CRASH BATCH MAIN MATERIAL / CA INTER / GR. 1 / BOOK / COSTING – PART / 42.5E
CHAPTERS INCLUDED – BUDGETARY CONTROL
(APPLICABLE TO MAY 2020 ATTEMPT OF CA INTER. SYNCHRONISED WITH JULY 2019 EDITION OF ICAI SM. ISSUED ON 7/12/19)

7. BUDGETARY CONTROL

NO. OF PROBLEMS IN 41.5E OF CA INTER: CLASSROOM - 07, ASSIGNMENT - 16

NO. OF PROBLEMS IN 41E OF CA INTER: CLASSROOM - 14, ASSIGNMENT – 16

NO. OF PROBLEMS IN 42.5E OF CA INTER: CLASSROOM - 9, ASSIGNMENT - 9

MODEL WISE ANALYSIS OF PAST EXAM PAPERS OF IPCC & CA INTER

No.	MODEL NAME	M-09	N-09	M-10 TO N-11	M-12	N-12	M-13	N-13 TO M-14	N-14	M-15	N -15	M - 16	N - 16	M - 17	N - 17	M-18 (OLD)	M-18 (NEW)	N-18 (OLD)	N-18 (NEW)	M-19 (NEW)	N-19(NEW)
1.	Production Budget, Raw Material Purchase Budget and Direct Wages Budget	-	2	-	5	-	-	-		5	-	-	-	-	-	-	-	5	10	-	-
2.	Sales Budget	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-
3.	Flexible Budget	-	-	-	-	-	7	8	-	-	4	4	8	-	-	-	-	-	5	10	
4.	Budgeted ratio's	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.	Comprehensive Budget	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SIGNIFICANCE OF EACH PROBLEM COVERED IN THIS MATERIAL

Problem No. in this material	Problem No. in NEW SM	Problem No. in OLD SM	Problem No. in OLD PM	RTP	MTP	Previous Exams	Remarks
CR 1	ILL-4	ILL-5	-	-	-	-	
CR 2	PQ-5	-	Q.NO-8	M-14	N-18	-	
CR 3	-	-	-	-	-	N-18(O)	
CR 4	-	-	-	-	-	-	
CR 5	-	-	Q.NO-12	-	-	N-15	
CR 6	-	-	-	-	-	M-17	
CR 7	-	-	-	M-17	-	-	
CR 8	-	-	-	N-19(N)	-	-	
CR 9	ILL-7	-	-	-	-	-	
ASG 1	-	-	Q.NO-4	-	-	M-12	
ASG 2	-	-	-	-	-	M-15	
ASG 3	PQ-4	-	Q.NO-6	N-13,N-18(O&N)	-	-	
ASG 4	-	-	Q.NO-13	N-15,M-18,N-17	-	-	
ASG 5	-	-	-	-	N-15	-	
ASG 6	-	-	-	-	N-15	-	
ASG 7	-	-	Q.NO-9	-	-	N-14	
ASG 8	-	-	-	-	-	NOV 19(N)	
ASG 9	-	-	-	-	-	M-19(N)	

The main characteristics of budget are as follows:

i) A budget is concerned for a definite future period.

ii) A budget is a written document.

iii) A budget is a detailed plan of all the economic activities of a business.

iv) All the departments of a business unit co-operate for the preparation of a business budget.

v) Budget is a mean to achieve business and it is not an end in itself.

vi) Budget needs to be updated, corrected and controlled every time when circumstances changes. Therefore, it is a continuous process.

vii) Budget helps in planning, coordination and control.

viii) Different types of budgets are prepared by industries according to business requirements.

ix) A budget acts a business barometer.

x) Budget is usually prepared in the light of Past Experience.

xi) Budget is a constant endeavour of the Management.

