36. TABULATION

This section comprises of questions in which certain data regarding common disciplines as production over a period of a few years: imports, exports, incomes of employees in a factory, students applying for and qualifying a certain field of study etc. are given in the form of a table. The candidate is required to understand the given information and thereafter answer the given questions on the basis of comparative analysis of the data.

Thus, here the data collected by the investigator are arranged in a systematic form in a table called the *tabular form.* In order to avoid some heads again and again, tables are made consisting of horizontal lines called *rows* and vertical lines called columns with distinctive heads, known as *captions*. Units of measurements are given with the captions.

 SOLVED EXAMPLES

 The following table gives the sales of batteries manufactured by a *company* lit *the years.* Study *the table and answer the questions that follow:*

(S.B.I.P.O. 1998)

 NUMBER OF DIFFERENT TYPES OF BATTERIES SOLD BY A COMPANY OVER THE YEARS (NUMBERS _N THOUSANDS)

TYPES OF BATTERIES

Year	4AH	7AH	32AH	35AH	55AH	T0TAL
1992	75	144	114	102	108	543
1993	90	126	102	84	426	528
1994	96	114	75	105	135	525
1995	105	90	150	90	75	510
1996	90	75	135	75	90	465
1997	105	60	165	45	120	495
1998	115	85	160	100	145	605

1. The total sales of all the seven years is the maximum for which battery ?
    (a) 4AH   (b) 7AH   (c) 32AH   (d) 35AH   (e) 55AH
2. What is the difference in the number of 35AH batteries sold in 1993 and 1997 ?
    (a) 24000   (b) 28000   (c) 35000   (d) 39000   (e) 42000
3. The percentage of 4AH batteries sold to the total number of batteries sold was maximum in the year:
    (a) 1994   . (b) 1995   (c) 1996   (d) 1997   (e) 1998
4. In the case of which battery there was a continuous decrease in sales from 1992 to 1997 ?
    (8) 4AH   (b) 7 AH   (c) 32AH   (d) 35AH   (e) 55AH
5. What was the approximate percentage increase in the sales of 55AH batteries in 1998 compared to that in 1992 ?
    (a) 28%   (b) 31%   (c) 33%   (d)34%   (e)37%

Sol. 1. *(c)* : The total sales (in thousands) of all the seven years for various batteries are:
For 4AH = 75 + 90 + 96 + 105 + 90 + 105 + 115 = 676
For 7AH = 144 + 126 + 114 + 90 + 75 + 60 + 85 = 694
For 32AH = 114 + 102 + 75 + 150 + 135 + 165 + 160 = 901
For 35 AH= 102 + 84 + 105 + 90 + 75 + 45 + 100 = 601
 For 55 AH= 108 + 126 + 135 + 75 + 90 + 120 + 145 = 799.
Clearly, sales are maximum in case of *32AH* batteries.
2. *(d* : Required difference = [(84 - 45) x 1000] = 39000.
3. *(d)* : The percentages of sales of 4AH batteries to the total sales in different years are:

For 1992 =(75*100/543)%=13.81%

For 1993=(90*100)/528%=17.05%

For 1994=(96*100/465)%=19.35%

For 1995=(105*100/495)%=20.59%

For 1996=(96*100/465)%=19.35%

For 1997=(105*100/495)%=21.21%

For 1998=(115*100/605)%=19.01%

Clearly, the percentage is maximum in 1997.
4. (b) : From the table it is clear that the sales of 7AH batteries have

been decreasing continuously from 1992 to 1997.

5. (d) : Required Percentage =(145-108)/108)*100 %=34.26%=34%.

Ex 2: Study the following table carefully and answer these questions:

NUMBER OF CANDIDATES APPEARED AND QUALIFIED IN A COMPETITIVE
EXAMINATION FROM DIFFERENT STATES OVER THE   YEAR

	1997		1998		1999		2000		2001	
	App.	Qual.	App.	Qal.	App.	Qual.	App.	Qual.	App.	Qual
M	5200	720	8500	980	7400	850	6800	775	9500	1125
N	7500	840	9200	1050	8450	920	9200	980	8800	1020
P	6400	780	8800	1020	7800	890	8750	1010	9750	1250
Q	8100	950	9500	1240	8700	980	9700	1200	8950	995
R	7800	870	7600	940	9800	1350	7600	945	7990	885

1. Combining the states P and Q, together in 1998, what is the percentage
of the candidates qualified to that of the canditates appeared?
    (8) 10.87% *(b)* 11.49%   *(c)* 12.35%   (d) 12.54% *(e)* 13.50%

