1. AVERAGE DUE DATE

PROBLEM NO: 1

Due date of maturity:

i) **29th February, 2016**.

Note : Year 2016 being leap year, due date will be 29th February, 2016.

ii) **25th January, 2015**.

Note: Due date after grace days, is 26th January, 2015. But since 26th January, 2015 is public holiday, due date will be 25th January, 2015.

iii) **17th February, 2015**.

Note: Due date after grace days, is 16th February, 2015. But since due to some emergency, it is declared as holiday, due date will be 17th February, 2015.

iv) **14th August, 2015**.

Note: Due date after grace days, is 16th August, 2015 but since 16th August, 2015, is a holiday (Sunday) and 15th August, 2015 is also holiday, due date will be 14th August, 2015.

PROBLEM NO: 2

Calculation of Average Due Date:

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

Due Dates	Amount (Rs.)	No. Of Days away from 3rd July	Products (Rs.)
3rd July	500	0	0
2nd August	800	30	24,000
11th September	1000	70	70,000
	2,300		**94,000**

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

= 3rd July + 41 Days (approx.) = **13th August**

PROBLEM NO: 3

Calculation of Average Due Date

Taking 10th August as the base date

Date of Bill	Term	Due Date	No. Of days from 10th August, 2013	Amount (Rs.)	Product (Rs.)
August 10, 2009	3 months	Nov. 13, 2009	95	6,000	5,70,000
October 23, 2009	60 days	Dec. 25, 2009	137	5,000	6,85,000
December 04, 2009	2 months	Feb. 07, 2010	181	4,000	7,24,000
January 14, 2010	60 days	Mar.18, 2010	220	2,000	4,40,000
March 08, 2010	2 months	May 11, 2010	274	3,000	8,22,000
			Total	**20,000**	**32,41,000**

Average Due Date = **Base date** + $\frac{\text{Total product}}{\text{Total amount}}$

= **10th August 2013** + $\frac{32,41,000}{20,000}$

= 10th August 2013 + 162 Days

i.e. **January 19, 2014**

Alternative: Average Due Date can be calculated by considering any date as base date

PROBLEM NO: 4

Calculation of Average due date taking 15th March, 2012 as the base date

Due Date	Amount (Rs)	No. Of days from the base date i.e. 15th March,2012	Product (Rs)
15th March, 2012	7,000	0	0
5th April, 2012	12,000	21	2,52,000
25th April, 2012	30,000	41	12,30,000
11th June, 2012	20,000	88	17,60,000
	69,000		32,42,000

Average Due Date = Base date + $\frac{\text{Total product}}{\text{Total amount}}$

= 15th March, 2012 + $\frac{32,42,000}{69,000}$

= 15th March, 2012 + 47 days = **1st May, 2012**

Interest Amount:

Interest can be calculated on Rs.69,000 after **1st May, 2012 to 30th June, 2012** at 10% p.a. i.e. Interest on Rs. 69,000 for 60 days at 10% p.a. = **Rs. 69,000 × 10/100×60/366**

= **Rs.1,131** (approx)

Note: Alternatively, interest can be calculated on the basis of 365 days instead of 366 days. In such a case, interest amount will be Rs. 1,134 (approx) instead of Rs.1,131

PROBLEM NO: 5

Calculation of Average due Date taking base date as 19.06.2011

Date of Bill	Period	Maturity (Due Date)	No. Of Days From the base date	Amount (Rs.)	Product (Rs.)
09.03.2011	4 months	12.07.2010	23	4,000	92,000
16.03.2011	3 months	**19.06.2010**	0	5,000	0
07.04.2011	5 months	10.09.2010	83	6,000	4,98,000
18.05.2011	3 months	21.08.2010	63	5,000	3,15,000
				20,000	**9,05,000**

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

= 19.06.2010 + 9,05,000 / 20,000

= 19.06.2010 + 46 days

A.D.D = 4th August, 2010

Computation of date of Payment to Earn Interest of Rs.150

Interest per day = (Rs.20,000 × (18/100)) / 365 days

= Rs.3,600 / 365

= Rs. 10 per day (approx)

To earn interest of Rs.150, the payment should be made 15 days (Rs.150 / Rs.10 per day) earlier to the due date. Accordingly, the date of payment would be.

Date of payment to earn interest of Rs.150 = **4th August, 2010 - 15 days = 20th July, 2010.**

Note: When 45 days is taken instead of 46 days, ADD-3rd August, Date of actual Payment – 19th July.

PROBLEM NO: 6

A	B	C	D = B ± C
	Principle/ Amount	Interest from average due date to Actual date of payment	Total amount to be paid
(i) Payment on Average Due Date			
	Rs.67,500	Rs.67,500 X $\frac{12}{100}$ X $\frac{0}{365}$ = 0	Rs. 67,500
(ii) Payment on 25th Aug. 2015			
	Rs.67,500	Rs.67,500 X $\frac{12}{100}$ X $\frac{15}{365}$ = 0 Interest to be charged for period of 15 days from 10.8.2015 to 25th Aug. 2015	Rs. 67,833
(iii) Payment on 30th July. 2015			
	Rs.67,500	Rs.67,500 X $\frac{12}{100}$ X $\frac{(11)}{365}$ = 0 Rebate has been allowed for unexpired credit period 11 days from 30.07.2015 to 10.08.2015	Rs. 67,256

PROBLEM NO: 7

Calculation of Average Due Date taking base date as 1ST January,2015

Due Date 2015	Amount (Rs)	No. Of days from the base date i.e. 1st January, 2015	Product (Rs)
January 1	890	0	0
January 16	910	15	13,650
February 2	750	32	24,000
March 6	810	64	51,840
	3,360		**89,490**

Calculation of average due date:

Average due date = **Base date +** $\frac{\text{Sum of Products}}{\text{Sum of the amounts}}$

= January 1 + 89,490/3,360

= January 1 + **27 days**

= **January 28**

Interest therefore has been calculated on Rs. 3,360 from 28th January to 31st March. i.e. for 63 days

Interest = Rs.3,360 × 5/100 × 63/365 = Rs.29.