Formulas:

i) Production (in units) = No. of units to be Sold + Closing stock of Finished goods - Opening stock of Finished goods

ii) Consumption of Raw materials (Qty.) = Production (in units) x consumption of raw material per unit

(OR)

= Opening stock + Purchase of RM - Closing stock

iii) Purchase of raw material (Qty.) = Consumption + Closing stock - Opening stock

iv) Purchase of raw material (Rs.) = Purchase of raw material (Qty) x Purchase cost per kg

v) Labour hours required = Production (in units) x Labour hours required per unit

vi) Machine hours required = Production (in units) x Machine hours required per unit

Budget Ratios:

i) $\text{Efficiency Ratio} = \frac{\text{Standard Hours}}{\text{Actual Hours}} \times 100$

ii) $\text{Activity Ratio} = \frac{\text{Standard Hours}}{\text{Budgeted Hours}} \times 100$

iii) $\text{Calendar Ratio} = \frac{\text{Available working days}}{\text{Budgeted working days}} \times 100$

iv) $\text{Standard Capacity Usage Ratio} = \frac{\text{Budgeted Hours}}{\text{Max. possible Hours in the budgeted period}} \times 100$

v) $\text{Actual Capacity Usage Ratio} = \frac{\text{Actual Hours worked}}{\text{Max. possible working in a period}} \times 100$

vi) $\text{Actual usage of Budgeted Capacity Ratio} = \frac{\text{Actual Hours worked}}{\text{Budgeted Hours}} \times 100$

PROBLEMS FOR CLASSROOM DISCUSSION

MODEL 1: PRODUCTION BUDGET RAW MATERIAL PURCHASE BUDGET AND DIRECT WAGES BUDGET

PROBLEM 1: A single product Company estimated its sales (in units) for the next year quarter - wise as under-

Q - 1	Q - 2	Q - 3	Q - 4
30,000 units	37,500 units	41,250 units	45,000 units

The Opening Stock of Finished Goods is 10,000 units and the Company expects to maintain the Closing Stock of Finished Goods at 16,250 units at the end of the year. The production pattern in each quarter is based on 80% of the Sales of the current quarter and 20% of the Sales of the next quarter.

The Opening Stock of Raw Materials in the beginning f the year is 10,000 kg and the Closing Stock at the end of the year is required to be maintained at 5,000 kg. Each unit of finished output requires 2 kg of Raw Materials.

The Company proposes to purchase the entire annual requirement of Raw Materials in the first three quarters in the proportion and at the prices given below-

Quarter	Purchase of Raw Materials % to total annual requirement in quantity	Price per kg
I	30%	Rs. 2
II	50%	Rs. 3
III	20%	Rs. 4

The value of the Opening Stock of Raw Materials in the beginning of the year is Rs. 20,000.

Required: Present the following for the next year, quarter - wise-

1. Production Budget in units.
2. Raw Material Consumption Budget in Quantity.
3. Raw Material Purchase Budget in Quantity and Value.

(B) (NEW SM, OLD SM) (ANS.: (1) I: 31,500 UNITS, II: 38,250 UNITS, III: 42,000 UNITS, IV: 48,250 UNITS; (2) I: 63,000 UNITS, II: 76,500 UNITS, III: 84,000 UNITS, IV: 96,500 UNITS; (3) 3,15,000, RS.9,13,500)

(SOLVE PROBLEM NO 1 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTION: what is the impact on the question, if opening stock is 8000 kgs and closing stock is 18,000 kgs.

Note:_____

_____

PROBLEM 2: (PRINTED SOLUTION AVAILABLE): Concorde Ltd. manufactures two products using two types of materials and one grade of labour. Shown below is an extract from the company's working papers for the next month's budget:

	Product - A	Product - B
Budgeted sales (in units)	2,400	3,600
Budgeted material consumption per unit (in kg):		
Material-X	5	3
Material-Y	4	6
Standard labour hours allowed per unit of product	3	5

Material - X and Material - Y cost Rs. 4 and Rs. 6 per kg and labours are paid Rs. 25 per hour. Overtime premium is 50% and is payable, if a worker works for more than 40 hours a week. There are 180 direct workers.

The target productivity ratio (or efficiency ratio) for the productive hours worked by the direct workers in actually manufacturing the products is 80%. In addition, the non-productive downtime is budgeted at 20% of the productive hours worked.

There are four 5 - days weeks in the budgeted period and it is anticipated that sales and production will occur evenly throughout the whole period.

