UNIT – 4 AVERAGE DUE DATE

LEARNING OUTCOMES

After studying this unit, you would be able to:

- Understand what is average due date and how to choose 0 (zero) day for calculating average due date.

- Learn the technique of calculating due date

- Learn calculation of average due date where amount is lent in various instalments.

- Calculate average due date for determining interest on drawings.

- Familiarize with the steps involved in calculation of average due date where amount is lent in one instalment but repayment is done in various instalments. Also understand days of grace and learn the technique of maturity date by counting the days of grace.

UNIT OVERVIEW 👉

USES OF AVERAGE DUE DATE

For calculatyion of Interest on drawings of partners	Where amount is lent in various Instalments	Where amount is lent in one Instalments

CALCULATION OF DUE DATE

If Bill/Invoice is payable

on a specific date	at a stated no. of months(s)/days after date
Due date will be on that specific date	Due date will be on tat date which comes after adding stated number of months/days to the date of invoice/bill+3 days of grace

4.1 INTRODUCTION

In business enterprises, a large number of receipts and payments by and from a single party may occur at different points of time. To simplify the calculation of interest involved for such transactions, the idea of average due date has been developed. Where a person owing several amounts due on different dates, desires to pay the total amount payable by him/her on a particular date, so that neither the debtor nor the creditor stands to lose or gain anything by way of interest, that date is known as average due date. Average Due Date is weighted average of due dates of various transactions where amount of each transaction is used as weight. The unique feature of this approach is that the party making payment neither suffers any loss nor gains anything by this arrangement of making a single payment. Average due date is generally used in following circumstances:

(i) For calculating interest on drawings of partners;

(ii) For settling accounts between principle and agent;

(iii) For settling contra accounts e.g. where parties sell goods to each other;

(iv) For making lump sum payment against various bills drawn on different dates with different due dates;

In this unit, we shall elaborate the underlying principle of determining average due date covering the cases where the amount is lent in various instalments but repayment is made in a single instalment as well as where the amount is lent in one instalment but repayment is made by various instalments. The technique of average due date is also useful for calculating interest on drawings made by the proprietors or partners of a business firm at several points of time.

Average due date: It is the mean or equated date on which a single total payment may be made in lieu of different payments on different dates without any loss to either party.

Where payment is not made on the average due date, the party receiving the amount charges interest for as many days as the payment is delayed from the average due date.

The formula for calculating average due date is as follows:

$$\text{Average due date} = \text{Base date} \pm \frac{\text{Total of the products}}{\text{Total of the amounts}}$$

Points to be noted:

1. Selection of base date/ zero date: Such a date may be the due date of the first transaction or the due date of the last transaction or any other due date between the first and the last but preferably earlier due date may be taken.

2. While ascertaining the number of intervening days (plus or minus) between the base date and the due date of each transaction ignore the first date and include the last day.

3. If due date is in fraction, round it off.

4. If amount is paid before due date, rebate is given.

5. If amount is paid after due date, then interest is charged.

6. Whenever there is a sale of goods by two persons to each other on different dates, the formula for calculating average due date becomes:

$$\text{Base date} \pm \frac{\text{Difference in products}}{\text{Difference in amounts}}$$

4.2   CONCEPT OF DUE DATE (DATE OF MATURITY)

The due date of a bill of exchange/invoice is the date when the amount of a bill/invoice is payable by the drawee/ creditor to drawer/ debtor.

4.2.1 Calculation of Due Date after Taking into Consideration Days of Grace

A Bill of exchange or promissory note matures on the date on which it falls due. And every promissory note or bill of exchange (other than those payable on demand or at sight or on presentment) falls due on the third day after on which it is expressed to be payable.

Examples

(i)   A bill dated 30th September is made payable three months after date. It falls due on 2nd January.

(ii)   Due Date=30 Dec

(iii)   Maturity date= 30 Dec +3 =2 Jan

(ii)   A note dated 1st January is payable one month after sight. It falls due on 4th February.

4.2.2 Calculating Due Date of Bill or Note Payable Few Months after Date or Sight

When the bill is made payable at a stated number of months after date or after sight or after certain events, then the period stated shall be held to terminate on the date of the month which corresponds with the day on which the instrument is dated. If the month in which the period would terminate has no corresponding day, the period shall be held to terminate on the last day of such month.

Example: A Bill due on 29th January, 2015 is made payable at one month after date. The due date of instrument is 3rd day after 28th February, i.e., 3rd March (in 2015, February is of 28 days only).

