(a) 1998–99 (b) 1997–98
(c) 1994–95 (d) 1996–97

Q.25 With profitability as defined in question 24, it can be concluded that:

(a) Profitability is non-increasing during the five years from 1994–95 to 1998–99.
(b) Profitability is non–decreasing during the five years from 1994–95 to 1998–99.
(c) Profitability remained constant during the five years from 1994–95 to 1998–99
(d) None of above.

Exercise 3

Directions for questions 1 to 5: ***Go through the data set given below and solve the questions based on it.***

Following table provides the number of workers employed in six units or a factory during the years:

Year/ Unit	A	B	C	D	E	F
1998	145	88	115	120	140	136
1999	128	76	122	112	152	132
2000	136	96	132	124	158	140

2001	183	92	125	135	166	126
2002	160	107	140	118	170	146
2003	152	110	148	128	175	150

Q.1 In the year 2000 the number of employed workers by unit 'C' is what per cent of the total number of employed workers by all the units in the same year (rounded off to two places of decimal)?
(a) 16.39 (b) 17.21
(c) 16.88 (d) 17.31
(d) None of these

Q.2 For all the given years, what is the difference between the average number of workers in units D and E?
(a) 37 (b) 33
(c) $33\frac{2}{3}$ (d) $37\frac{1}{3}$
(e) None of these

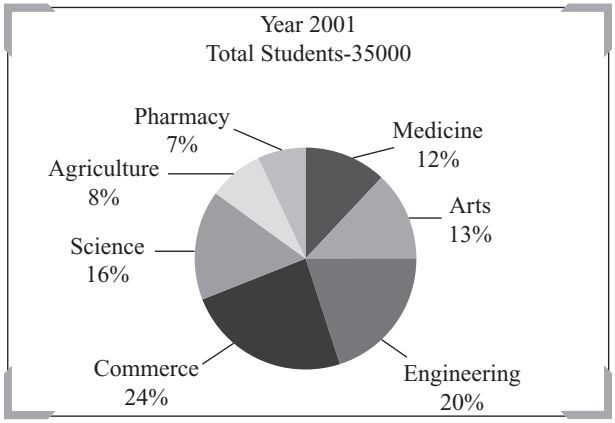
Q.3 In which year the percentage increase/decrease in the number of employed workers is minimum for unit 'F'?
(a) 1999 (b) 2000
(c) 2002 (d) 2003
(e) None of these

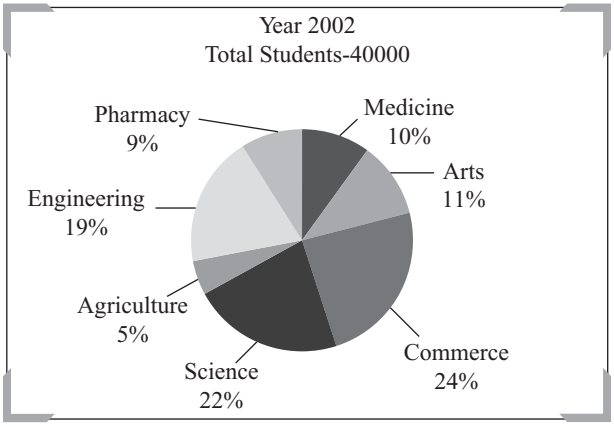
Q.4 For all the given years, in which unit the average number of employed workers were maximum?
(a) D (b) A
(c) C (d) E
(e) None of these

Q.5 In the years 1998 and 1999, what is the approximate ratio between the number of employed workers in all the units?
(a) 13:14 (b) 37:36
(c) 10:9 (d) 13:11
(d) 4:3

Directions to questions 6 to 10: ***Go through the data set given below and solve the questions based on it.***

Number of students studying in different faculties in the years 2001 and 2002 from State X.





Answer all the questions based upon the pie charts given above.

Q.6 In which faculty there was decrease in the number of students from 2001 to 2002?
(a) None (b) Commerce
(c) Agriculture (d) Pharmacy
(e) None of these

Q.7 What is the ratio between the number of students studying pharmacy in the years 2001 and 2002 respectively?
(a) 4:3 (b) 41:72
(c) 2:3 (d) 49:72
(e) None of these

Q.8 What was the approximate percentage increase in the number of students of Engineering from the year 2001 to 2002?
(a) 17% (b) 13%
(c) 5% (d) 23%
(e) 9%

Q.9 In the year 2001, the number of student studying Arts and Commerce together is what percentage of the number of students studying these subjects together in 2002?
(a) 76 (b) 92
(c) 82 (d) 79
(e) 97

Q.10 In which of the following faculties, the percentage change (consider absolute value) in the number of students was minimum from 2001 to 2002?
(a) Arts (b) Science
(c) Commerce (d) Medicine
(e) Engineering

Directions to questions 11 to 15: ***Go through the data set given below and solve the questions based on it.***

Following table gives the salary of six persons and the percentage break up of their salaries.

Person	Per Annum Income (₹In Lakhs)	Percentage break up of spending pattern					
		Eating out	Shopping	Watching Movies	Health	Savings	Miscella-neous
Ritu	2.05	21.8	14.6	20.4	16.4	14.5	12.3
Satish	2.25	20.9	15.7	15.6	11.4	15.3	21.1
Arun	1.95	14.3	16.6	18.5	21.5	16.4	12.7
Vidya	2.00	18.6	14.5	18.7	21.5	16.2	10.5
Arif	1.75	17.8	12.8	19.5	21.0	18.2	10.7
Suresh	1.70	12.0	18.6	10.5	18.2	22.4	18.3

Q.11 What is the total amount of savings of all the persons together?
(a) ₹1,98,460 (b) ₹1,42,524
(c) ₹1,89,520 (d) ₹1,56,625
(d) ₹1,62,780

Q.12 Who spends the maximum amount on shopping?
(a) Ritu (b) Suresh
(c) Satish (d) Arun
(e) Vidya

Q.13 What is the respective ratio of total amount spent by Ritu on Eating out and Watching Movies together to the total amount spent by Arun on the same?
(a) 156:211 (b) 217:253
(c) 253:217 (d) 211:156
(d) None of these

Q.14 Amount spent by Suresh on health is what per cent of the total amount spent by all the people together on Health? (round off to two digits after decimal)
(a) 16.24 (b) 14.60
(c) 19.04 (d) 12.35
(e) None of these

Q.15 Per annum income of Arif is **approximately** what per cent of the total per annum income of all the men together?
(a) 10 (b) 22
(c) 27 (d) 19
(e) 15

Directions to questions 16 to 20: ***Go through the data set given below and solve the questions based on it.***

Following table provides the number of women working in various departments of six different organizations:

Department / Organization	Production	HR	IT	Finance	Marketing	Merchandis-ing
P	155	250	320	405	150	50
Q	178	300	415	328	127	90
R	58	275	204	250	188	66
S	102	190	198	200	190	75
T	110	100	256	305	250	85
U	60	150	225	220	168	35

Q.16 Number of women working in the HR department from organization S is what per cent of the total number of women working in the HR departments from all organizations together? (rounded off to two digits after decimal)
(a) 13.45 (b) 19.16
(c) 21 (d) 15.02
(e) None of these

Q.17 What is the average number of women working in the Finance department from all organizations together?
(a) 226 (b) 287
(c) 312 (d) 308
(e) None of these

Q.18 Which organization has the least number of women employees working in all the given departments together?
(a) T (b) R
(c) U (d) S
(e) None of these

Q.19 What is the respective ratio of number of women working in IT department from organizations P, Q and U together to the number of women working in the Marketing department of organizations P, S and T together?
(a) 59:33 (b) 96:31
(c) 71:19 (d) 71:23
(e) None of these

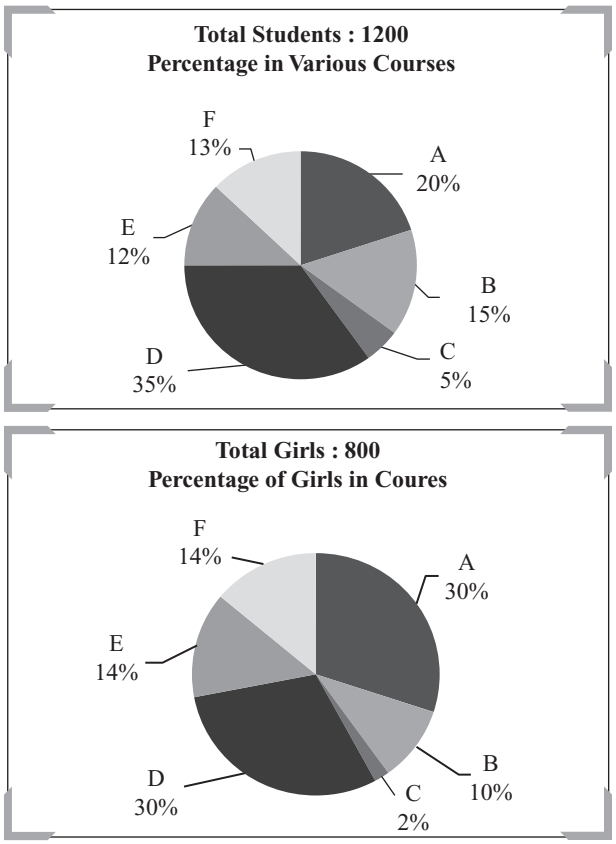
Q.20 If the women working in the Production department of organization Q were also to work in its Merchandising department, what would be the approxi-mate percentage of women employees working for the Merchandising department of organization Q?

(a) 19 (b) 26
(c) 30 (d) 23
(e) 15

EXERCISE 4

Directions for questions 1 to 5: ***Go through the data set given below and solve the questions based on it.***

Pie charts given present the percentage of students in various courses (A, B, C, D, E, F) and percentage of girls out of these courses.



Q.1 For which course is the number of boys the minimum?
(a) E (b) F
(c) C (d) A
(d) None of these

Q.2 How many girls are there in course C?
(a) 44 (b) 16
(c) 40 (d) 160
(e) None of these

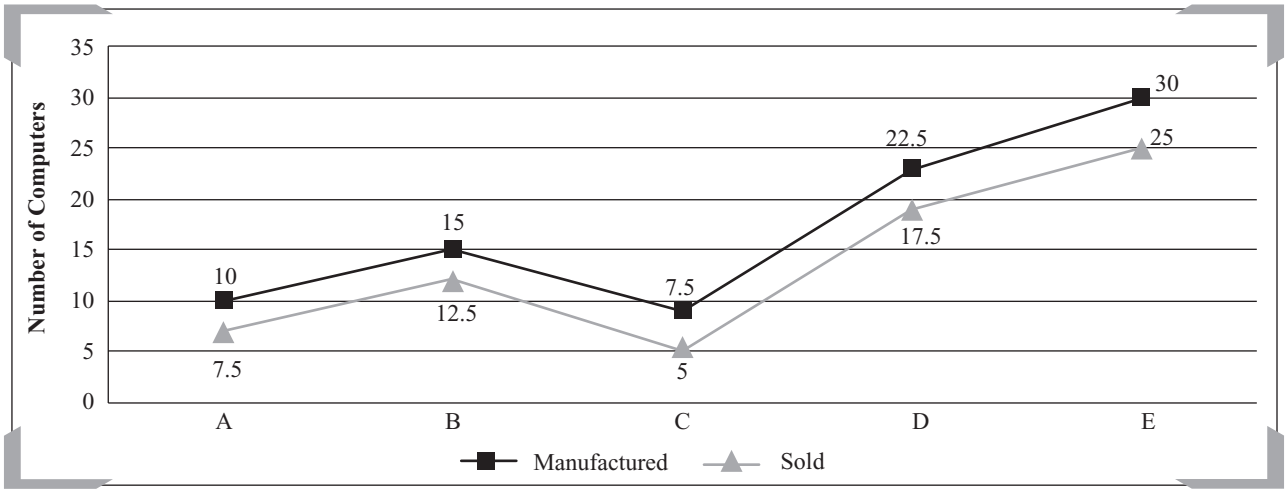
Q.3 For course D, what is the respective ratio of boys and girls?
(a) 3:4 (b) 4:5
(c) 3:5 (d) 5:6
(e) None of these

Q.4 For which pair of courses is the number of boys the same?
(a) E and F (b) A and D
(c) C and F (d) B and D
(e) None of these