It is anticipated that stock at the beginning of the period will be:

Product - A	400 units.
Product - B	200 units.
Material - X	1,000 kg.
Material - Y	500 kg.

The anticipated closing stocks for budget period are as below:

Product - A	4 days sales
Product - B	5 days sales
Material - X	10 days consumption
Material - Y	6 days consumption

Required: Calculate the Material Purchase Budget and the Wages Budget for the direct workers, showing the quantities and values, for the next month. *(B) (NEW SM - TYK, OLD PM, RTP M14, MTP2 N18 (N&O))*

(ANS.: 36,950, 45,936 KGS; RS.1,47,828, RS. 2,75,616; 43,410 HRS, RS.12,67,875.)

(SOLVE PROBLEM NO 2 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTION: what is the impact on the question, if efficiency ratio is 70%

Note:_____

PROBLEM 3: (PRINTED SOLUTION AVAILABLE): AB manufacturing Company manufactures two products A and B. Both Products use a common Raw Material "C". The Raw Material "C" is purchased at the rate of Rs. 45 per kg. from the Market. The Company has made estimates for the year ended 31st March, 2018 (the budget period) as under:

Particulars	Products	
	A	B
Sales in Units	36,000	16,700
Finished Goods Stock Increase by year-end (in Units)	860	400
Post-production Rejection Rate (%)	3	5
Material "C" per completed Unit, net of wastage	4 kg	5 kg
Material "C" wastage in %	5	4

Additional information available is as under:

- Usage of Raw Material "C" is expected to be at a constant rate over the period.
- Annual cost of holding one unit of Raw Material "C" in Stock is 9% of the Material Cost.
- The cost of placing an order is Rs. 250 per order.

You are required to:

a) Prepare Functional Budgets for the year ended 31st March, 2018 under the following categories:

i) Production Budget for Products A and B in Units.

ii) Purchase Budget for Raw Material "C" in kg and value.

b) Calculate the Economic Order Quantity (EOQ) in kg for Raw Material "C".

(A) (N18 (O) - 8M) (ANS.: A) I) PRODUCT A: 38,000 UNITS, PRODUCT B: 18,000 UNITS; II) PRODUCT C: QUANTITY: 2,53,750 KGS., VALUE: RS. 1,14,18,750; B) 5,597 KGS. (APPROX.))

(SOLVE PROBLEM NO 3,4OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTION: what is the impact on the question, if sales units are 30,000 units, and 20,000 units for product A and B respectively.

Note:_____

_____

PROBLEM 4: (PRINTED SOLUTION AVAILABLE): V Ltd. produces and markets a very popular product called 'X'. The company is interested in presenting its budget for the second quarter of 2019.

The following information are made available for this purpose:

(i) It expects to sell 50,000 bags of 'X' during the second quarter of 2019 at the selling price of Rs. 900 per bag.

(ii) Each bag of 'X' requires 2.5 kgs. of a raw – material called 'Y' and 7.5 kgs. of raw – material called 'Z'.

(iii) Stock levels are planned as follows:

Particulars	Beginning of Quarter	End of Quarter
Finished Bags of 'X' (Nos.)	15,000	11,000
Raw – Material 'Y' (Kgs.)	32,000	26,000
Raw – Material 'Z' (Kgs.)	57,000	47,000
Empty Bag (Nos.)	37,000	28,000

(iv) 'Y' cost Rs.120 per Kg., 'Z' costs Rs.20 per Kg. and 'Empty Bag' costs Rs.80 each.

(v) It requires 9 minutes of direct labour to produce and fill one bag of 'X'. Labour cost is Rs.50 per hour.

(vi) Variable manufacturing costs are Rs.45 per bag. Fixed manufacturing costs Rs.30,00,000 per quarter.

(vii) Variable selling and administration expenses are 5% of sales and fixed administration and selling expenses are Rs.20,50,000 per quarter.