4.2.3 Calculation of Due Date when the Maturity Day is a Holiday

When the day on which a promissory note or bill of exchange is at maturity (after including days of grace) is a public holiday, the instrument shall be deemed to be due on the preceding business day. The expression "public holiday" includes Sundays and other days declared by the Central Government by notification in the official gazette, to be a public holiday. And now if the preceding day is also a public holiday, it will fall on the day preceding the previous day. But if the holiday happens to be emergency or unforeseen holiday then the date shall be the next following day.(Ref: Negotiable Instruments Act 1881).

```
┌─────────────────────────────────────────────────────────────┐
│   If Maturity Day is holiday (after including days of grace)  │
└─────────────────────────────────────────────────────────────┘
        │                                          │
┌──────────────────────────────┐    ┌──────────────────────────────┐
│ Public Holiday (including     │    │ Emergency or unforeseen       │
│ Sundays & other days declared │    │ holiday                       │
│ by Central Government by      │    │                               │
│ notification in the official  │    │                               │
│ gazette                       │    │                               │
└──────────────────────────────┘    └──────────────────────────────┘
        │                                          │
┌──────────────────────────────┐    ┌──────────────────────────────┐
│ Due date = Preceding Business │    │ Due date = Next following day │
│ day                           │    │                               │
└──────────────────────────────┘    └──────────────────────────────┘
        │
┌──────────────────────────────┐
│ If Preceding day is also      │
│ Public Holiday                │
└──────────────────────────────┘
        │
┌──────────────────────────────┐
│ Due date =Day Preceding the   │
│ previous day                  │
└──────────────────────────────┘
```
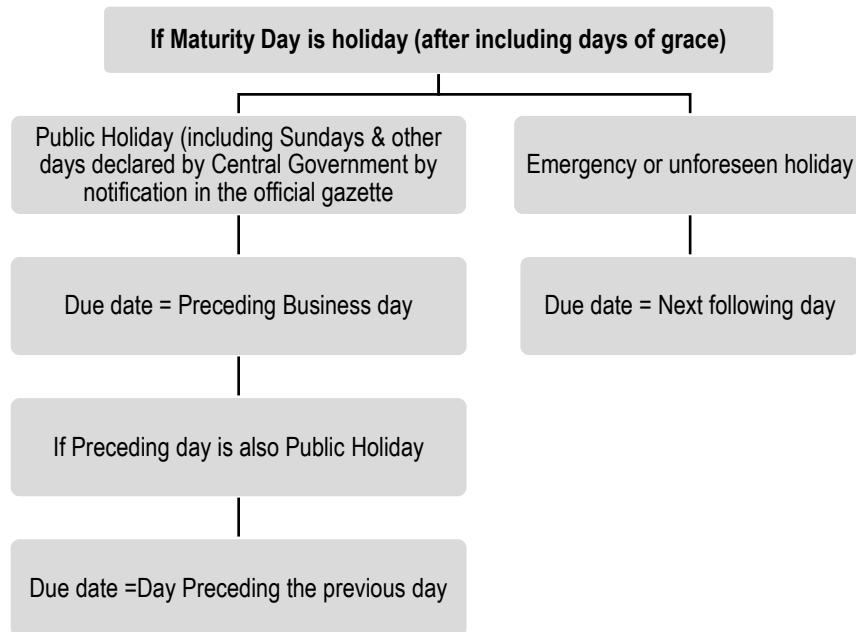
4.3   TYPES OF PROBLEMS

Case 1: Learn calculation of average due date where one Party is involved

Case 2: Learn calculation of average due date where inter transactions between 2 Parties are involved

Case 3: Learn calculation of average due date where amount is repaid in Instalments

Case 4: Learn calculation of average due date for determining interest on drawings.

Case 1: Learn calculation of average due date where one Party is involved

Calculation of average due date

Under this type of problem, average due date is calculated as follows :

a. Take the earliest due date as starting day or base date or "O" day for convenience. Any date whatsoever, may also be taken as "O" day.

b. Consider the number of days from base date up to each due date. Calculations may also be made in month.

c. Multiply the number of days by the corresponding amounts.

d. Add up the amount and products.

e. Divide the "Product total" by "Amount total" and get result approximately upto a whole number.

f. This number is added in the base date to find the average due date.

Thus the formula for the average due date can be under.

$$\text{Average due date} = \text{Base date} \pm \frac{\text{Total of products}}{\text{Total amounts}}$$

Note: For calculation of no. of days, no. of days in each respective month involved are to be considered individually.

(?) ILLUSTRATION 1

The followings are the amounts due on different dates in between the same parties:

Amount	Due Date
₹	
500	3rd July
800	2nd August
1,000	11th September

Suggest a date on which all the bills may be paid out without any loss of interest to either party.