Q.5 For course E, the number of girls is how much per cent more than the boys for course E?
(a) 250 (b) 350
(c) 150 (d) 80
(e) None of these

Directions for questions 6 to 10: ***Go through the data set given below and solve the questions based on it.***

Number of Computers Manufactured and Sold by Various Companies in a Year (Number in Lakhs)



Q.6 What is the respective ratio of the number of computers manufactured by companies A and C together to the number of computers sold by companies A and C together?
(a) 4:5 (b) 14:11
(c) 8:9 (d) 7:5
(e) None of these

Q.7 What is the difference between the average number of computers manufactured by all the companies together and the average number of computers sold by all the companies together?
(a) 3500 (b) 35000
(c) 350000 (d) 3500000
(e) None of these

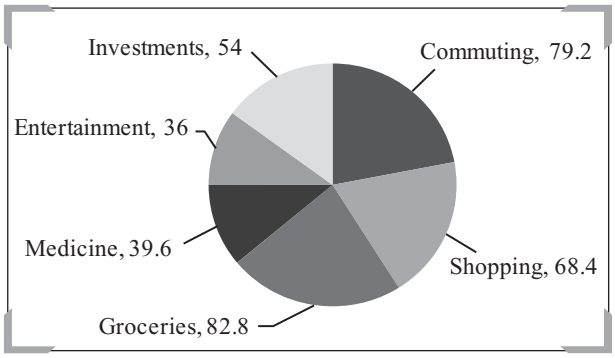
Q.8 The number of computers sold by company B is what per cent of the number of computers manufactured by company B? (Rounded off to two digits after decimal)
(a) 83.33 (b) 120
(c) 78.83 (d) 106.54
(e) None of these

Q.9 The number of computers manufactured by company D is what per cent of the number of computers manufactured by company E?
(a) 125 (b) 112.5
(c) 85 (d) 65.25
(e) 75

Q.10 The number of computers manufactured by company B is approximately what per cent of the number of computers manufactured by all the companies together?
(a) 22 (b) 18
(c) 14 (d) 26
(e) 32

Directions for questions 11 to 15: ***Go through the data set given below and solve the questions based on it.***

Following pie chart gives the degree wise break-up of expenditure of a family in a particular month.



Total amount spent in this month = ₹45,800.

Q.11 What is the amount spent by the family on commuting?
(a) ₹10,076 (b) ₹10,534
(c) ₹6,870 (d) ₹8,702
(e) None of these

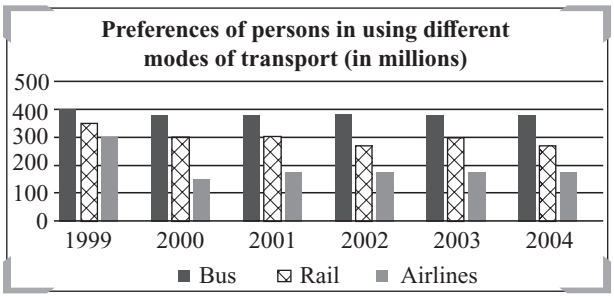
Q.12 What is the respective ratio of amount spent by family on Medicine to the amount spent on Groceries?
(a) 1:2 (b) 13:21
(c) 3:5 (d) 11:23
(e) None of these

Q.13 What is the total amount spent by the family on Entertainment and Shopping together?
(a) ₹9,618 (b) ₹13,282
(c) ₹13,740 (d) ₹11,908
(e) None of these

Q.14 Total amount spent by the family on Groceries, Entertainment and Investments together forms **approximately** what per cent of amount spent on Commuting?
(a) 209 (b) 76
(c) 154 (d) 42
(e) 218

Q.15 Amount spent by the family on Medicine forms what per cent of amount spent on Shopping? (Rounded off to two digits after decimal)
(a) 43.67 (b) 49.52
(c) 57.89 (d) 61.89
(e) None of these

Directions for questions 16 to 20: ***Go through the data set given below and solve the questions based on it.***



Note - All the values are in the multiples of 25.

Q.16 From 1999 to 2004, the total number of people who preferred to travel by rail, was **approximately** how many millions?
(a) 1300 (b) 1500
(c) 1600 (d) 1800
(e) 2000

Q.17 The number of people preferring to travel by rail in 2004, was how many millions fewer than the number of people preferring to travel by rail in 1999?
(a) 70 (b) 45
(c) 75 (d) 50
(e) None of these

Q.18 In 2001, the people preferring to travel by bus represented approximately what per cent of the people preferring to travel by buses, rail and airlines together in that year?
(a) 65 per cent (b) 35 per cent
(c) 55 per cent (d) 75 per cent
(e) 45 per cent

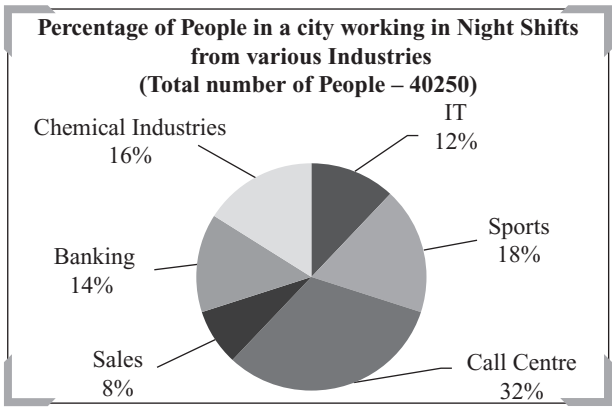
Q.19 What is the respective ratio of the number of people preferring to travel by bus to the number of people preferring to travel by rail in the year 2002?
(a) 15:11 (b) 9:7
(c) 7:9 (d) 11:15
(e) None of these

Q.20 In the year 2003, if all the airlines reduced their rates by 50% and 50% of the people who preferred to travel by rail, now preferred airlines, **approximately** how many millions of people prefer to travel by air?
(a) 290 (b) 313
(c) 330 (d) 300
(e) 325

Exercise 5

Directions for questions 1 to 5: ***Go through the data set given below and solve the questions based on it.***

Following pie chart give the percentage of people working in night shift from various industries. Table given ahead presents the percentage of females out of number of people working in night shift in different industries.



Percentage of Females from various Industries working in night shifts

Industries	Females
IT	20%
Sports	20%
Call Centre	45%
Sales	60%
Banking	40%
Chemical Industries	15%

Q.1 What is the respective ratio of men to the women working in night shifts from the Call Centre industry?
(a) 9:11 (b) 7:5
(c) 8:13 (d) 11:7
(e) None of these

Q.2 What is the approximate average number of females working in night shifts from all the industries together?
(a) 2227 (b) 4481
(c) 3326 (d) 2823
(e) 4107

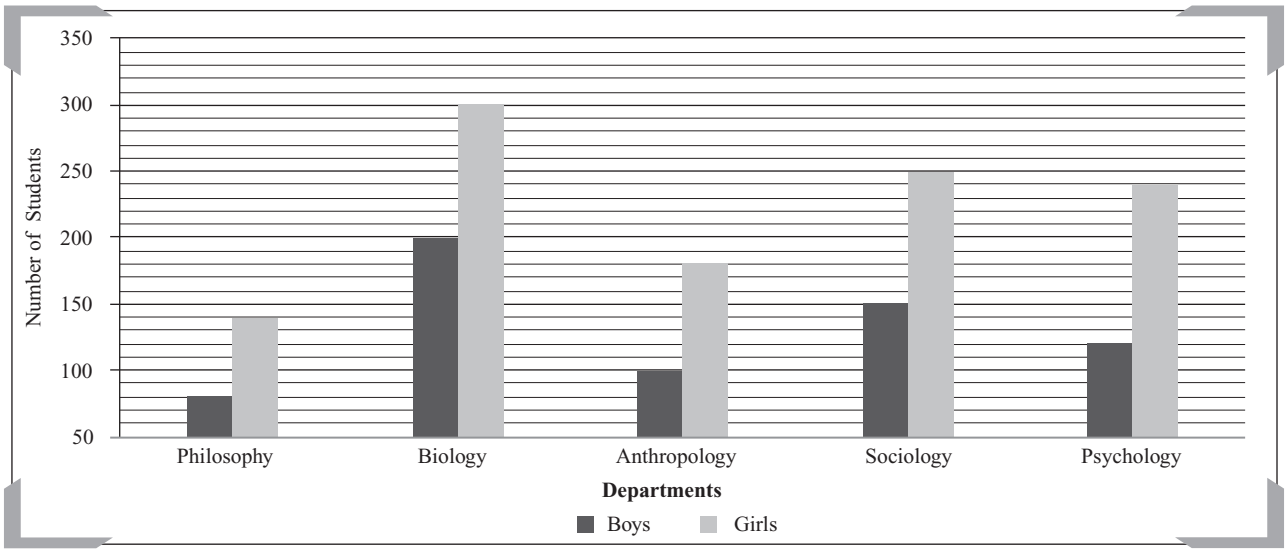
Q.3 What is the total number of men working in night shifts from al the industries together?
(a) 28297 (b) 25788
(c) 28678 (d) 26887
(e) None of these

Q.4 The number of women from the sports industry is what per cent of the total number of people working in the night shifts from all the industries together?
(a) 5.6 (b) 3.6
(c) 3.2 (d) 4.4
(e) None of these

Q.5 What is the difference between the total number of men and the total number of women working in night shifts from all the industries together?
(a) 13254 (b) 13542
(c) 13524 (d) 13363
(e) None of these

Directions for questions 6 to10: ***Go through the data set given below and solve the questions based on it.***

Following bar chart presents the total number of Boys and Girls in Five Different Departments in a college:



Q.6 The number of girls from Biology department is approximately what per cent of the total number of girls from all the departments together?
(a) 32 (b) 21
(c) 37 (d) 43
(e) 27

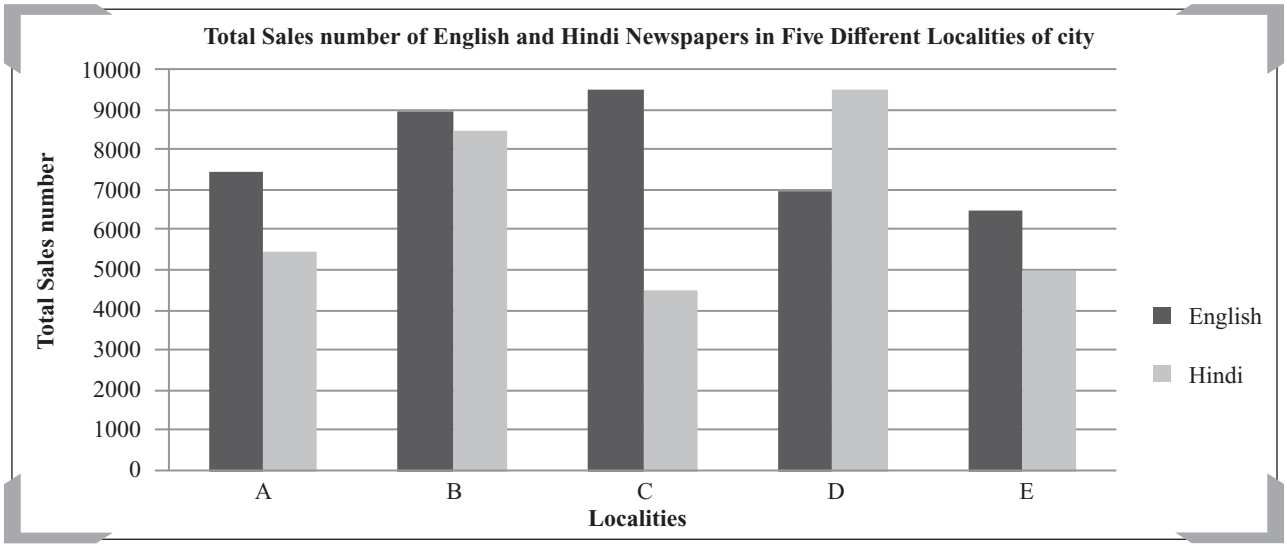
Q.7 What is the difference between the total number of boys and the total number of girls from all the departments together?
(a) 440 (b) 520
(c) 580 (d) 460
(e) None of these

Q.8 What is the average number of boys from all the departments together?
(a) 122 (b) 126
(c) 130 (d) 134
(e) None of these

Q.9 The number of boys from Anthropology department is **approximately** what per cent of the total number of boys from all the departments together?
(a) 15 (b) 23
(c) 31 (d) 44
(e) 56