2.The percentage of the total number of qualified candidates to the total
number appeared candidates among all the five states in 1999 is :
    (a) 11.49% *(b)* 11.84%   *(c)-* 12.21% (d) 12.57%*(e)* 12.7a1

3. What is the percentage of candidates qualified from State N for all the
years together, over the candidates appeared from State N during all the years
together?
    (a) 12.36% *(b)* 12.16% *(c)* 11.47% (d) 11.15%(e)None of these

4. What is the average of candidates who appeared from State Q during the
given yeas?
    (8) 8700   *(b)* 8760   *(c)* 8810   (d) 8920   *(e)* 8990

5 . In which of the given years the number of candidates appeared from
State P has maximum percentage of qualified candidates?
    (8) 1997   *(b)* 1998   *(c)* 1999   (d) 2000   (e) 2001

6. Total number of candidates qualified from all the states together in 1997

is approximately what percentage of the total number of candidates qualified from all the states together in 1998 ?

  (8) 72%   *(b)* 77%   *(c)* 80%   (d) 83%   *(e)* 86%

Sol.1.(c)Required Percentage=$\frac{(1020+1240)}{(8800+9500)}$ *100%=(2260*100)/18300%

$$=12.35\%$$

Required Percentage= $\frac{(850+920+890+980+1350)}{(7400+8450+7800+8700+9800)}$ *100%

$$=(4990*100)/42150\%$$

$$=11.84\%$$

(e)   :   Required   Percentage=(84-+1050+920+980+1020)/(7500+9200+8450+9200+8800)*100%

$$=(4810*100)/43150* \%$$

$$=11.15\%$$

4. (e) Required average =(8100+9500+8700+9700+8950)/5

$$=44950/5$$

$$=8990$$

5. (e) : The percentages of candidates qualified to candidates appeared from State P during different years are:

For 1997= $\frac{780}{6400}$ * 100% =12.19%

for 1998 = $\frac{1020*100}{8800}$ %=11.59%

For 1999 = $\frac{890*100}{7800}$ %=11.41%;

For 2000 = $\frac{1010* 100}{8\ 750}$ % = 11.54%.

For 2001=$\frac{1250*100}{9750}$ %=   12.82%

     ∴ Maximum percentage is for the year 2001.

6. *(c)* : Required Percentage $= \dfrac{(720 + 840 + 780 + 950 + 870)}{980 + 1050 + 1020 + 1240 + 940} \times 100$

$= 80\%$

Ex. 3. *The following table gives the percentage of marks obtained by* seven *students* in six , *different subjects* in an *examination. Study the table* and answer *the questions based* on *it. The numbers* in *the brackets give the maximum marks* in *each subject.*
(Bank P.O. 2003)

(Max. marks) Student	Maths (160)	Chemistry (130)	Physics (120)	Geography (100)	History (60)	Computer Science (40)
Ayush	90	50	90	60	70	80
Aman	100	80	80	40	80	70
Sajal	90	60	70	70	90	70
Rohit	80	65	80	80	60	60
Muskan	80	65	85	95	50	90
Tanvi	70	75	65	85	40	60
Tharun	65	35	50	77	80	80

1. What was the aggregate of marks obtained by Sajal in all the six subjects?
   (a) 409   *(b)* 419   *(c)* 429   (d) 439   *(e)* 449
2. What is the overall percentage of Thrun?
   (a) 52.5%   *(b)* 55%   *(c)* 60%   (d) 63%   *(e)* 64.5%
3. What are the average marks obtained by all the seven students in Physics? (rounded off to two digits after decimal)
   (a) 77.26   *(b)* 89.14   *(c)* 91.37   (d) 96.11   *(e)* 103.21
4. The number of students who obtained 60% and above marks in all the subjects is :
   (a) 1   *(b)* 2   *(c)* 3   (d) None   *(e)* None of these
6. In which subject is the overall percentage the best?
   (a) History *(b)* Maths *(c)* Physics   (d) Chemistry   *(e)* Geography
Sol. 1.. *(e)* : Aggregate marks obtained by Sajal

= [(90% of 150) + (60% of 130) + (70% of 120) + (70% of 100) +
(90% of 60) + (70% of 40)] = 135 + 78 + 84 + 70 + 54 + 28 = 449.
    2. *(c)* : Aggregate marks obtained by Tarun
= [(65% of 150) + (35% of 130) + (50% of 120) + (77% of 100) + (80% of
60) + (80% of 40)] = 97.5 + 45.5 + 60 + 77 + 48 + 32 = 360.
Total maximum marks (of all the six subjects)
= (150 + 130 + 120 + 100 + 60 + 40) = 600.

Overall percentage of Tarun = $\dfrac{360 \times 100}{600}$ % = 60%.