(☑) SOLUTION

Considering 3rd July as the starting day the following table is prepared:

Due Dates	Amount	No. of Days from 3rd July	Products
3rd July	500	0	0
2nd August	800	30	24,000
11th September	1,000	70	70,000
	2,300		94,000

$$\text{Average Due Date} = 3^{rd} \text{ July } \frac{94,000}{2,300}$$

$$= \text{3rd July} + 41 \text{ days} = \text{13th August}$$

Loss of Interest: 13th August to 11th September

Assuming 5% is interest rate, the debtor loses interest due to early payment of ₹ 1,000 for 29 days (from 13th August to 11th September) i.e., ₹ 4. $1000 \times 29/365 \times 5/100$

Gain of Interest: 3rd July to 13th August and 2 August to 13th August

He however, gains interest, due to late payment on ₹ 500 for 41 days from 3rd July to 13th August and on ₹ 800 for 11 days i.e. ₹ 2.80 + ₹ 1.20, i.e., ₹ 4.

Thus, the debtor neither loses nor gains by payment of all the amounts on 13th August.

It should be noted that in calculating the number of days only one of the dates, either the starting date or the due date is to be counted.

In the same manner, bill due to one party may be cancelled as against bills of same amount due from the same party after adjustment of interest for the period elapsing between the two average due dates. Instead of payment of several bills on the same date as above, other bill starting from the average due date for agreed period together with interest for the period may be accepted.

ILLUSTRATION 2

The following amounts are due to X by Y. Y wants to pay off (a) on 18th March or (b) on 14th July. Interest rate of 8% p.a. is taken into consideration.

Due Dates	₹
10th January	500
26th January (Republic Day)	1,000
23rd March	3,000
18th August (Sunday)	4,000

Determine the amount to be paid in (a) and in (b).

SOLUTION

Taking 10th January as the base date

Due Date (Normal)		Due Date (Actual)	No. of days from 10th January….	Amount ₹	Product
10th January		10th January	0	500	0
26th January		25th January	15	1,000	15,000
23rd March		23rd March	72	3,000	2,16,000
18th August		17th August	219	4,000	8,76,000
				8,500	11,07,000

Average Due Date = 10th Jan. + $\frac{11,07,000}{8,500}$ = 10th Jan + 130 days = 20th May

January	21
February	28
March	31
April	30
	110

(a)   If the payment is made on 18th March rebate will be allowed for unexpired time from 18th March to 20th May i.e., 13 + 30 + 20 i.e. for 63 days. He has to pay the discounted value of the total amount.

Discount $= 8,500 \times \dfrac{8}{100} \times \dfrac{63}{365} = ₹117.37$

Amount to be paid on 18th March= ₹ (8,500 – 117.37) = ₹ 8,382.63

(b)   If the payment is deferred to 14th July, interest is to be paid from 20th May to 14th July i.e., for 11 + 30 + 14 = 55 days.

Interest $= 8,500 \times \dfrac{8}{100} \times \dfrac{55}{365} = ₹102.47$

The amount to be paid on 14th July.

₹ 8,500 + 102.47 = 8602.47

(?) ILLUSTRATION 3

Calculate Average Due date from the following information:

Date of the bill	Term	Amount ₹
August 10, 2019	3 months	6,000
October 22, 2019	60 days	5,000
December 4, 2019	2 months	4,000
January 14, 2020	60 days	2,000
March 14, 2020	2 months	3,000

(Assume February of 28 days)

(✓) SOLUTION

Calculation of Average Due Date

Taking 10th August 2019 as the base date

Date of bill	Term	Due date-Maturity Date	No. of days from 10th August 2019	Amount ₹	Product ₹
August 10, 2019	3 months	Nov. 13, 2019	95	6,000	5,70,000
October 22, 2019	60 days	Dec. 24, 2019	137	5,000	6,85,000
December 04, 2019	2 months	Feb. 07, 2020	181	4,000	7,24,000
January 14, 2020	60 days	Mar. 18, 2020	220	2,000	4,40,000
March 14, 2020	2 months	May 17, 2020	280	3,000	8,40,000
				20,000	32,59,000

Average Due Date $= \dfrac{\text{Total of product}}{\text{Total of amount}} = \dfrac{32,59,000}{20,000} = 162.95 = 163$ days

= 163 days after August 10, 2019 i.e. January 20, 2020.

Days of Grace added as it is case of Bills and it is Negotiable Instrument.

ILLUSTRATION 4

A trader having accepted the following several bills falling due on different dates, now desires to have these bills cancelled and to accept a new bill for the whole amount payable on the average due date :

Sl. No.	Date of bill	Amount	Usance of the bill
1	1st March 2020	400	2 months
2	10th March 2020	300	3 months
3	5th April 2020	200	2 months
4	20th April 2020	375	1 month
5	11th May 2020	500	2 months

You are required to find the said average due date.