Q.10 What is the respective ratio of number of girls from Philosophy department to the number of girls from Psychology department?
(a) 1:2 (b) 7:12
(c) 5:12 (d) 3:4
(e) None of these

Directions for questions 11 to 15: ***Go through the data set given below and solve the questions based on it.***



Q.11 What is the difference between the total sale of English newspapers and the total sale of Hindi newspapers in all the localities together?
(a) 6000 (b) 6500
(c) 7000 (d) 7500
(e) None of these

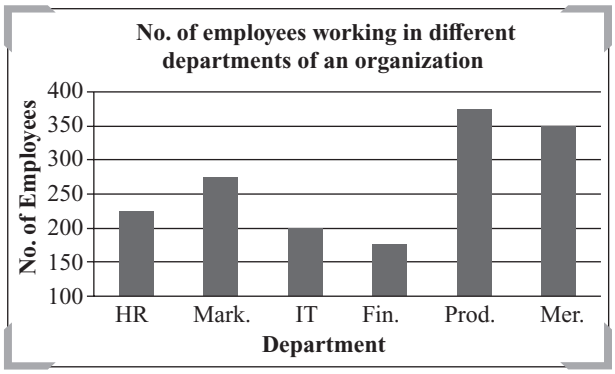
Q.12 The sale of English newspaper in locality A is **approximately** what per cent of the total sale of English newspapers in all the localities together?
(a) 527 (b) 25
(c) 111 (d) 236
(e) 19

Q.13 What is the respective ratio of the sale of Hindi newspapers in locality A to the sale of Hindi newspapers in locality D?
(a) 11:19 (b) 6:5
(c) 5:6 (d) 19:11
(e) None of these

Q.14 The sale of English newspaper in localities B and D together is approximately what per cent of the sale of English newspaper in localities A, C and E together?
(a) 162 (b) 84
(c) 68 (d) 121
(e) 147

Q.15 What is the average sale of Hindi newspapers in all the localities together?
(a) 6600 (b) 8250
(c) 5500 (d) 4715
(e) None of these

Directions for questions 16 to 20: ***Go through the data set given below and solve the questions based on it.***



All the data values given above are in the multiples of 25. Following table presents the ratio of male and female in the organization:

Department	Males	Females
HR	9	16
Marketing	3	2
IT	9	31
Finance	2	3
Production	11	4
Merchandising	4	3

Note: Mark. – Marketing; Fin. – Finance; Prod. – Production; Mer. - Merchandising

Q.16 What is the total number of males working in all departments together?
(a) 755 (b) 925
(c) 836 (d) 784
(e) None of these

Q.17 What is the number of females working in the HR department?
(a) 158 (b) 128
(c) 136 (d) 144
(e) None of these

Q.18 What is the respective ratio of total number of employees working in the production department to those working in the Merchandising department?
(a) 15 : 14 (b) 8 : 7
(c) 14 : 15 (d) 7 : 8
(e) None of these

Q.19 Which is the department with lowest number of females working?
(a) Marketing (b) Production
(c) HR (d) Finance
(e) None of these

Q.20 What is the total number of employees from all departments together in the organization?
(a) 1500 (b) 1575
(c) 1525 (d) 1625
(e) None of these

Exercise 6

Directions for questions 1 to 5: ***Go through the data set given below and solve the questions based on it.***

Study the following profile of Parliament carefully and answer the questions given below it.

PROFILE OF PARLIAMENT (comprising of Lok Sabha and Rajya Sabha) IN YEAR 2014:

Total Members in Parliament = 640 (490 from Lok Sabha and 150 from Rajya Sabha)

Lok Sabha (No. of Members)	Party	Rajya Sabha (No. of Members)
280	A	90
180	B	45
30	Others	15
490	Total	150
	SEX	
435	Males	120

55	Females	30
	RELIGION	
348	Hindus	85
42	Muslims	20
75	Sikhs	35
25	Christians	10
	PROFESSION	
300	Graduates	50
45	Business men	19
60	Educators	11
85	Unknown	70

Q.1 What is the **approximate** percentage of the Muslim members in Lok Sabha?
(a) 9% (b) 11%
(c) 13% (d) 14%
(e) 7%

Q.2 In Rajya Sabha, if 30 male members were replaced by 30 female members, then what is the ratio of male members to female members respectively?
(a) 3 : 1 (b) 3 : 2
(c) 1 : 3 (d) 2 : 3
(e) 2 : 1

Q.3 What percentage of members in parliament are businessmen?
(a) 8% (b) 20%
(c) 30% (d) 18%
(e) 10%

Q.4 If all the 'others' party members of Lok Sabha join the party 'B' then what would be the ratio between members of party 'A' to the members of party 'B' respectively.
(a) 3:2 (b) 6:5
(c) 4:3 (d) 7:6
(e) 4:5

Q.5 Out of total members of party 'B' in Parliament, what percentage of the members belongs to Rajya Sabha?
(a) 30% (b) 35%
(c) 25% (d) 20%
(e) 15%

Directions for questions 6 to 10: ***Go through the data set given below and solve the questions based on it.***

Various Food-grains sold by farmers at prices (Price Per Kg.) mentioned:

Food grains / Farmers	Rice	Corn	Bajra	Paddy	Jowar
A	30	22.5	22	24	18
B	36	28	24.5	25	24
C	40	24	21	26	20.5
D	34.5	27.5	28	25	25
E	36	32	30	28.5	27

Q.6 If farmer A sell 350 kg of Rice, 150 kg of Corn and 250 kg of Jowar, how much would he earn?
(a) ₹19425 (b) ₹18,500
(c) ₹15,585 (d) ₹18,375
(e) ₹None of these

Q.7 What is the average price per kg of Bajra sold by all the farmers together?
(a) ₹25.10 (b) ₹24.50
(c) ₹25 (d) ₹23.40
(e) None of these

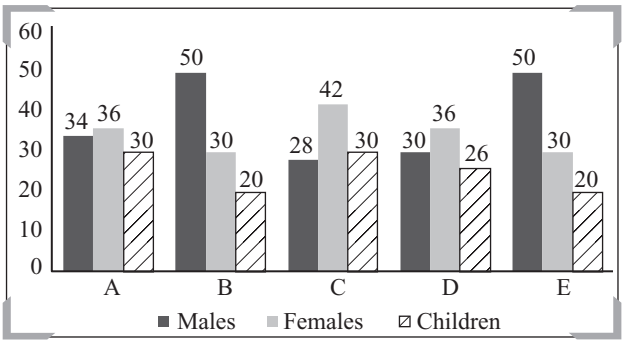
Q.8 Farmer D and farmer E, both sell 240 kg of Bajra each. What would be the respective ratio of their earnings?
(a) 15 : 14 (b) 11 : 13
(c) 14 : 15 (d) 13 : 15
(e) None of these

Q.9 Farmer C sells 180 kg each of Corn, Paddy and Jowar grains. How much does he earn?
(a) ₹13,540 (b) ₹12,550
(c) ₹13,690 (d) ₹12,690
(e) None of these

Q.10 Earnings on 150 kg of Paddy sold by farmer B is **approximately** what percentage of the earnings on the same quantity of Rice sold by the same farmer?
(a) 65 (b) 69
(c) 73 (d) 60
(e) 75

Directions for questions 11 to 15: ***Go through the data set given below and solve the questions based on it.***

Following bar chart provides the percentage of Adult Males, Adult Females and Children out of total population in five colonies A, B, C, D and E:



Total number of Residents in these Colonies

Colonies	Residents
A	1250
B	2050
C	1800
D	1150
E	1620

Q.11 What is the total number of adult females in colonies A, B and C together?
(a) 1785 (b) 1821
(c) 1479 (d) 1692
(e) None of these

Q.12 The number of children in colony A are **approximately** what per cent of the number of children in colony E?
(a) 121 (b) 116
(c) 75 (d) 101
(e) 98

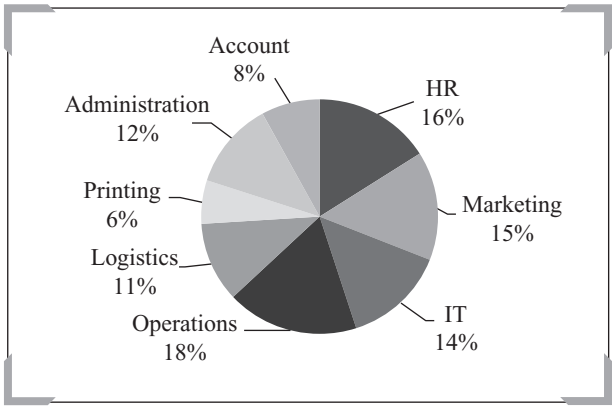
Q.13 What is the respective ratio of the number of adult males to the number of adult females in colony B?
(a) 3:5 (b) 7:5
(c) 8:7 (d) 5:7
(e) None of these

Q.14 What is the average number of residents from all the colonies together?
(a) 1654 (b) 1600
(c) 1580 (d) 1574
(e) None of these

Q.15 What is the difference between the number of adult males and the number of children in colony D?
(a) 138 (b) 126
(c) 136 (d) 135
(e) None of these

Directions for questions 16 to 20: ***Go through the data set given below and solve the questions based on it.***

Following pie chart presents the percentage of employees working in different departments in an organization. Total Number of Employees = 2500



Following is the ratio of males to females in different departments in the same organization:

Male: Female Ratio			
Department	Male	:	Female
Administration	7	:	5
Accounts	2	:	3
HR	5	:	3
Marketing	7	:	8
IT	3	:	4
Operations	5	:	4
Logistics	6	:	5
Printing	2	:	1

Q.16 What is the ratio between male employees in Administration and Printing Departments respectively?
(a) 7:4 (b) 4:7
(c) 3:4 (d) 7:3
(e) None of these

Q.17 What is the difference between total number of employees in IT and Operations Departments?
(a) 75 (b) 150
(c) 100 (d) 50
(e) None of these

Q.18 What is the ratio between total number of males in HR and Marketing and the total number of females in these two departments respectively?
(a) 13:15 (b) 15:13
(c) 13:17 (d) 17:14
(e) None of these

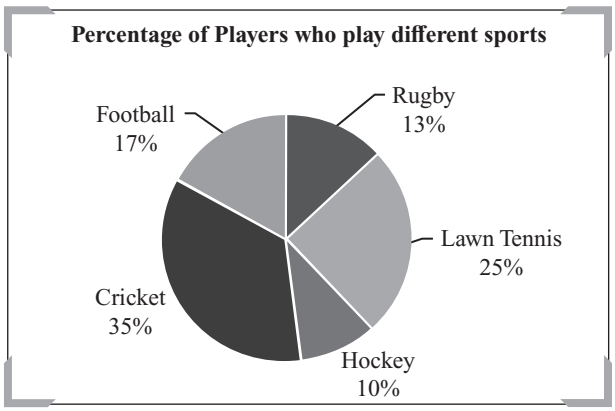
Q.19 How many female employees are there in HR Department?
(a) 250 (b) 120
(c) 125 (d) 150
(e) None of these

Q.20 What is the difference between the male and female employees in Logistics Department?
(a) 50 (b) 25
(c) 75 (d) 100
(e) None of these

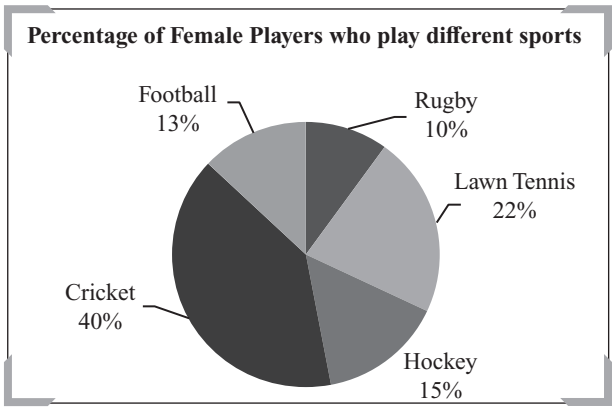
Exercise 7

Directions for questions 1 to 5: ***Go through the data set given below and solve the questions based on it.***

Following pie chart give the percentage wise break-up of total players who play five different sports. Given that total number of players = 4200.



Out of total 4200 players, number of female players is equal to 2000. Following pie chart present the breakup of female players playing these five sports.