3. *(b)* : Average marks obtained in Physics by all the seven students

= $\dfrac{1}{7}$ [(90% of 120) + (80% of 120) + (70% of 120) + (80% of 120)

    + (85% of 120) + (65% of 120) + (50% of 120)]

= $\dfrac{1}{7}$ [(90 + 80 + 70 + 80 + 85 + 65 + 50)% of 120]

= $\dfrac{1}{7}$ [520% of 120] = 89.14.

4. *(b)* : From the table it is clear that Sajal and Rohit have 60% or more marks
in each of the six subjects.

6. *(b)* : We shall find the overall percentage (for all the seven students) with respect to each subject.
The overall percentage for any subject is equal to the average of percentages obtained by all the seven students since the maximum marks for any subject is the same for all the students.
Therefore, overall percentage for:
(i) Maths = $[\dfrac{1}{7}(90+100+90+80+80+70+65)]$%

= $[\dfrac{1}{7}(575)]$% = 82.14%.

(ii) Chemistry = $[\dfrac{1}{7}(50 + 80 + 60 + 65 + 65 + 75 + 35)]$%

= $[\dfrac{1}{7}(430)]$% = 61.43%.

(iii) Physics = [$\underline{1}$(90 + 80 + 70 + 80 + 85 + 65 + 50)]%
         7

    =[$\underline{1}$ (520)]% = 74.29%.
       7

(iv) Geography = [$\underline{1}$(60 + 40 + 70 + 80 + 95 + 85 + 77)]%
          7

      = [$\underline{1}$ (507)}_ = 72.43%.
         7

(v) History = [$\underline{1}$ (70 + 80 + 90+ 60 + 50 + 40 + 80)]%
         7

    =$\underline{1}$[(470)]% = 67.14%.
       7

(vi*)* Computer Science = [$\underline{1/7}$ (80 + 70 + 70 + 60 + 90 + 60 + 80)]%

= [$\underline{1}$ (510)]% = 72.86%.
     7

Clearly; this. percentage is highest for Maths.

ex.4. *Study the following table carefully and answer tbe questions given below:*(Bank P.O. 2001)

CLASSIFICATION OF 100 STUDENTS BASED ON THE MARKS OBTAINED BY THEM IN PHYSICS AND CHEMISTRY IN AN EXAMINATION

Marks out Of 50 Subject	40 and above	30 and Above	20 and above	10 and above	0 and above
physics	9	32	80	92	100
chemistry	4	,21	66	,.81,	100
(aggregate Average)	7	27	73	87	100

1. The number of students scoring less than 40% marks in aggregate is :
  (a) 13   (b) 19   (c) 20   (d) 27   (e) 34
2. If at least 60% marks in Physics are required for pursuing higher studies in Physics,how many students will be eligible to pursue higher studies in Physics?
  (a) 27   (b) 32   (c) 34   (d)41   (e) 68
3. What is the difference between the number of students passed with 30 as

cut-off marks in Chemistry and those passed with :JUas cut-off marks in aggregate?

(a) 3   (b) 4   (c) 5   (d) 6   (e) 7

4. The percentage of the number of students getting at least 60% marks in Chemistry over those getting at least 40% marks in aggregate, is approximately:

(a) 21%   (b) 27%   (c) 29%   (d) 31%   (e) 34%

5. If it is known that at least 23 students were eligible for a Symposium on Chemistry the minimum qualifying marks in Chemistry for eligibility to Symposium would lie in the range:

(a) 40-50   (b) 30-40   (c) 20-30   (d) Below 20

Sol. 1. (d) : We have 40% of 50 $= (\frac{40 \times 50}{100}) = 20$.

∴ Required number = Number of students scoring less than 20 marks in aggregate
= 100 - number of students scoring 20 and above marks in aggregate = 100 - 73 = 27.

2. (b) : We have 60% of 50 $= (\frac{60 \times 50}{100}) = 30$.

∴ Required number = Number of students scoring 30 and above mark in Physics = 32.

3. (d) : Required difference = (Number of students scoring 30 and above in mark in Chemistry) (Number of students scoring 30 and above marks in aggregate) = 27 - 21 = 6.

4. (c) : Number of students getting at least 60% marks in Chemistry
= Number of students getting 30 and above marks in Chemistry = 21.
Number of students getting at least 40% marks in aggregate
= Number of students getting 20 and above marks in aggregate = 73.
∴ Required Percentage $= (\frac{21}{73} \times 100)\% = 28.77\% \approx 29\%$.

6. (c) : Since 66 students get 20 and above marks in Chemistry and out of these 21 students get 30 and above marks, therefore to select top 35 students in Chemistry, the qualifying marks should lie in the range 20-30.

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