SOLUTION

Calculation of the average due date

<p align="center">Taking 4th May as the base date</p>

Sl. No.	Date of bill	Due Date of Maturity	Amount ₹	No. of days from starting date (4th May)	Product
1	1st March 2020	4th May	400	0	0
2	10th March 2020	13th June	300	40	12,000
3	5th April 2020	8th June	200	35	7,000
4	20th April 2020	23rd May	375	19	7,125
5	11th May 2020	14th July	500	71	35,500
	Total :		1,775		61,625

Average Due Date is 61,625/1,775=34.71 i.e., 35 days after the assumed due date, 4th May, 2020. The new bill should be for ₹ 1,775 payable on June 8th, 2020.

Case 2: Learn calculation of average due date Where inter transactions between 2 Parties are involved

When more than one party is involved where one party purchase and also sells to other party like JK Tyres and Maruti where Maruti sells car to JK Tyres for their employees and purchases Tyres from them. In such a case instead of paying gross amount they may go for new amount i.e. Purchase amount and sales amount will be set off and thus here we take difference of amount and produce as Net Amount. In such cases, earliest date of both parties is taken as the base date.

ILLUSTRATION 5

Two traders X and Y buy goods from one another, each allowing the other one month's credit. At the end of 3 months the accounts rendered are as follows:

	Goods sold by X to Y			Goods sold by Y to X
	₹			₹
April 18	60.00	April 23		52.00
May 15	70.00	May 24		50.00
June 17	80.00			

Calculate the date upon which the balance should be paid so that no interest is due either to X or Y.

SOLUTION

Taking May 18th as the zero or base date (April 18 + One month Credit = 18 May)

For Y's payments:

Date of Transactions (1)	Due Date (2)	Amount (3)	No. of days from the base date (4)	Products (5)
April 18	May 18	60	0	0
May 15	June 15	70	28	1,960
June 17	July 17	80	60	4,800
Amount Due to X		210	Sum of products	6,760

For X's payments

The students should note that the same base date should be taken. Therefore, the base date will be May 18th in this case also.

Date of Transactions (1)	Due Date (2)	Amount (3)	No. of days from the base date (4)	Products (5)
April 23	May 23	52	5	260
May 24	June 24	50	37	1,850
Amount Due to Y		102	Total products	2,110

Excess of Y's products over X's   =   6,760 – 2,110

                                         =   4,650

Excess amount due to X ₹ 210 – 102   =   ₹ 108.

Number of days from the base date to the date of settlement is

$$\frac{4,650}{108} = 43 \text{ days}$$

Hence the date of settlement of the balance is 43 days after May 18 i.e., on June 30. On June 30, Y has to pay X, ₹ 108 to clear the account.

(?) ILLUSTRATION 6

Manoj had the following bills receivables and bills payable against Sohan. Calculate the average due date, when the payment can be received or made without any loss of interest.

Date	Bills Receivable ₹	Tenure	Date	Bills Payable ₹	Tenure
01/06/2020	3,000	3 month	29/05/2020	2,000	2 month
05/06/2020	2,500	3 month	03/06/2020	3,000	3 month
09/06/2020	6,000	1 month	9/06/2020	6,000	1 month
12/06/2020	1,000	2 month			
20/06/2020	1,500	3 month			

15 August, 2020 was a Public holiday. However, 6 September, 2020 was also declared as sudden holiday.

(✓) SOLUTION

Let us take 12.07.2020 as Base date.

Bills receivable

Due date	No. of days from 12.07.2020	Amount	Product
04/09/2020	54	3,000	1,62,000
08/09/2020	58	2,500	1,45,000
12/07/2020	0	6,000	0
14/08/2020	33	1,000	33,000
23/09/2020	73	1,500	1,09,500
		14,000	4,49,500

Bills payable

Due date	No. of days from 12.07.2020	Amount	Product
01/08/2020	20	2,000	40,000
07/09/2020	57	3,000	1,71,000
12/07/2020	0	6,000	0
		11,000	2,11,000

Excess of products of bills receivable over bills payable = 4,49,500 – 2,11,000 = 2,38,500

Excess of bills receivable over bills payable = 14,000 – 11,000 = 3,000

Number of days from the base date to the date of settlement is 2,38,500/3,000 = 79.5 (appox.)

Hence date of settlement of the balance amount is 80 days after 12th July i.e. 30th September.

On 30th September, 2020 Sohan has to pay Manoj ₹ 3,000 to settle the account.