Q.1 What is the number of total players who play football and rugby together?
(a) 620 (b) 357
(c) 630 (d) 1260
(e) None of these

Q.2 What is the difference between the number of the female players who play lawn tennis and the number of male players who play rugby?
(a) 94 (b) 84
(c) 220 (d) 240
(e) None of these

Q.3 What is the respective ratio of the number of female players who play cricket and number of male players who play hockey?
(a) 20:7 (b) 4:21
(c) 20:3 (d) 3:20
(e) None of these

Q.4 What is the total number of male players who play football, cricket and lawn tennis together?
(a) 1,724 (b) 1,734
(c) 1,824 (d) 1,964
(e) None of these

Q.5 Number of male players who play rugby is approximately what percentage of the total number of players who play lawn tennis?
(a) 33 (b) 39
(c) 26 (d) 21
(e) 43

Directions for questions 6 to 10: ***Go through the data set given below and solve the questions based on it.***

Number of Articles (in thousands) Manufactured (M) and Defective (D) by 5 units of a company over the Years

	UNIT									
Year	I		II		III		IV		V	
	M	D	M	D	M	D	M	D	M	D
1996	53	21	45	12	76	38	56	21	46	18
1997	49	18	32	10	45	24	63	24	36	14
1998	50	18	48	18	55	16	68	30	34	15
1999	65	20	68	15	57	20	54	19	48	12
2000	70	31	72	13	82	22	48	27	58	10
2001	44	15	56	22	38	32	40	15	60	11

Q.6 What is the ratio between total number of articles manufactured by unit III to that by Unit V for all the years together?
(a) 353 : 282 (b) 282 : 353
(c) 457 : 215 (d) 215 : 457
(e) None of these

Q.7 What is the average number of defective items from Unit II for the given years?
(a) 21,500 (b) 17,000
(c) 12,500 (d) 15,000
(e) None of these

Q.8 During which year the largest percentage of articles were defective out of the articles manufactured by unit IV?
(a) 1996 (b) 1997
(c) 1998 (d) 1999
(e) 2000

Q.9 What was the percentage (rounded off to nearest integer) of defective articles over the number of articles manufactured by all units together in the year 2001?
(a) 42 (b) 40
(c) 37 (d) 33
(e) None of these

Q.10 During which year was the percentage increase/decrease in manufacture from the previous year the highest for Unit I?
(a) 1998 (b) 2001
(c) 1999 (d) 1997
(e) None of these

Directions for questions 11 to 15: ***Go through the data set given below and solve the questions based on it.***

Number of Males and Females staying in various Societies:

Societies	Males	Females
A	250	350
B	400	150
C	300	275
D	280	300
E	180	250
F	325	300

Percentage of Male and Female Children in the Societies:

Societies	Children (out of total population)	Male Children out of total children	Female Children out of total children
A	25%	40%	60%
B	40%	75%	25%
C	16%	25%	75%
D	25%	80%	20%
E	40%	50%	50%
F	24%	46%	54%

Q.11 What is the respective ratio of the number of adult females to the total number of female children staying in all the societies together?
(a) 243:82 (b) 112:71
(c) 82:243 (d) 71:112
(e) None of these

Q.12 What is the total number of female children staying in all the societies together?
(a) 314 (b) 433
(c) 410 (d) 343
(e) None of these

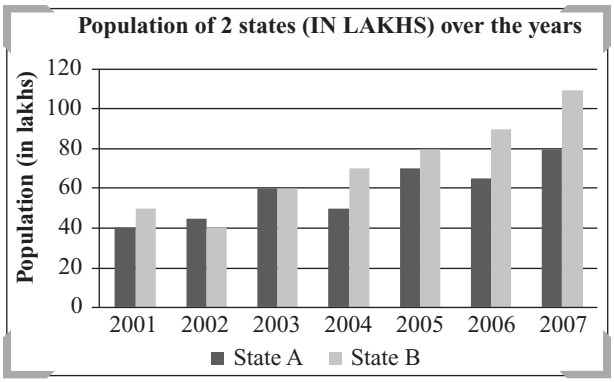
Q.13 What is the respective ratio of the total number of adult males in societies A and B together to the total number of adult males in societies E and F together?
(a) 3520 (b) 3360
(c) 4100 (d) 3000
(e) None of these

Q.14 What is the total number of members staying in all the societies together?
(a) 3520 (b) 3360
(c) 4100 (d) 3000
(e) None of these

Q.15 What is the difference between the number of male children in society B and the number of male children in society F?
(a) 84 (b) 14
(c) 96 (d) 26
(e) None of these

Directions to questions 16 to 20: ***Go through the data set given below and solve the questions based on it.***

Following chart gives the population of 2 states from year 2001 to year 2007:
(All the values are in the multiples of 5 lakhs)



Q.16 Population of State B in 2002 is what per cent of the total population of State B in all the years together?
(a) 18% (b) 26%
(c) 14% (d) 12%
(e) 8%

Q.17 What is the ratio between the total population of State A for the years 2001, 2002 and 2003 together and the total population of State B for the years 2005, 2006 and 2007 together respectively?
(a) 27 : 53 (b) 54 : 29
(c) 29 : 56 (d) 53 : 27
(e) None of these

Q.18 For which State and in which year the per cent rise in population from the previous year was the highest?
(a) State B – 2003 (b) State B – 2002
(c) State A – 2004 (d) State A – 2005
(e) None of these

Q.19 What is the per cent rise in population of State B from 2003 to 2004?
(a) $16\frac{1}{3}$ (b) $16\frac{2}{3}$
(c) $18\frac{2}{3}$ (d) $18\frac{1}{3}$
(e) None of these

Q.20 **Approximately** what is the average population of State A for all the given years?
(a) 65 lakhs (b) 50 lakhs
(c) 48 lakhs (d) 58 lakhs
(e) 52 lakhs

Exercise 8

Directions for questions 1 to 5: ***Refer to the tables given below and answer the questions that follow.***

Table 1 give the transportation cost of a product from six factories F1, F2, F3, F4, F5 and F6 to five warehouses W1, W2, W3, W4 and W5.

	W1	W2	W3	W4	W5
F1	60	25	45	40	80
F2	85	40	45	60	75
F3	80	20	45	50	90
F4	90	40	55	25	70
F5	95	20	40	45	80
F6	85	35	50	50	75

Table 2 give the transportation cost of the same product from five warehouses W1, W2, W3, W4 and W5 to six retailers R1, R2, R3, R4, R5 and R6.

	R1	R2	R3	R4	R5	R6
W1	40	20	40	30	85	25
W2	50	50	45	60	70	30
W3	20	10	50	50	80	35
W4	40	30	45	40	90	40
W5	50	30	50	40	70	30

In addition to the above tables given, following table gives the transportation cost incurred from different retailers to the five different colonies C1, C2, C3, C4 and C5.

	C1	C2	C3	C4	C5
R1	10	25	10	10	10
R2	15	10	15	10	15
R3	10	20	10	15	10
R4	20	10	15	15	10
R5	15	10	20	20	20
R6	10	15	15	15	15

Q.1 What is the minimum transportation cost incurred in transferring the product from any factory to any colony?
(a) ₹45 (b) ₹65
(c) ₹55 (d) None of these

Q.2 What is the minimum transportation cost incurred in transferring the product from any factory to the colony C2?
(a) ₹45 (b) ₹60
(c) ₹55 (d) None of these

Q.3 If one unit produced in each of the factories is to be sent to each of the colonies, then what will be the total transportation cost incurred?
(a) ₹1705 (b) ₹1980
(c) ₹2185 (d) None of these

Q.4 $F_iW_jR_kC_l$ represents that the product has moved in this cycle – Factory i to warehouse j to retailer k to colony l. If i = 2 and k = 2, then what is the sum of (j + l) for the lowest transportation cost incurred in one product transferred from i = 2 to any of the colonies?
(a) 4
(b) 5
(c) 7
(d) cannot be determined

Q.5 In the above question, if j = 2, then how many different value/s of (i + k + l) is/are possible for the lowest transportation cost incurred in one product transferred from any of the factories to any of the colonies?
(a) 1
(b) 2
(c) 3
(d) cannot be determined

Directions for questions 6 to 10: ***Refer to the table given below and answer the questions that follow.***

Given below are the forecasts of world and Asian energy demand for the years 1991, 2001 and 2011. The demand is given in million barrels per day, crude oil equivalent.

	1991		2001		2011	
	World	Asia	World	Asia	World	Asia
Petrol	50.0	4.0	70.0	10.0	80.0	15.0
Naphtha	30.0	0.5	40.0	2.5	50.0	5.0

Solid Fuels	50.0	4.0	60.0	5.0	75.0	10.0
Nuclear Fuel	10.0	0.5	20.0	1.0	25.0	1.3
Hydro Energy	10.0	1.0	10.0	1.5	20.0	2.0
Total	150.0	10.0	200.0	20.0	250.0	33.3

Q.6 What can be inferred from the given table?
(a) Percentage increase in the number of Petrol using vehicles/agents have increased in Asia than the world in the decade 1991–2001.
(b) Exploration of Naphtha is low in Asia is less than the exploration of Naphtha in the world throughout the period.
(c) Both (a) and (b)
(d) None of these

Q.7 Over 1991–2011, which two fuels meet more than 60% of the total energy demand of both the world and Asia?
(a) Petrol and Naphtha
(b) Petrol and Solid fuels
(c) Naphtha and Solid fuels
(d) None of these

Q.8 Which fuel's proportion in the total energy demand increases over the decade 1991–2001 and decreases over the decade 2001–2011 for both the world and Asia?
(a) Petrol (b) Naphtha
(c) Solid fuels (d) Nuclear Fuel

Q.9 Which is the fuel whose proportion in the total energy demand will decrease continuously over the period 1991–2011, in Asia?
(a) Naphtha (b) Solids fuels
(c) Nuclear Fuel (d) Hydro Energy

Q.10 Which is the fuel whose proportions to the total energy demand of the world will remain constant over the period 1991–2011 but whose proportion will increase in the total energy demand in Asia?
(a) Naphtha (b) Solids fuels
(c) Nuclear Fuel (d) Hydro Energy

Directions for questions 11 to 14: ***Refer to the table given below and answer the questions that follow.***

Following table gives some incomplete information on the marks obtained by four persons Amit, Binit, Charu and Dilip in four different subjects.

	Physics	Chemistry	Maths	English	Total
Amit	80	70	–	80	–
Binit	60	–	60	–	–
Charu	–	–	60	–	220
Dilip	90	–	70	60	–

Additional Information:

(i) Amit's average marks was 72.5, in all the four subjects.
(ii) The average marks in Physics for all four persons was 67.5.
(iii) Binit's Average marks for all four subjects was 1.5 times Charu's marks in physics.
(iv) Binit and Dilip scored the same marks in English. The average English marks were the same as the average Physics marks.
(v) The total marks in Chemistry was 10 less than the total marks in physics for all four persons.

Q.11 Who scored the lowest total?
(a) Amit (b) Binit
(c) Charu (d) Dilip

Q.12 The average marks for all four persons (for all the four subjects) is (approx.)
(a) 65.625 (b) 81.225
(c) 99.5 (d) 105.6

Q.13 Who is the highest scorer in chemistry?
(a) Amit (b) Binit
(c) Charu (d) Dilip

Q.14. Who is the lowest scorer in physics?
(a) Amit (b) Binit
(c) Charu (d) Dilip

Directions for questions 15 to 17: ***In each question, there are two statements: A and B, either of which can be true or false on the basis of the information given below.***

A research agency collected the following data regarding the admission process of a reputed management school in India.

Year	Gender	Number bought application forms	Number appeared for written test	Number called for interviews	Number selected for the course
2002	Male	61205	59981	684	171
	Female	19236	15389	138	48
2003	Male	63298	60133	637	115
	Female	45292	40763	399	84

Chosse (a) if only A is true
Chosse (b) if only b is true
Chosse (c) if both A and B are true
Chosse (d) if neither A nor b is true

Q.15 **Statement A:** The success rate of moving from written test to interview stage for males was worse than for females in 2003.

Statement B: The success rate of moving from written test to interview test to interview stage for females was better in 2002 than in 2003.

Q.16 **Statement A:** In 2002, the number of females selected for the course as a proportion of the number of females who bought application forms, was higher than the corresponding proportion for males.
Statement B: In 2002, among those called for interview, males had a greater success rate than females.