Note: As 2015 is not a leap year, we have to take 62 days. **(But is Study Material taken as 63 days)**

PROBLEM NO: 8

Calculation of Average Due Date taking base date as 15th Jan, 2012

Date	Amount (Rs)	No. Of days from base date	Product (Rs)
January 15	5,000	0	0
February 10	4,000	26	1,04,000
April 5	8,000	81	6,48,000
May 20	10,000	126	12,60,000
June 18	9,000	155	13,95,000
	36,000		**34,07,000**

Average due date = **Base date +** $\frac{\text{Total product}}{\text{Total amount}}$

= 15th January + $\frac{34,07,000}{36,000}$

= 15th January + 95 days = **19th April, 2012**

Number of days after 19th April,2012 to 30th June, 2012 = 72 days

Interest on drawings after 19th April to 30th June @10% p.a.

= Rs.36,000 × 72/366 × 10/100

= Rs.708

Hence, interest on drawings Rs. 708 will be charged from A on 30th June, 2012.

PROBLEM NO: 9

Calculation of Average Due Date taking base date as 6th January,2011

For Green Payments:

Due Date	Amount (Rs)	No. Of days from base date i.e. 6th January 2011	Product (Rs)
6th January 2011	6,000	0	0
2nd February 2011	2,800	27	75,600
31st March	2,000	84	1,68,000
Total	**10,800**		**2,43,600**
For Red Payments:			
6th January 2011	6,600	0	0
9th March 2011	2,400	62	1,48,800
20th March 2011	500	73	36,500
Total	**9,500**		**1,85,300**

Excess of Green's product over Red's = RS. 2,43,600 - Rs.1,85,300

= Rs. 58,300

Excess of Green's Amount over Red's = Rs.10,800 - Rs.9,500

= Rs.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, 2011 Green has to pay Red Rs.1,300 to settle the account.

PROBLEM NO: 10

Let us take 12.07.2014 as Base date

Bills receivable

Due Date	No. of days from 12.07.2014	Amount (Rs)	Product (Rs)
04.09.2014	54	3,000	1,62,000
08.09.2014	58	2,500	1,45,000
12.07.2014	0	6,000	0
14.08.2014	33	1,000	33,000
23.09.2014	73	1,500	1,09,500
		14,000	**4,49,500**

Bills payable

Due Date	No. of days from 12.07.2014	Amount (Rs)	Product (Rs)
01.08.2014	20	2,000	40,000
07.09.2014	57	3,000	1,71,000
12.07.2014	0	6,000	0
		11,000	**2,11,000**

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

Excess of bills receivables over bills payable = Rs.14,000 – Rs. 11,000 = Rs.3,000/-

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

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

On 30th September, 2014 Sohan has to pay Manoj Rs.3,000 to settle the account.

PROBLEM NO: 11

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

$$= \text{January 1, 2008} + \frac{1+2+3+4+5}{5}$$

= January 1, 2008 + 3 years.

= 1st January, 2011

Just for the sake of understanding, No need to present in Exam

Interest at a certain rate on the instalment paid from the date of payment to any fixed date will be the same as on Rs. 10,000 (if lent on 1st January, 2011 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 December,2009 then calculation of interest by product method from both parties point of view will be as follows.

Dass Bros. Pays interest as follows:

Amount (Rs)	Paid on	Money used by Dass Bros upto 31st dec.2013	Product (Rs)
2,000	1st Jan.2009	5 years	10,000
2,000	1st Jan. 2010	4 years	8,000
2,000	1st Jan. 2011	3 years	6,000
2,000	1st Jan.2012	2 years	4,000
2,000	1st Jan. 2013	1st year	2,000
			30,000

Interest at 5% p.a. on Rs.30,000 for one year. = Rs. 30,000 × 5 / 100

= Rs.1,500

Dass Bros. Will receive interest (if given in 1st Jan. 2011 on Rs.10,000 from average due date to 31st Dec. 2013 i.e. for 3 years at 5% p.a. = Rs.10,000 × 3 × 5 / 100 = Rs. 1,500

From the above, it can be concluded that if the borrower pays Rs.2,000 yearly from 1st Jan. 2009 for 5 years and if the lender gives Rs. 10,000 on 1st Jan.2011 then both will charge same interest from each other. There is no loss to any of the parties. But actually lender gives Rs.10,000 on 1st Jan. 2008, therefore, he has given loan in advance and will charge interest on Rs.10,000 for 3 years.

Interest = Rs.10,000 × 3 × 5/100 = Rs. 1,500 (to be charged by Dass Bros.)

PROBLEM NO: 12

Instalment	Instalment Amount	No. of years away from the date of loan i.e. 1st January 2011
1-1-2012	5,000	1
1-7-2012	5,000	1.5
1-1-2013	5,000	2
1-7-2013	5,000	2.5
1-1-2014	5,000	3

Average due date = Date of loan + $\frac{\text{Sum of the number of Years from the date Lending to the date of instalment}}{\text{Number of instalments}}$

= 1-1-2001 + $\frac{1+1.5+2+2.5+3}{5}$

= 1-1-2011 + 2 years = 1-1-2013

Interest = Rs. 25,000 x $\frac{10}{100}$ x 2 years

= Rs. 5,000

THE END