❓ ILLUSTRATION 7

Mr. Kapoor had the following Bills receivable and Bills payable against Mr. Khan, the details of which has been given as follows-

Bills receivable			Bills payable		
Date	*Amount*	*Tenure*	*Date*	*Amount*	*Tenure*
1.5.2020	400	3 months	11.5.2020	800	60 days
19.6.2020	750	2 months	21.6.2020	950	30 days
25.6.2020	1,000	1 month	28.6.2020	1,150	45 days
7.7.2020	1,250	2 months	10.7.2020	1,800	50 days
14.7.2020	800	2 month	16.7.2020	1,250	55 days

Gazetted holidays in the intervening period

15th August (Independence day), 24th July (Emergency holiday), 10th September (Sunday)

☑ SOLUTION

Base date-The date of the first transaction - 13.07.2020

Payment to be made by Mr. Khan to Mr. Kapoor

Due date	No. of days from base date	Amount	Product
04.08.2020	22	400	8,800
22.08.2020	40	750	30,000
28.07.2020	15	1000	15,000
09.09.2020	58	1250	72,500
17.09.2020	66	800	52,800
Total		**4,200**	**1,79,100**

Payment to be made by Mr. Kapoor to Mr. Khan

Due date	No. of days from base date	Amount	Product
13.07.2020	0	800	0
25.07.2020	12	950	11,400
14.08.2020	32	1,150	36,800
01.09.2020	50	1,800	90,000
12.09.2020	61	1,250	76,250
Total		**5,950**	**2,14,450**

Difference in products = Mr. Kapoor to pay to Mr. Khan = 2, 14, 450-1,79,100 = 35350.

Difference in amounts = 5,950-4,200 = 1,750

Average due date = Base date ± $\dfrac{\text{Difference in products}}{\text{Difference in amounts}}$

13th July + $\dfrac{35,350}{1,750}$ = 13th July + 20.2 days = 20 days

Average due date = 2nd August, 2020

? ILLUSTRATION 8

Mr. Green and Mr. Red had the following mutual dealings and desire to settle their account on the average due date:

Purchases by Green from Red:	₹
6th January, 2020	6,000
2nd February, 2020	2,800
31st March, 2020	2,000

Sales by Green to Red:

6th January, 2020	6,600
9th March, 2020	2,400
20th March, 2020	500

You are asked to ascertain the average due date. (28 days in February)

☑ SOLUTION

Calculation of Average Due Date

Taking 6th January, 2020 as base date

For Green's payments

Due date	Amount	No. of days from the base date i.e. 6th Jan. 2020	Product
2020	₹		
6th January	6,000	0	0
2nd February	2,800	27	75,600
31st March	2,000	84	1,68,000
Total	10,800		2,43,600
For Red's payment 2020			
6th January	6,600	0	0
9th March	2,400	62	1,48,800
20th March	500	73	36,500
Total	9,500		1,85,300

Excess of Green's products over Red's   = ₹ 2,43,600 – ₹ 1,85,300 = ₹ 58,300

= ₹ 10,800 – ₹ 9,500 = ₹ 1,300

Number of days from the base date to the date of settlement is 58,300/1,300 = 45 days (approx.)

Hence, the date of settlement of the balance amount is 45 days after 6th January i.e. on 20th February.

On 20th February, 2020, Green has to pay Red ₹ 1,300 to settle the account.

Case 3: Learn calculation of average due date where amount is repaid in Instalments

Calculation of average due date in a case where the amount is lent in one instalment and repayment is done in various instalments (opposite to what we have done in the first case). The problem takes a different shape. The procedure for calculating average due date can be summarized as under:

Step 1: Calculate number of days/monthly/years from the date of lending money to the date of each repayment.

Step 2: Find the total of such days/months/years.

Step 3: Quotient will be the number of days/months/years by which average due date falls away from date of commencement of loan.

As explained earlier, if instalment are same, we can use Simple mean concept i. Divide days by number of items and no need for product.

Thus, the formula for the average due date can be written as under:

$$\text{Average due date} = \text{Date of Loan} + \frac{\text{Sum of days/months/years from the date of Lending to the date of repayment of each instalment}}{\text{Number of instalments}}$$

? ILLUSTRATION 9

₹ 10,000 lent by Dass Bros. to Kumar & Sons on 1st January, 2015 is repayable in 5 equal annual instalments commencing on 1st January, 2016. Find the average due date and calculate interest at 5% per annum, which Dass Bros. will recover from Kumar & Sons.

✓ SOLUTION

Due date	No. of years from 1 Jan 2015
1 Jan 2015	0
1 Jan 2016	1
1 Jan 2017	2
1 Jan 2018	3
1 Jan 2019	4
1 Jan 2020	5

Average=5+4+3+2+1/5=3 years

Average due date = Date of Loan + $\dfrac{\text{Sum of days/months/years from the date of Lending}}{\text{to the date of repayment of each instalment}}{\text{Number of instalments}}$

$$= \text{Jan. 1, 2015} + \frac{1+2+3+4+5}{5}$$

$$= \text{Jan. 1, 2015} + 3 \text{ years}$$

$$= 1^{st} \text{ Jan., 2018}$$

Interest at a certain rate on the instalments paid from the date of payment to any fixed date will be the same as on ₹ 10,000 (if lent on 1st Jan., 2018 to that fixed date). There will be no loss to either party. Supposing rate of interest is 5% p.a. and date of settlement is 31st Dec., 2016 then calculation of interest by product method from both parties' point of view will be as follows:

Dass Bros. pays interest as follows:

Amount ₹	Paid on	Money used by Dass Bros upto 31st Dec. 2020	Product ₹
2,000	1st Jan. 2016	5 Years	10,000
2,000	1st Jan. 2017	4 Years	8,000
2,000	1st Jan. 2018	3 Years	6,000
2,000	1st Jan. 2019	2 Years	4,000
2,000	1st Jan. 2020	1 Year	2,000
			30,000

Interest at 5% p.a. on ₹ 30,000 for one year. $= \dfrac{₹\,30,000 \times 5}{100} = ₹\,1,500$

Dass Bros. will receive interest (if given on 1st Jan., 2018 on ₹ 10,000 from average due date to 31st Dec.,

2020, i.e., for 3 years at 5% p.a. $= \dfrac{5 \times 3 \times ₹\,10,000}{100} = ₹\,1,500$

From the above, it can be concluded that if the borrower pays ₹ 2,000 yearly from 1st Jan., 2016 for 5 years and if the lender gives ₹ 10,000 on 1st Jan., 2018 then both will charge same interest from each other. There is no loss to any of the parties. But actually lender gives ₹ 10,000 on 1st Jan., 2015, therefore, he has given loan 3 years in advance and will charge interest on ₹ 10,000 for 3 years.

Interest $= \dfrac{₹\,10,000 \times 5 \times 3}{100} = ₹\,1,500$ (to be charged by Dass Bros.)

(?) ILLUSTRATION 10

₹ 20,000 lent on 1st January 2015, is repaid as follows-

₹ 2500 on 1st January 2016

₹ 5500 on 1st January 2017

₹ 3000 on 1st January 2018

₹ 5000 on 1st January 2019

₹ 4000 on 1st January 2020

Determine the average due date for settling all the above instalments by a single payment and compute interest at the rate of 10% per annum

✓ SOLUTION

Due date	Amount (in ₹)	No. of months from 1.1.2015	Products
1st January 2016	2500	12	30,000
1st January 2017	5500	24	1,32,000
1st January 2018	3000	36	1,08,000
1st January 2019	5000	48	2,40,000
1st January 2020	4000	60	2,40,000
	20,000		**7,50,000**

$$\text{Average due date} = \text{Base date} + \frac{\text{Total of Product}}{\text{Total of amount}}$$

1st January 2015 + = 37.5 months~ 38 months

Average due date= 1st January 2015+ 38 months = 1st March 2018.

$$\text{Interest for the 38 months} = \frac{20,000 \times 10 \times 3.17}{100} = 6,340.$$

Case 4: Learn Calculation of average due date for determining interest on drawings

In the case of drawings also, amount is drawn by the owners of business on various dates but it may settled on one day. It should be noted that, when different amounts are due on different dates, but they are ultimately settled on one day the interest may be calculated by means of Average Due Date. When interest is chargeable on drawings, and drawings are on different dates, interest may be calculated on the basis of Average Due Date of drawings determined on the basis given above. An illustration is given below to help in understanding the same:

? ILLUSTRATION 11

A and B, two partners of a firm, have drawn the following amounts from the firm in the year ending 31st March, 2020:

Date	A	Date	B
	₹		₹
1st July	500	12th June	1,000
30th September	800	11th August	500
1st November	1,000	9th February	400
28th February	400	7th March	900

Interest at 6% p.a. is charged on all drawings. Calculate interest chargeable by using (i) ordinary system (ii) Average due date system. (assume 1 year = 365 days) any fraction of day should be ignored.

✓ **SOLUTION**

(i)		Ordinary System :		
	A	500 for 9 months	=	4,500 for 1 month
		800 for 6 months	=	4,800 for 1 month
		1,000 for 5 months	=	5,000 for 1 month
		400 for 1 month	=	400 for 1 month
				14,700 for 1 month
		14,700 @ 6% for 1 month	=	1/2% of 14,700
			=	₹ 73.50
	B	1,000 for 292 days	=	2,92,000
		500 for 232 days	=	1,16,000
		400 for 50 days	=	20,000
		900 for 24 days	=	21,600
				4,49,600

$$4,49,600 \times \frac{6}{100} \times \frac{1}{365} = ₹\ 73.91$$

(ii)   Average Due Date System:

(a)   Taking 1st July as the base date (O-day)

	Dates	₹	Months from O-day	Products
	1st July	500	0	0
	30th September	800	3	2,400
A	1st November	1,000	4	4,000
	28th February	400	8	3,200
		2,700		9,600

Average Due Date = $\frac{9,600}{2,700}$ months from 1st July. i.e., 3.556 months i.e. October 17th.