Q.17 **Statement A:** The percentage of absentees in the written test among females decreased from 2002 to 2003.
Statement B: The percentage of absentees in the written test among males was larger than among females in 2003.

Directions for questions 18 to 20: ***Answer the questions on the basis of the information given below.***

The table below provides certain demographic details of 30 respondents who were part of a survey investigating the irregularities in NREGS. The demographic characteristics are: gender, number of children, and age of respondents. The first number in each cell is the number of respondents in that group. The minimum and maximum age of respondents in each group is given in brackets. For example, there are five female respondents with no children and among these five; the youngest is 34 years old, while the oldest is 49.

No. of children	Male	Female	Total
0	1(38,38)	5(34,49)	6
1	1(32,32)	8(35,57)	9
2	8(21,65)	3(37,63)	11
3	2(32,33)	2(27,40)	4
Total	12	18	30

Q.18 The percentage of respondents aged less than 40 years is at least
(a) 10% (b) 16.67%
(c) 20.0% (d) 30%

Q.19 Given the information above, the percentage of respondents older than 35 can be at most
(a) 30% (b) 73.33%
(c) 76.67% (d) 90%

Q.20 The percentage of respondents that fall into the 35 to 40 years age group (both inclusive) is at least
(a) 6.67% (b) 10%
(c) 13.33% (d) 26.67%

ANSWER KEYS

Exercise 1

1. (d)	**2.** (e)	**3.** (a)	**4.** (c)	**5.** (b)	**6.** (d)	**7.** (e)	**8.** (a)	**9.** (c)	**10.** (b)
11. (e)	**12.** (e)	**13.** (d)	**14.** (a)	**15.** (a)	**16.** (e)	**17.** (a)	**18.** (b)	**19.** (d)	**20.** (c)

Exercise 2

1. (a)	**2.** (c)	**3.** (b)	**4.** (d)	**5.** (d)	**6.** (b)	**7.** (d)	**8.** (a)	**9.** (a)	**10.** (b)
11. (b)	**12.** (d)	**13.** (c)	**14.** (b)	**15.** (b)	**16.** (a)	**17.** (b)	**18.** (d)	**19.** (b)	**20.** (a)
21. (c)	**22.** (a)	**23.** (d)	**24.** (b)	**25.** (d)					

Exercise 3

1. (e)	**2.** (d)	**3.** (d)	**4.** (d)	**5.** (b)	**6.** (c)	**7.** (d)	**8.** (e)	**9.** (b)	**10.** (a)
11. (a)	**12.** (c)	**13.** (d)	**14.** (b)	**15.** (e)	**16.** (d)	**17.** (e)	**18.** (c)	**19.** (e)	**20.** (a)

Exercise 4

1. (d)	**2.** (b)	**3.** (a)	**4.** (c)	**5.** (a)	**6.** (d)	**7.** (c)	**8.** (a)	**9.** (e)	**10.** (b)
11. (a)	**12.** (d)	**13.** (b)	**14.** (e)	**15.** (c)	**16.** (d)	**17.** (c)	**18.** (e)	**19.** (a)	**20.** (e)

Exercise 5

1. (e)	**2.** (a)	**3.** (d)	**4.** (b)	**5.** (c)	**6.** (e)	**7.** (d)	**8.** (c)	**9.** (a)	**10.** (b)
11. (b)	**12.** (e)	**13.** (a)	**14.** (c)	**15.** (a)	**16.** (c)	**17.** (d)	**18.** (a)	**19.** (b)	**20.** (e)

Exercise 6

1. (a)	**2.** (b)	**3.** (e)	**4.** (c)	**5.** (d)	**6.** (d)	**7.** (a)	**8.** (c)	**9.** (d)	**10.** (b)
11. (b)	**12.** (b)	**13.** (e)	**14.** (d)	**15.** (a)	**16.** (a)	**17.** (c)	**18.** (d)	**19.** (d)	**20.** (b)

Exercise 7

1. (d)	**2.** (a)	**3.** (c)	**4.** (b)	**5.** (a)	**6.** (a)	**7.** (d)	**8.** (e)	**9.** (b)	**10.** (b)
11. (a)	**12.** (c)	**13.** (d)	**14.** (e)	**15.** (c)	**16.** (e)	**17.** (c)	**18.** (a)	**19.** (b)	**20.** (d)

Exercise 8

1. (d)	**2.** (d)	**3.** (d)	**4.** (d)	**5.** (d)	**6.** (d)	**7.** (b)	**8.** (a)	**9.** (d)	**10.** (a)
11. (c)	**12.** (a)	**13.** (d)	**14.** (c)	**15.** (d)	**16.** (d)	**17.** (a)	**18.** (d)	**19.** (c)	**20.** (c)

EXERCISE 1

Solutions to Q.1 to 5:

1. Number of men working in the Marketing department $= 1800 \times \frac{18}{100} \times \frac{7}{12} = 189$

Hence, option (d) is the correct answer.

2. Number of women working in IT department $= 1800 \times \frac{23}{100} \times \frac{4}{9} = 184$

Hence required percentage $\cong \frac{184}{1800} \times 100 = 10$

Hence, option (e) is the correct answer.

3. Required ratio = 3:4.

Hence, option (a) is the correct answer.

4. Required ratio = 2:9.

Hence, option (c) is the correct answer.

5. Required percentage $= \frac{11}{12} \times 100 = 91.67$.

Hence, option (b) is the correct answer.

Solutions to Q.6 to 10:

6. If the expenditure be ₹X lacs, then $\frac{18.9}{x} \times 100 = 9$

$\Rightarrow x = \frac{18.9 \times 100}{9} =$ ₹210 lacs

Hence Income = ₹(210 + 18.9) lacs = ₹228.9 lacs.

Hence, option (d) is the correct answer.

7. Percentage increase $= \frac{4}{10} \times 100 = 40$

Hence, option (e) is the correct answer.

8. Required expenditure of the company $= \frac{2.1 \times 100}{7}$ = ₹30 lacs.

Hence, option (a) is the correct answer.

9. Average per cent profit $= \frac{7+8+13+14+15+15}{6}$ = 12%.

Hence, option (c) is the correct answer.

10. Required difference $= 10 - \left(\frac{9+5+8+12+6}{5}\right) = 10\% - 8\% = 2\%$.

Hence, option (b) is the correct answer.

Solutions to Q.11 to 15:

11. Total number of tickets sold of movie B = (15 + 19 + 24 + 21 + 34 + 27) thousands = 140 thousands

Required percentage $= \frac{34}{140} \times 100 = 24$.

Hence, option (e) is the correct answer.

12. Required difference = (27000 – 21000) = 6000.

Hence, option (e) is the correct answer.

13. Average number of tickets of movie C sold in all the cities $= \left(\frac{35+21+19+32+26+20}{6}\right)$ thousand $= \frac{153}{6}$ thousand = 25500.

Hence, option (d) is the correct answer.

14. Required percentage $= \frac{34}{20} \times 100 = 170$.

Hence, option (a) is the correct answer.

15. Total number of tickets sold of all the movies together:

Mumbai ⟶ (20 + 15 + 35 + 26 + 18) thousand = 114 thousand

Delhi ⟶ (17 + 19 + 21 + 25 + 28) thousand = 110 thousand

Kolkata ⟶ (32 + 24 + 19 + 21 + 17) thousand = 113 thousand

Chennai ⟶ (18 + 21 + 32 + 28 + 34) thousand = 133 thousand

Hyderabad ⟶ (16 + 34 + 26 + 29 + 22) thousand = 127 thousand

Lucknow ⟶ (15 + 27 + 20 + 35 + 26) thousand = 123 thousand

Hence, option (a) is the correct answer.

Solutions to Q.16 to 20:

16. Required percentage $= \frac{0.9}{12} \times 100 = 7.5$.

Hence, option (e) is the correct answer.

17. Required average $= \frac{11.3+6+18+1+1.5}{5} \times 100 = \frac{3780}{5} = 756$.

Hence, option (a) is the correct answer.

18. Number of music shows in cities N and Q = 105% of (13 + 12.4) = 25.4 $\times \frac{105}{100} = 2667$.

Hence, option (b) is the correct answer.

19. Required ratio = 12.4:9.8 = 124:98 = 62:49.

Hence, option (d) is the correct answer.

20. Total number of standup comedy shows = (0.8 + 2 + 0.3 + 1 + 3 + 0.7) × 100 = 780.

Hence, option (c) is the correct answer.

EXERCISE 2

Solutions to Q.1 to 5:

1. Percentage change for India = $\frac{0.72-1.71}{1.71} > 50\%$

Percentage change for China = $\frac{5.46-4.8}{5.46}$; 12%

Percentage change for Korea = $\frac{3.12-2.8}{2.8}$ 11%

Percentage change for Malaysia = $\frac{0.33}{2.1} - \approx 15\%$

Hence, maximum % change is for India

Hence, option (a) is the correct answer.

2. For the year 1998

For China, $\frac{FEIH_{China}}{GDP_{China}} = 0.048$ ……..(1)

For India, $\frac{FEIH_{India}}{GDP_{India}} = 0.0072$ ……..(2)

$$\frac{FEI_{China}}{FEI_{India}} = 10$$

on dividing (1) by (2):

$$\frac{GDP_{China}}{GDP_{India}} \times 10 = \frac{0.048}{0.0072} = \frac{20}{3}$$

$$\Rightarrow \quad \frac{GDP_{China}}{GDP_{India}} = \frac{3}{2} = 1.5$$

So percentage difference between china's GDP and India's GDP = 50%

Hence, option (c) is the correct answer.

3. Since the comparisons are for the same country in each case, assume the GDP as 100 in 1997 in all cases. So, GDP of China, India and Korea in 1998 is 105,107 and 98 respectively.

$$\frac{FEI_{1998}}{FEI_{1997}} = \frac{FEII_{1998} \times GDP_{1998}}{FEII_{1997} \times GDP_{1997}}$$

For China: $\frac{FEI_{1998}}{FEI_{1997}} = \frac{4.8 \times 107}{5.46 \times 100} < 1$

For India: $\frac{FEI_{1998}}{FEI_{1997}} = \frac{0.72 \times 105}{1.71 \times 100} < 1$

For Korea: $\frac{FEI_{1998}}{FEI_{1997}} = \frac{3.12 \times 98}{2.8 \times 100} < 1$

So, II and V are correct.

Hence, option (b) is the correct answer.

4. It can be seen that all the values (FEII) are expressed as a ratio of FEI to GDP, the absolute values of GDP cannot be determined.

Hence, option (d) is the correct answer.

5. Since only the ratios of GDP and FEI are known, the increase in one independent of other cannot be determined.

Hence, option (d) is the correct answer.

Solutions to Q.6 to 12:

6. You may note that apart from a few years for manufacturing and mining & quarrying, the annual growth rates in most years have been positive and near the 5 – 6% mark for all the sectors. The other options [a], [c], and [d] are too far away to be considered. Alternatively, for ease of calculation take the 1989 values for a manufacturing as 400, Mining & quarrying and Electricity as 300 each and Chemicals as 200. then, the final value for manufacturing would be nearly 580, that for mining & quarrying would be about 365; that for electricity would be around 550; and for Chemicals would be around 335.

$\Rightarrow$ Initial value of production

$= 400 + 300 + 300 + 200 = 1200$

Final value of production

$= 580 + 365 + 550 + 335 = 1830$

$\Rightarrow$ Overall % increase $\approx 52.5\%$

$\Rightarrow$ Average annual growth = 52.5/9 = 5.85%

Hence, option (b) is the correct answer.

7. Electricity production has increased throughout (as growth rates are positive throughout) and the maximum production would be achieved in the last year, i.e., 98.

Hence, option (d) is the correct answer.

8. The production for manufacturing can be minimum either in 1989 or in 1992 (when the growth rate is negative).

If Manufacturing started with a production of 100 in 1989, then production in 1992 will be $100 \times 1.04 \times 1.01 \times 0.97 > 1$

So, the production in 1989 was the least

Hence, option (a) is the correct answer.

9. Electricity has shown the highest growth rate in all the years and therefore, would have the highest growth rate for the entire period.

Hence, option (a) is the correct answer.

10. Electricity in 1992:

$100 \times 1.05 \times 1.07 \times 1.08 = 121.4$

Chemicals in 1992:

$100 \times 1.07 \times 1.03 \times 1.06 = 116.8$

$\Rightarrow$ In 1992, the index of chemicals is less than that of electricity by approximately 5.

Hence, option (b) is the correct answer.

11. Let Manufacturing in 1989 = 200 and

Chemicals in 1989 = 100

$\Rightarrow$ Manufacturing in 1991:

$200 \times 1.04 \times 1.01 = 210$

and Chemicals in 1991:

$100 \times 1.07 \times 1.03 = 110$

Required percentage $\frac{210-110}{110} \times 100 = 90\%$

Hence, option (b) is the correct answer.

12. As can be seen directly from the graph, the highest increase (that of 8%) for Mining and Quarrying was in the year 1998, relative to 1997.

Hence, option (d) is the correct answer.

Solutions to Q.13 to 18:

13. Values added per worker for various sectors will be proportional to following ratios:

Central	10/6
State	3/6
Central/state	12/3
Public	8/8/

Hence, option (c) is the correct answer.

14. Fixed capital per factory will be proportional to the following ratios:

Central	5/8
State	4/4
Central/state	5/6
Public	6/12

Hence, option (b) is the correct answer.

15. If the variables are proportional to the number of employees and the production per employees, then we can say that the variable cost is directly proportional to the production. Since the variable cost is maximum for private sector, it will also have the maximum production.

Hence, option (b) is the correct answer.

16. If 20% of govt. fixed capital is equal to $ 200 million $\Rightarrow$Total govt. sector fixed capital = $ 1000 m which is equivalent to 14% of the total fixed capital. Now, 25% of Govt. investment in joint sector i.e., 25% of the 8% of the total = 2% of total fixed capital will be given by:

$(1000 \times 2)/14 =$ $ 143 million

Value in ₹is given by:

$143 \times 45 =$ ₹6450 million

Hence, option (a) is the correct answer.

17. From the above question the money disinvested will be ₹6450 million.

Hence, option (b) is the correct answer.

18. Neither of the statements [A] or [B] can be inferred as we know only the percentages and not the actual values of the employees, factories or fixed capital.

Hence, option (d) is the correct answer.

Solutions to Q.19 to 21:

One of the women spent 2517 – 1378 = 1139, she is Chellamma. This is the only possibility as we add ₹1378 even to the least amount ₹1193, we will not be able to satisfy all the conditions given simultaneously.

So, the table obtained is:

Archana	Chellamma	Dhenuka	Helen	Shahnaz
2234	1139	1193	1340	2517

Solutions to Q.22 to 25:

22. From graph it is clear that, growth in sales is negative for 1997–98. The change for 1996–97 is very small. We need to check for 1995–96 & 1998–99

For 1995–96 = (250 – 100)/100 × 100% = 150%

For 1998–99 = (680-290)/290 × 100% = 134.5%

So, the highest percentage change of growth of sales is for year 1995-96

Hence, option (a) is the correct answer.

23. In 1995–96, the change is from 2.5 to 4.5, clearly it is more than 50% change in net profit. In none other option, this change is even 50%. So, the highest percentage change of growth of net profit is for year 1995–96

We must try to solve such type of questions without actual calculation to save time

Hence, option (d) is the correct answer.

24. Profitability for 1994–95 = 2.5/100 = 0.025

Profitability for 1996–97 = 6/300 = 0.02

Profitability for 1997–98 = 8.5/290 = 0.029

Profitability for 1998–99 = 12/680 = 0.018

So, highest profitability was recorded for 1997-98.

Hence, option (b) is the correct answer.

25. Profitability for 1994–95 = 2.5/100 = 0.025

Profitability for 1995–96 = 4.5/250 = 0.018

Profitability for 1996–97 = 6/300 = 0.02

Profitability for 1997–98 = 8.5/290 = 0.029

Profitability for 1998–99 = 12/680 = 0.018

So, we cannot conclude the statements of options (a), (b) & (c)

Hence, option (d) is the correct answer.

Exercise 3

Solutions to Q.1 to 5:

1. In the year 2000, the number of employed workers by unit C = 132

Total number of employed workers in all the units in year 2000

$= 136 + 96 + 132 + 124 + 158 + 40 = 786$

Therefore required percentage $= \frac{132}{786} \times 100 = 16.79$

Hence, option (e) is the correct answer.

2. Total number of workers in unit 'D' during the given years = 120 + 112 + 124 + 135 + 118 + 128 = 737

Therefore Average $= \frac{737}{6}$

Total number of workers in unit 'E' during the given years

$= 140 + 152 + 158 + 166 + 170 + 175 + 961$

Therefore Average $= \frac{961}{6}$

Therefore required difference $= \frac{961}{6} - \frac{737}{6} = \frac{224}{6}$

$= 37\frac{1}{3}$

Hence, option (d) is the correct answer.

3. For unit 'F', the percentage change in the number of workers in the year:

In 1999: $\frac{136-132}{136} \times 100 = 2.94\%$ decrease

In 2000: $\frac{140-132}{132} \times 100 = 6.06\%$ increase

In 2001: $\frac{140-126}{140} \times 100 = 10\%$ decrease

In 2002: $\frac{140-126}{126} \times 100 = 15.87\%$ increase

In 2003: $\frac{150-146}{146} \times 100 = 2.74\%$ increase

Hence, option (d) is the correct answer.

4. For each unit we need to find the total number of employees for all years. We can observe that E has the highest total value & so average value too.

Hence, option (d) is the correct answer.

5. Total number of employed workers in all units in 1998 = 145 + 88 + 115 + 120 + 140 + 136 = 744

Total number of employed workers in all units in 1999 = 128 + 76 + 122 + 112 + 152 + 132 = 722

Therefore required ratio = 744 : 722 = 37 : 36

Hence, option (b) is the correct answer.

Solutions to Q.6 to 10:

6. Let us 1st spend some time observing the data set, and identify if we can eliminate the some options through observation without doing actual calculation:

First, we will observe the data for options (b), (c) and (d).

Looking at option (d), Pharmacy cannot have decline in the data as its percentage share is rising and total number of students is also rising. Similarly option (b) cannot be the answer as share of commerce is fixed at 24%.

Number of students decreased from 2800 to 2000 in Agriculture.

Hence, option (c) is the correct answer.

7. Number of students studying Pharmacy in 2001 = 2450

Number of students studying Pharmacy in 2002 = 3600

Therefore Required ratio = 2450 : 3600 = 49 : 72

Hence, option (d) is the correct answer.

8. Difference= 7600–7000 = 600

Hence required percentage increase $= \frac{600}{7000} \times 100 = 8.57\%$

Hence, option (e) is the correct answer.

9. Total number of students in Arts and Commerce faculties in 2001= 4200 + 7700 = 11900

Total number of students in Arts and Commerce faculties in 2002 =4400 + 9600 = 1400

Therefore required percentage $= \frac{12950}{14000} \times 100 = 92\%$

Hence, option (b) is the correct answer.

10. Question is asking for absolute value in the percentage change of different faculty across the two years ⇒So we are required to calculate percentage increase as well as percentage decrease both, as applicable for different faculty.

Again, let us first observe the data set and identify if we can eliminate any option by simple observation of data:

We can eliminate option (b) Science – Percentage contribution of science has increased from 16% to 22% – so it cannot be the answer. (Going through the actual calculation, Science $= \frac{8800-5600}{5600} \times 100 = 57\%$)

Similarly option (c) Commerce cannot be the answer as it will have net percentage change = 14.28%. (We will calculate the change in total number of students only, and since the percentage contribution of commerce remains same in both the years, answer would be equivalent to the percentage change in the total

number of students.) Hence even option (c) cannot be the answer.

Let us calculate for remaining three options:

Percentage change in the faculty of:

Arts = $\frac{4550-4400}{4400} \times 100 = 3.2\%$

Engineering = $\frac{7600-7000}{7000} \times 100 = 8.57\%$

Medicine = $\frac{4200-4000}{4200} \times 100 = 4.7\%$

[Since question asks for absolute value of percentage change, we do not care for percentage increase or percentage decrease].

Hence, the percentage change in Arts is minimum.

Hence, option (a) is the correct answer.

Solutions to Q.11 to 15:

11. Savings for different persons:

Ritu $\rightarrow \frac{2.05\times14.5}{100} = ₹0.29725$ lakh

Satish $\rightarrow \frac{2.25\times15.3}{100} = ₹0.34425$ lakh

Arun $\rightarrow \frac{1.95\times16.4}{100} = ₹0.3198$ lakh

Vidya $\rightarrow \frac{2\times16.2}{100} = ₹0.324$ lakh

Arif $\rightarrow \frac{1.75\times18.2}{100} = ₹0.3185$ lakh

Suresh $\rightarrow \frac{1.70\times22.4}{100} = ₹0.3808$ lakh

Total savings = ₹(0.29725 + 0.34425 + 0.3198 + 0.324 + 0.3185 + 0.3808) lakh = ₹1.9846 lakh = ₹198460

Hence, option (a) is the correct answer.

12. Amount spent on shopping by:

Satish $\rightarrow ₹\frac{(2.25\times15.7)}{100}$ lakh = ₹0.35325 lakh

He spends maximum.

Hence, option (c) is the correct answer.

13. Amount spent by Ritu on:

Eating out = $\frac{(21.8\times2.05)}{100} = ₹0.4469$ lakh

Watching movies = $\frac{20.4\times2.05}{100} = ₹0.4182$ lakh

Total amount = ₹(0.4469 + 0.4182) lakh = ₹0.8651 lakh

Amount spent by Arun on:

Eating out = $\frac{1.95\times14.3}{100} = ₹0.27885$ lakh

Watching movies = $\frac{18.5\times1.95}{100} = ₹0.36075$ lakh

Total amount = ₹(0.27885 + 0.36075) lakh = ₹0.6396

Required ratio = 0.8651:0.6396 = 211:156

Hence, option (d) is the correct answer.

14. Amount spent on health by:

Suresh $\rightarrow ₹\frac{1.70\times18.2}{100}$ lakh = ₹0.3094 lakh

Similarly,

Ritu → ₹0.3362 lakh

Satish → ₹0.2565 lakh

Arun → ₹0.41925 lakh

Vidya → ₹0.43 lakh

Arif → ₹0.3675 lakh

Total expenditure on health = ₹(0.3094 + 0.3362 + 0.2565 + 0.41925 + 0.43 + 0.3675) lakh = ₹2.11885 lakh

Required percentage = $\frac{0.3094}{2.11885} \times 100 = 14.60$

Hence, option (b) is the correct answer.

15. Total annual income = ₹(2.05 + 2.25 + 1.95 + 2 + 1.751.7) lakhs = ₹11.7 lakhs

Required percentage = $\frac{1.75}{11.7} \times 100 = 14.95 = 15$

Hence, option (e) is the correct answer.

Solutions to Q.16 to 20:

16. Number of women working in HR departments = 250 + 300 + 190 + 100 + 150 = 1265

Required percentage = $\frac{190}{1265} \times 100 = 15.02$

Hence, option (d) is the correct answer.

17. Average number of women working in finance department from all organization together = $\frac{(405+328+250+200+305+220)}{6} = 284.66$

18. Number of women employees in organization:

P → 155 + 250 + 320 + 405 + 150 + 50 = 1330

Q → 178 + 300 + 415 + 318 + 127 + 90 = 1428

R → 58 + 275 + 204 + 250 + 188 + 66 = 1041

S → 102 + 190 + 198 + 200 + 190 + 75 = 955

T → 110 + 100 + 256 + 305 + 250 + 85 = 1106

U → 60 + 150 + 225 + 220 + 168 + 35 = 858

Clearly, Organization U has the least number of employees.

Hence, option (c) is the correct answer.

19. Number of IT employees from organizations P, Q and U = 320 + 415 + 225 = 960

Number of marketing department employees from organizations P, S and T = 150 + 190 + 250 = 590

Required ratio = 96:59

Hence, option (e) is the correct answer.

20. Number of employees in production department of organization Q = 178

Therefore Number of women in merchandising department of organization Q = 178 + 90 = 268

Required percentage = $\frac{268}{1428} \times 100 = 18.77 = 19$

Hence, option (a) is the correct answer.

Exercise 4

Solutions to Q.1 to 5:

	No. of students	Boys	Girls
A	240	0	240
B	180	100	80
C	60	44	16
D	420	180	240
E	144	32	112
F	156	44	112
Total	**1200**	**400**	**800**

1. Number of boys in course A is minimum i.e., zero.

Hence, option (d) is the correct answer.