Interest is chargeable from October 17 to March 31 i.e. 5.444 months $2,700 \times \frac{6}{100} \times \frac{5,444}{12} = ₹\ 73.49$

Or,

Taking 1st April as the base date (O-day):

	Dates	₹	Months from O-day	Products
A	1st July	500	3	1,500
	30th September	800	6	4,800

© **The Institute of Chartered Accountants of India**

1st November	1,000	7	7,000
28th February	400	11	4,400
	2,700		17,700

Average Due Date $= \dfrac{17,700}{2,700}$ months from 1st April. i.e. 6.556 months i.e. 17th October.

Interest is chargeable from October 17 to March 31 i.e. 5.444 months. $2,700 \times \dfrac{6}{100} \times \dfrac{5444}{12} = ₹\ 73.49$

(b)   Taking 12th June as the base date (Zero-day)

	Dates	₹	Days from O-day	Products
B	12th June	1,000	0	0
	11th August	500	60	30,000
	9th February	400	242	96,800
	7th March	900	268	2,41,200
		2,800		3,68,000

Average Due Date $= \dfrac{3,68,000}{2,800}$ days from 12th June. i.e. 131 days.

June 18
July 31
Aug. 31
Sept. 30
─────
110

131 days -110 days i.e. 21st October

So, interest is chargeable from 21st October to 31st March i.e. for 161 days.

$2,800 \times \dfrac{6}{100} \times \dfrac{161}{365} = ₹\ 74.10$

The Differences in amounts in the two systems (1) and (2) are due to approximation.

ILLUSTRATION 12

A partner in a firm has drawn the following amounts for the half year ended on 31st March 2020 :

Date	Amount
9th Sep, 2019	9,000
10th Oct, 2019	10,000
11th Nov, 2019	11,000
12th Dec, 2019	12,000
13th Jan, 2020	13,000

| 14th Feb, 2020 | 14,000 |
| 15th Mar, 2020 | 15,000 |

Assume February has 28 days

✓ SOLUTION

Base date = 9th September

Calculation of average due date

Due date	Amount	No of days from base date	Product
9th Sep, 2019	900	0	0
10th Oct, 2019	1,000	31	31,000
11th Nov, 2019	1,100	63	69,300
12th Dec, 2019	1,200	94	1,12,800
13th Jan, 2020	1,300	126	1,63,800
14th Feb, 2020	1,400	158	2,21,200
15th Mar, 2020	1,500	187	2,80,500
	8,400		**8,78,600**

$$\text{Average due date} = \text{Base date} + \frac{\text{Total of Product}}{\text{Total of amount}}$$

9th September, 2019 + $\dfrac{8,78,600}{8,400}$ = 104.60 days = 105 days

Average due date = 9th September, 2019 + 105 days = 23rd December, 2019.

SUMMARY

- Average Due Date is one on which the net amount payable can be settled without causing loss of interest either to the borrower or the lender.

- It is used in various cases like:

  (i)   Calculation of interest on drawings of partners.

  (ii) Cancellation of various bills of exchange due on different dates and issuance of a Single bill.

  (iii) Amount lent in one instalment and repayable in various instalments.

- When the amount is lent in various instalments then average due date can be calculated as :

  $$\text{Average due date} = \text{Base date} \pm \frac{\text{Total Amount} \times \text{No. of days from base date to due date}}{\text{Total Amounts}}$$

- When interest is chargeable on drawings, and drawings are on different dates, interest may be calculated on the basis of Average Due Date of drawings.

◆ Average due date in a case where the amount is lent in one instalment and repayment is done in various instalments will be:

Average due date = Date of Loan + $\dfrac{\text{Sum of days/months/years from the date of lending to the date of repayment of each instalments}}{\text{Total Amounts}}$

Every promissory note or bill of exchange (other than those payable on demand or at sight or on presentment) falls due on the third day after on which it is expressed to be payable. This exempted period of three days is called days of grace.

TEST YOUR KNOWLEDGE

True and False

1. The specific due date excludes the addition of grace days to arrive at the due date.

2. Payment made before the average due date entitles rebate to the customer.

3. Average due date results in loss to the party making the payment.

4. Interest has to be paid by the party making payment exactly on the average due date.

5. Where the due date is a Public holiday and the preceding day is Sunday (holiday), then the due date falls on the day preceding Sunday.

Multiple Choice Questions

1. If payment is made on the average due date it results in-

    (a) Loss of interest to the creditor.

    (b) Loss of interest to the debtor.

    (c) No loss of interest to either of them.

2. A mean date is calculated

    (a) In connection with the settlement of contra accounts.

    (b) For a lump sum payment.

    (c) For several payments on different dates.

3. If payment is made after average due date, the party entitled to interest is

    (a) Creditor   (b) Debtor   (c) Bank

4. When due date is a public holiday, then the due date will be.

    (a) Succeeding business day

    (b) Preceding business day

    (c) Due date will not change and will remain same.