2. Number of girls in course C = 16.

Hence, option (b) is the correct answer.

3. Required ratio = 180:240 = 3:4.

Hence, option (a) is the correct answer.

4. Number of boys in each of courses C and F = 44.

Hence, option (c) is the correct answer.

5. Required percentage = $\frac{112-32}{32} \times 100 = \frac{80}{32} \times 100 = 250$.

Hence, option (a) is the correct answer.

Solutions to Q.6 to 10:

6. Number of computers manufactured by companies A and C together = (10 + 7.5) lakh = 17.5 lakhs

Number of computers sold by companies A and C together = (7.5 + 5) lakh = 12.5 lakhs

Hence required ratio = 17.5 : 12.5 = 7 : 5.

Hence, option (d) is the correct answer.

7. Average number of computers manufactured by all the companies together

$= \left(\frac{10+15+7.5+22.5+30}{5}\right)$ lakhs $= \left(\frac{85}{5}\right)$ lakhs

= 17 lakhs

Average number of computers sold by all the companies together $= \left(\frac{7.5+12.5+5+17.5+25}{5}\right)$ lakhs

$= \left(\frac{67.5}{5}\right)$ lakhs = 13.5 lakhs

Hence required difference = (17 – 13.5) lakhs = 3.5 lakhs = 350000.

Hence, option (c) is the correct answer.

8. Required percentage = $\frac{12.5}{15} \times 100 = 83.33\%$.

Hence, option (a) is the correct answer.

9. Required percentage = $\frac{22.5}{30} \times 100 = 75\%$.

Hence, option (e) is the correct answer.

10. Number of computers manufactured by all the companies together = 85 lakhs

Number of computers manufactured by company B = 15 lakhs

Hence required percentage = $\frac{15}{85} \times 100 = 17.65 = 18$

Hence, option (b) is the correct answer.

Solutions to Q.11 to 15:

11. Angle for commuting = 79.2° $\Rightarrow$ 360° = 45800

$\Rightarrow$ 79.2° = $\frac{45800}{360} \times 79.2 = ₹10076$.

Hence, option (a) is the correct answer.

12. Ratio of amount spent must be same as ratio of respective angles $= \frac{39.6°}{82.8°} = 11:23$

Hence, option (d) is the correct answer.

13. Total angle of amount spent on shopping & entertainment = 36° + 68.4° = 104.4°.

So, total expenditure $= \frac{104.4°}{360°} \times 45{,}800 = ₹13{,}282$.

Hence, option (b) is the correct answer.

14. Total angle for expenditure on grocery, entertainment & investment = 82.8° + 36° + 54° = 172.8°.

Angle for amount spent on commuting = 79.2°.

Required percentage $= \frac{172.8}{79.2} \times 100\% = 218\%$

Hence, option (e) is the correct answer.

15. Angle for amount spent on medicine = 39.6°.

Angle for amount spent on shopping = 68.4°.

Required percentage $= \frac{39.6}{68.4} \times 100\% = 57.89\%$.

Solutions to Q.16 to 20:

16. Total number of people travelling by rail = (350 + 300 + 300 + 275 + 300 + 275) millions = 1800 million.

Hence, option (d) is the correct answer.

17. Required difference = 350 – 275 = 75 millions.

Hence, option (c) is the correct answer.

18. Total number of people travelling by buses, rail and airlines in 2001 = 375 + 300 + 175 = 850 millions

Number of people travelling by buses = 375 millions.

Hence, Required percentage $= \frac{375}{850} \times 100 = 45$.

Hence, option (e) is the correct answer.

19. Required ratio = 375 : 275 = 15 : 11.

Hence, option (a) is the correct answer.

20. In the year 2003:

Number of people travelling by rail = 300 millions

Number of people travelling by air = 175 millions

Now, 50 % of people travelling by rail shift to air.

Hence required number of people = 175 + 150 = 325 million

Hence, option (e) is the correct answer.

Exercise 5

Solutions to Q.1 to 5:

Number of people working in night shifts:

IT industry $\rightarrow 40250 \times \frac{12}{100} = 4830$	Number of women $= 4830 \times \frac{20}{100} = 966$ and no. of men = 4830 – 966 = 3864
Sports industry $\rightarrow 40250 \times \frac{18}{100} = 7245$	Number of women $= 7245 \times \frac{20}{100} = 1449$ and no. of men = 7245 – 1449 = 5796
Call centre $\rightarrow 40250 \times \frac{32}{100} = 12880$	Number of women $= 12880 \times \frac{45}{100} = 5796$ and no. of men = 12880 – 5796 = 7084
Sales $\rightarrow 40250 \times \frac{8}{100} = 3220$	Number of women $= 3220 \times \frac{60}{100} = 1932$ and no. of men = 3220 – 1932 = 1288
Banking $\rightarrow 40250 \times \frac{14}{100} = 5635$	Number of women $= 5635 \times \frac{40}{100} = 2254$ and no. of men = 5635 – 2254 = 3381
Chemical industry $\rightarrow 40250 \times \frac{16}{100} = 6440$	Number of women $= 6440 \times \frac{15}{100} = 966$ and no. of men = 6440 – 966 = 5474

1. Required ratio = 7084:5796 = 11:9.

Hence, option (e) is the correct answer.

2. Number of women = 966 + 1449 + 5796 + 1932 + 2254 + 966 = 13363

Hence required average $= \frac{13363}{6} = 2227$.

Hence, option (a) is the correct answer.

3. Number of women = 3864 + 5796 + 7084 + 1288 + 3381 + 5474 = 26887.

Hence, option (d) is the correct answer.

4. Total number of working people = 40250

Number of women in sports industry = 1449

Hence required percentage $= \frac{1449}{40250} \times 100 = 3.6$.

Hence, option (b) is the correct answer.

5. Required difference = 26887–13363 = 13524.

Hence, option (c) is the correct answer.

Solutions to Q.6 to 10:

6. Number of girls in all departments = 140 + 300 + 180 + 250 + 240 = 1110

Hence required percentage $= \frac{300}{1110} \times 100 = 27\%$

Hence, option (e) is the correct answer.

7. Total number of boys in all the departments = 80 + 200 + 100 + 150 + 120 = 650

Number of girls = 1110

Hence required difference = 1110 – 650 = 460

Hence, option (d) is the correct answer.

8. Average number of boys = $\frac{650}{5}$ = 130

Hence, option (c) is the correct answer.

9. Number of all boys = 650

Number of boys from Anthropology department = 100

Hence required percentage = $\frac{100}{650} \times 100 = 15.38 = 15$

Hence, option (a) is the correct answer.

10. Number of girls from Philosophy department = 140

Number of girls from Psychology department = 240

Required ratio = 140:240 = 7:12

Hence, option (b) is the correct answer.

Solutions to Q.11 to 15:

11. Total sale of Hindi Newspapers = 5500 + 8500 + 4500 + 9500 + 5000 = 33000

Total sale of English Newspapers = 7500 + 9000 + 9500 + 7000 + 6500 = 39500

Required difference = 39500 – 33000 = 6500

Hence, option (b) is the correct answer.

12. Required percentage = $\frac{7500}{39500} \times 100 = 19$

Hence, option (e) is the correct answer.

13. Required ratio = 5500:9500 = 11:19

Hence, option (a) is the correct answer.

14. Total sale of English Newspaper in localities B and D = 9000 + 7000 = 16000

Total sale of English Newspaper in localities A, C and E = 7500 + 9500 + 6500 = 23500

Hence required percentage = $\frac{16000}{23500} \times 100 = 68\%$

Hence, option (c) is the correct answer.

15. Average sale of Hindi Newspaper = $\frac{33000}{5}$ = 6600

Hence, option (a) is the correct answer.

Solutions to Q.16 to 20:

16. Number of males:

HR department ⟶ $225 \times \frac{9}{25} = 81$

Marketing department = $275 \times \frac{3}{5} = 165$

IT department = $200 \times \frac{9}{40} = 45$

Finance department = $175 \times \frac{2}{5} = 70$

Production department = $375 \times \frac{11}{15} = 275$

Merchandising department = $350 \times \frac{4}{7} = 200$

Therefore Total number of males = 81 + 165 + 45 + 70 + 275 + 200 = 836

Hence, option (c) is the correct answer.

17. Number of females working in the HR department = $225 \times \frac{16}{25} = 144$

Hence, option (d) is the correct answer.

18. Required ratio = 375:350 = 15:14

Hence, option (a) is the correct answer.

19. Number of females in different departments:

HR department ⟶ 225 – 81 = 144

Marketing department ⟶ 275 – 165 = 110

IT department ⟶ 200–45 = 155

Finance department ⟶ 175 – 70 = 105

Production department ⟶ 375 – 275 = 100

Merchandising department ⟶ 350 – 200 = 150

Hence, option (b) is the correct answer.

20. Total number of employees = 225 + 275 + 200 + 175 + 375 + 350 = 1600

Hence, option (e) is the correct answer.

Exercise 6

Solutions to Q.1 to 5:

1. Required percentage = $\frac{42}{490} \times 100 = 9\%$

Hence, option (a) is the correct answer.

2. Required ratio = (120 – 30) : (30 + 30) = 90:60 = 3:2

Hence, option (b) is the correct answer.

3. Number of businessmen = 45 + 19 = 64

Hence required percentage = $\frac{64}{100} \times 100 = 10\%$

Hence, option (e) is the correct answer.

4. Required ratio = 280 : (180 + 30) = 280:210 = 4:3

Hence, option (c) is the correct answer.

5. Required percentage = $\frac{45}{(180+45)} \times 100 = \frac{45}{225} \times 100 = 20\%$

Hence, option (d) is the correct answer.

Solutions to Q.6 to 10:

6. Farmer A's earnings = ₹(350 × 30 + 150 × 22.5 + 250 × 18) = ₹(10500 + 3375 + 4500) = ₹18375

Hence, option (d) is the correct answer.

7. Average price of Bajra = ₹$\left(\frac{22+24.5+21+28+30}{5}\right)$ per kg = ₹25.10 per kg

Hence, option (a) is the correct answer.

8. Required ratio = 240 × 28 : 240 × 30 = 14:15

Hence, option (c) is the correct answer.

9. Farmer C's earnings = ₹(180 × 24 + 180 × 26 + 180 × 20.5) = ₹180(24 + 26 + 20.5) = ₹(180 × 70.5) = ₹12690

Hence, option (d) is the correct answer.

10. Required percentage = $\frac{25}{36} \times 100 = 69$

Hence, option (b) is the correct answer.

Solutions to Q.11 to 15:

11. Total number of adult females in colonies A, B and C together = $\left(\frac{1250\times36}{100}+\frac{2050\times30}{100}+\frac{1800\times42}{100}+\right)$

= (450 + 615 + 756) = 1821

Hence, option (b) is the correct answer.

12. Number of children in colony A = $\frac{1250\times30}{100} = 375$

Number of children in colony E = $\frac{1620\times30}{100} = 324$

Required percentage = $\frac{375}{324} \times 100 = 116$

Hence, option (b) is the correct answer.

13. Required ratio = 50:30 = 5:3

Hence, option (e) is the correct answer.

14. Average number of residents from all the colonies together = $\frac{1250+2050+1800+1150+1620}{5} = \frac{7870}{5}$

= 1574

Hence, option (d) is the correct answer.

15. Required difference = (38 – 26)% of 1150 = $\frac{12\times1150}{100}$

= 138

Hence, option (a) is the correct answer.

Solutions to Q.16 to 20:

16. Total number of employees in administration department = $\frac{2500\times12}{100} = 300$

Number of male employees = $\frac{7}{12} \times 300 = 175$

Total number of employees in printing department = $\frac{2500\times6}{100} = 150$

Number of male employees = $\frac{2}{3} \times 150 = 100$

Therefore Required ratio = 175:100 = 7:4

Hence, option (a) is the correct answer.

17. Required difference = 2500 × (18 – 14)% = $\frac{2500\times4}{100}$ = 100

Hence, option (c) is the correct answer.

18. Total number of employees in HR department = $\frac{2500\times16}{100} = 400$

Hence no. of males = $\frac{5}{8} \times 400 = 250$ and number of females = 400 – 250 = 150

Number of employees in marketing department = $\frac{2500\times15}{100} = 375$

Number of males = $\frac{7}{15} \times 375 = 175$

Number of females = 375 – 175 = 200

Therefore Required ratio = (250 + 175) : (150 + 200) = 425:350 = 17:14

Hence, option (d) is the correct answer.