5. A Bill due on 29th January, 2020 is made payable at one month after date. The due date of instrument

(a)   28th February, 2020

(b)   29th February, 2020

(c)   3rd March, 2020

Theoretical Questions

1.   Define Average Due Date.

2.   List out the various instances when Average Due Date can be used.

Practical Questions

1.   Mr. Yash and Mr. Harsh are partners in a firm. They had drawn the following amounts from the firm during the year ended 31.03.2020:

Date	Amount ₹	Drawn by ₹
01.05.2019	75,000	Mr. Yash
02.07.2019	20,000	Mr. Yash
15.08.2019	60,000	Mr. Harsh
31.12.2019	50,000	Mr. Harsh
04.03.2020	75,000	Mr. Harsh
31.03.2020	15,000	Mr. Yash

Interest is charged @ 10% p.a. on all drawings. Calculate interest chargeable from each partner by using Average due date system. (Consider 1st May as base date) (1 year = 365 days)

Anand purchased goods from Amirtha, the average due date for payment in cash is 10.08.2020 and the total amount due is ₹ 67,500. How much amount should be paid by Anand to Amirtha, if total payment is made on following dates and interest is to be considered at the rate of 12% p.a.

(i)   On average due date.

(ii)   On 25th August, 2020.

(iii)   On 30th July, 2020.

ANSWERS/HINTS

True and False

1.   True: Where the due date is specifically given, then there is no need of further addition of 3 days grace to it.

2.   True: The rebate is given to the customers who make payment early to the average due date calculate.

3.   False: It is single weighted average date calculated in such a way that it does not create any profit / loss to both the parties involved.

4. False: If payment made on the average due date, then there is no need to pay interest or provide rebate as it is a date resulting in no profit/loss to either parties.

5. True: This can be understood from the following example- where August 15th is the due date, then the revised due date is 14th- which is Sunday (holiday), then the due date becomes 13th (preceding working day).

Multiple Choice Questions

1. (c) 2. (c) 3. (a) 4. (b) 5. (c)

Theoretical Questions

1. In business enterprises, many receipts and payments by and from a single party may occur at different points of time. To simplify the calculation of interest involved for such transactions, the idea of average due date has been developed. Average Due Date is a break-even date on which the net amount payable can be settled without causing loss of interest either to the borrower or the lender.

2. Few instances where average due date can be used:

    (i) Calculation of interest on drawings made by the proprietors or partners of a business firm at several points of time.

    (ii) Settlement of accounts between a principal and an agent.

    (iii) Settlement of contra accounts, that is, A and B sell goods to each other on different dates.

Practical Questions

Answer 1

Calculation of Interest chargeable from Partners

Taking 1st May as the base date

	Dates	Amount (₹)	Days from 1st May	Products (₹)
Yash	1.5.2019	75,000	0	0
	2.7.2019	20,000	62	12,40,000
	31.3.2020	15,000	334	50,10,000
		1,10,000		62,50,000

Average Due Date = $\dfrac{62,50,000}{1,10,000}$ days from 1st May. i.e. 57 days = 27th June

Interest is chargeable for Yash from 27th June to March 31 i.e. 277 days

₹ 1,10,000 x 10% x 277/365 = ₹ 8,348

	Dates	(₹)	Days from 1 May	Products (₹)
Harsh	15.8.2019	60,000	106	63,60,000
	31.12.2019	50,000	244	1,22,00,000

	4.3.2020	75,000	307	2,30,25,000
		1,85,000		4,15,85,000

Average Due Date = $\dfrac{4,15,85,000}{1,85,000}$ days from 1st May = 225 days.

$$= 12\text{th Dec.}$$

Interest is chargeable for Harsh from 12th December to 31st March i.e. for 109 days.

₹ 1,85,000 x $\dfrac{10}{100}$ x $\dfrac{109}{365}$ = ₹ 5,525

Thus, interest amounting ₹ 8,348 will be charged from Yash and amount of ₹ 5,525 will be charged from Harsh.

Answer 2

A	B	C	D = B C
	Principal Amount	**Interest from Average Due Date to Actual date of Payment**	**Total amount to be paid**
(i) Payment on average due date			
	₹ 67,500	₹ 67,500 x $\dfrac{12}{100} \times \dfrac{0}{365}$ = 0	₹ 67,500
(ii) Payment on 25th Aug. 2020			
	₹ 67,500	₹ 67,500 x $\dfrac{12}{100} \times \dfrac{15}{365}$ = 333 Interest to be charged for period of 15 days from 10.8.2020 to 25th Aug. 2020	₹ 67,833
(iii) Payment on 30th July, 2020			
	₹ 67,500	₹ 67,500 x $\dfrac{12}{100} \times \dfrac{(11)}{365}$ = (244) Rebate has been allowed for unexpired credit period of 11 days from 30.7.2020 to 10.8.2020	₹ 67,256