19. Number of employees in HR department = 16% of 2500 = $\frac{16}{100}\times2500$

= 400.

Number of female employees in HR department = $\frac{3}{8}$ of total employee.

= 3/8 × 400 = 150

Hence, option (d) is the correct answer.

20. Total number of employees in logistics department = $\frac{2500\times11}{100} = 275$

Number of males = $\frac{6}{11} \times 275 = 150$

Number of females = 275 – 150 = 125

Hence required difference = 150 – 125 = 25

Hence, option (b) is the correct answer.

Exercise 7

Solutions to Q.1 to 5

	Total Players	Female	Male
Rugby	546	346	200
Lawn Tennis	1050	610	440
Hockey	420	120	300
Cricket	1470	670	800
Football	714	454	260
Total	**4200**	**2200**	**2000**

1. Average number of players who play Football and Rugby = [(17 + 13) % of 4200]

$= 4200 \times \frac{30}{100} = 1260.$

Hence, option (d) is the correct answer.

2. Number of players who play Rugby = $4200 \times \frac{13}{100}$ = 546

Number of female players who play Rugby = $2000 \times \frac{10}{100} = 200$

Hence Number of male players who play Rugby = 546 – 200 = 346

Number of female players who play Lawn Tennis = $2000 \times \frac{22}{100} = 440$

Hence required difference = 440 – 346 = 94.

Hence, option (a) is the correct answer.

3. Number of female cricketers = $2000 \times \frac{40}{100} = 800$

Number of male Hockey players = $\frac{4200 \times 10}{100} - \frac{2000 \times 15}{100} = 420 - 300 = 120$

Hence Required ratio = 800:120 = 20:3.

Hence, option (c) is the correct answer.

4. Number of male players who play Football, Cricket and Lawn Tennis

= (17 + 35 + 25)% of 4200 – (13 + 40 + 22)% of 2000

$= 4200 \times \frac{77}{100} - 2000 \times \frac{75}{100} = 3234 - 1500 = 1734$

Hence, option (b) is the correct answer.

5. Number of male players who play Rugby = $4200 \times \frac{13}{100} - 200 = 346$

Number of players who play Lawn Tennis = $4200 \times \frac{25}{100} = 1050$

Hence required percentage = $\frac{346}{1050} \times 100 = 33$

Hence, option (a) is the correct answer.

Solutions to Q.6 to 10:

6. Number of articles manufactured by:

Unit III ⟶ (76 + 45 + 55 + 57 + 82 + 38) thousands = 353 thousands

Units V ⟶ (46 + 36 + 34 + 48 + 58 + 60) thousands = 282 thousands

Hence Required ratio = 353:282

Hence, option (a) is the correct answer.

7. Required average = $\frac{(12+10+18+15+13+22)}{6}$ thousands = $\frac{90}{6}$ = 15 thousands

Hence, option (d) is the correct answer.

8. It was in the year 2000.

Hence, option (e) is the correct answer.

9. Number of articles manufactured in 2001 = (44 + 56 + 38 + 40 + 60) thousands = 238 thousands

Number of defective items = (15 + 22 + 32 + 15 + 11) thousands = 95 thousands

Hence Required percentage = $\frac{95}{238} \times 100 = 39.9 = 40.$

Hence, option (b) is the correct answer.

10. Percentage increase in 1999 = $\frac{15}{50} \times 100 = 30\%$

Percentage decrease in 2001 = $\frac{26}{70} \times 100 = 37.14\%$

Hence, percentage decrease was highest in 2001.

Hence, option (b) is the correct answer.

Solutions to Q.11 to 15:

	Total Males	Total Females	Total Population	Adults	Children	Male Children	Female Children
A	250	350	600	450	150	60	90
B	400	150	550	330	220	165	55
C	300	275	575	483	92	23	69
D	280	300	580	435	145	116	29
E	180	250	430	258	172	86	86
F	325	300	625	475	150	69	81
Total	**1735**	**1625**	**3360**	**2431**	**929**	**519**	**410**

11. Number of children:

Society A ⟶ $600 \times \frac{25}{100} = 150$

Number of female children = $150 \times \frac{60}{100} = 90$

Number of male children = 150 – 90 = 60

Society B $\rightarrow 550 \times \frac{40}{100} = 220$

Number of female children $= 220 \times \frac{25}{100} = 55$

Number of male children $= 220 - 55 = 165$

Society C $\rightarrow 575 \times \frac{16}{100} = 92$

Number of female children $= 92 \times \frac{75}{100} = 69$

Number of male children $= 92 - 69 = 23$

Society D $\rightarrow 580 \times \frac{25}{100} = 145$

Number of female children $= 145 \times \frac{20}{100} = 29$

Number of male children $= 145 - 29 = 116$

Society E $\rightarrow 340 \times \frac{40}{100} = 172$

Number of female children $= 172 \times \frac{50}{100} = 86$

Number of male children $= 172 - 86 = 86$

Society F $\rightarrow 625 \times \frac{24}{100} = 150$

Number of female children $= 150 \times \frac{54}{100} = 81$

Number of male children $= 150 - 81 = 69$

Number of adult females $= (350 + 150 + 275 + 300 + 250 + 300) - 410 = 1625 - 410 = 1215$

Number of female children $= 90 + 55 + 69 + 29 + 86 + 81 = 410$

Hence required ratio $= 1215:410 = 243:82$

Hence, option (a) is the correct answer.

12. Using the data obtained in the previous question:

Number of all female children = 410.

Hence, option (c) is the correct answer.

13. Number of adult males in societies A and B $= (250 - 60) + (400 - 165) = 190 + 235 = 425$

Number of adult males in societies E and F $= (180 - 86) + (325 - 69) = 94 + 256 = 350$

Required ratio $= 425:350 = 17:14$

Hence, option (d) is the correct answer.

14. Number of all members $= (250 + 350) + (400 + 150) + (300 + 275) + (280 + 300) + (180 + 250) + (325 + 300) + 150 + 220 + 92 + 145 + 172 + 150 = 4289$

Hence, option (e) is the correct answer.

15. Required difference $= 165 - 69 = 96$

Hence, option (c) is the correct answer.

Solutions to Q.16 to 20

16. Total population of state B in all the years $= (50 + 40 + 60 + 70 + 80 + 90 + 100)$ lakhs $= 490$ lakhs

Population of state B in 2002 = 40 lakhs

Hence required percentage $= \frac{40}{490} \times 100 = 8.16\%$

Hence, option (e) is the correct answer.

17. Required ratio $= (40 + 45 + 60):(80 + 90 + 110) = 145:280 = 29:56$

Hence, option (c) is the correct answer.

18. It is obvious from the graph.

Hence, option (a) is the correct answer.

19. Percentage increase $= \frac{70-60}{60} \times 100 = \frac{50}{3} = 16\frac{2}{3}$

Hence, option (b) is the correct answer.

20. Average population of the state

$A = \left(\frac{40+45+60+50+70+65+80}{7}\right)$ Lakhs $= \frac{410}{7}$ lakhs $= 58$ lakhs

Hence, option (d) is the correct answer.

EXERCISE 8

Solutions to Q.1 to 5:

1. F3 to W2 to R6 to C1 is the lowest $= 20 + 30 + 10 =$ ₹60.

Hence, option (d) is the correct answer.

2. F3 to W2 to R6 to C2 is the minimum $= 20 + 30 + 15 =$ ₹65.

Hence, option (d) is the correct answer.

4. F2 – W3 – R2 – either C2/C4. Hence two different values possible.

Hence, option (d) is the correct answer.

5. There can be two values of i = 3/5, one value of j = 2, one value of k = 6 and one value of l = 1. Hence two different sums are possible.

Hence, option (d) is the correct answer.

Solutions to Q.6 to 10:

6. Obviously cannot be inferred. (a) seems probable, but number of vehicles/agents need not be increasing. There can be other reasons also like reduction in the efficiency of the vehicle etc.

Hence, option (d) is the correct answer.

7.

		1991		2001		2011	
		World	Asia	World	Asia	World	Asia
Total energy		150	10	200	20	250	33.3
Naphtha	Value	30	0.5	40	2.5	50	5
	Proportion	20%	5%	20%	12.50%	20%	15.01
Solid fuels	Value	50	4	60	5	75	10
	Proportion	33.30%	40%	30%	25%	30%	30.03
Petrol	Value	50	4	70	10	80	15
	Proportion	33.30%	40%	35%	50%	32%	45.04

Hence, solid fuels and Petrol combined constitute more than 60 percent of total energy in both the world and Asia for the given period.

Hence, option (b) is the correct answer.

8. It can be seen from the table that Petrol is the fuel whose proportion in the total energy demand increases during 1991–2001 and decreases during 2001–2011 for both the world and Asia.

Hence, option (a) is the correct answer.

9. For the answer choices given and for Asia we can take make the following table.

		1991	2001	2011
	Total energy	10	20	33
Naphtha	Value	0.5	2.5	5
	Proportion	5%	12.50%	15.15%
Solid fuels	Value	4	5	10
	Proportion	40%	25%	30.30%
Nuclear Fuel	Value	0.5	1	1.3
	Proportion	5%	5%	3.90%
Hydro Energy	Value	1	1.5	2
	Proportion	10%	7.50%	6.06%

Hence, we can see that the proportion of Hydro Energy goes on decreasing over the period.

Hence, option (d) is the correct answer.

10. For answer choices given and for the worlds, we can make the following table.

		1991	2001	2011
	Total energy	150	200	250
Naphtha	Value	30	40	50
	Proportion	20%	20%	20%
Solid Fuels	Value	50	60	75
	Proportion	33%	30%	30%
Nuclear Fuel	Value	10	20	25
	Proportion	6.66%	10%	10%
Hydro Energy	Value	10	10	20
	Proportion	6.66%	5%	8%

Hence, we can see that the proportion of Naphtha remains constant over the given period.

Hence, option (a) is the correct answer.

Solutions to Q.11 to 14:

From the given information the following table can be prepared:

	Physics	Chemistry	Maths	English	Total
Amit	80	70	60	80	290
Binit	60	60	60	60	240
Charu	40	50	60	70	220
Dilip	90	80	70	60	300

Now all the questions can be answered.

11. (c) **12.**(a) **13.** (d) **14.** (c).

15. Statement A: Success rate of moving from written test to interview for male in 2003 = $\frac{637}{60133}\times 100$ & for women it is $\frac{399}{40763}\times 100$. It is clear for males it is more than 1% & for women it is less than 1% (we must avoid actual calculation)

Statement B: Success rate of moving from written test to interview for females in 2003 = $\frac{399}{40763}\times 100$ & for year 2002 it is $\frac{138}{15389}\times 100$. We can easily observe without actual calculation that it was more in 2002 as compared to 2003.

So, both Statement A & Statement B are wrong.

Hence, option (d) is the correct answer.

16. Statement A: Proportion of females & male selected for course as compared to total females & males who bought application form in 2002 is $\frac{48}{19236}$ & $\frac{171}{61205}$ respectively clearly proportion is more for males.

Statement B: Success rate of males & females for those who were called for interview in 2002 is $\frac{171}{684}$

& $\frac{48}{135}$ respectively. Clearly success rate of female is higher.

So, both Statement A and Statement B are wrong.

Hence, option (a) is the correct answer.

17. Statement A: The % of females absentees in written-test in 2002 & 2003 are $\frac{19236-15389}{19236}\times 100$ = 20% & $\frac{45292-40763}{45292}\times 100 \simeq 10\%$. Clearly Statement A is correct.

Statement B: The % of male absentees in 2003 = $\frac{63298-60123}{63298}\times 100\% \simeq 5\%$ clearly Statement B is wrong.

Hence, option (a) is the correct answer.

Solutions to Q.18 to 20:

18. The minimum number of males (or females) for any group on the basis of number of children = 0 (if lower age is more than 40)

= All (if upper age is less than 40)

= 1 (if lower age is less than 40 & upper)

So, minimum possible number of people below 40 age is 9.

Hence, required percentage = 9/3 × 100% = 30%.

Hence, option (d) is the correct answer.

19. $\frac{23}{30} \times 100 = 76.67\ \%$.

Hence, option (c) is the correct answer.

20. $\frac{4}{30} \times 100 = 13.33\ \%$.

Hence, option (c) is the correct answer.