(MTP NOV19)(ANS:I)46,000 UNITS II)1,09,000 3,35,000 37,000 III)582.5 IV) 85,75,000)

(SOLVE PROBLEM NO 5 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTION: what is the impact on the question, if selling price per bag is RS.800

Note:_____

_____

MODEL 2: SALES BUDGET

PROBLEM 5: XY Co., Ltd manufactures two products viz., X and Y and sells them through two divisions, East and West. For the purpose of sales Budget to the Budget committee, following has been made available for the year 2014-2015:

Product	Budgeted sales		Actual sales	
	East Division	West division	East Division	West division
X	400 units at Rs. 9	600 units at Rs. 9	500 units at Rs. 9	700 units at Rs.9
Y	300 units at Rs. 21	500 units at Rs.21	200 units at Rs.21	400 units at Rs.21

Adequate market studies reveal that product X is popular but underpriced. It is expected that if the price of X is increased by Rs.1, it will find a ready market. On the other hand, Y is overpriced and if the price of Y is reduced by Rs.1, it will have more demand in the market. The company management has agreed for the aforesaid price changes. On the basis of these price changes and the reports of salesmen, following estimates have been prepared by the divisional managers:

Percentage increases in sales over budgeted sales

Product	East Division	West division
X	+10%	+5%
Y	+20%	+10%

With the help of intensive advertisement campaign, following additional sales (over and above the above mentioned estimated sales by Divisional Managers) are possible:

Product	East Division	West division
X	60 units	70 units
Y	40 units	50 units

You are required to prepare sales Budget for 2015-16 after incorporating above estimates and also show the Budgeted sales and Actual sales of 2014-15.

(A) (OLD PM, N 15 - 8M) (ANS.: 5,000, 7,000, 13,000, 19,000, 3600, 5,400, 6,300, 10,500, 4,500, 6,300, 8,700, 14,700)

CONCEPT QUESTION: what is the impact on the question, if budget unit for west division of product X =660 and budget unit for east division of product Y =350 units.

Note:_____

MODEL 3: FLEXIBLE BUDGET

PROBLEM 6: You are given the following data of a manufacturing concern:

Particulars	Amount (Rs.)
Variable Expenses (at 50% capacity):	
Materials	48,00,000
Labour	51,20,000
Others	7,60,000
Semi variable expenses (at 50% capacity):	
Maintenance and Repairs	5,00,000
Indirect Labour	19,80,000
Sales Dept. Salaries	5,80,000
Sundry Administrative Expenses	5,20,000
Fixed Expenses:	
Wages & Salaries	16,80,000
Rent, Rates and Taxes	11,20,000
Depreciation	14,00,000
Sundry Administrative Exp.	17,80,000

The fixed expenses remain constant for all levels of production. Semi variable expenses remain constant between 45% and 65% of capacity whereas it increases by 10% between 65% and 80% capacity of 20% between 80% and 100 % capacity.

Sales at various levels are as under:

Capacity	Sales (Rs.)
75%	2,40,00,000
100%	3,20,00,000

Prepare flexible budget at 75% and 100% capacity.

(A) (M17 - 8M) (ANS.: AT 75%: RS. (19,38,000); AT 100%: RS. 3,64,000)

SOLVE PROBLEM NO 6 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTION: what is the impact on the question, if semi variable expenses are remain constant up to 70%&there after increase by 15%.

Note:_____

_____

PROBLEM 7: (PRINTED SOLUTION AVAILABLE) Vivekananda Primary School has a total of 150 students consisting of 5 sections with 30 students per section. The school plans for a picnic around the city during the weekend to places such as the zoo, the Japanese park, Birla planetarium etc. A private transport operator has come forward to lease out the buses for taking the students. Each bus will have a maximum capacity of 50 (excluding 2 seats reserved for the teachers accompanying the students.) The school will employ two teachers for each bus paying them an allowance of Rs.500 per teacher. It will also lease out the required number of buses. The following are the other cost estimates:

Particulars	Cost per student (Rs.)
Breakfast	50
Lunch	100
Tea	30
Entrance fee at zoo	20
Bus hire charge	6,500 per bus
Special permit fee	500 per bus
Block Entrance fee at the planetarium	2,500
Prizes to students for games	2,500

No costs are incurred in respect of the accompanying teachers (except the allowances of Rs. 500 per teacher).

You are required to prepare:

(a) A flexible budget estimating the total cost for the students' levels of 30, 60, 90, 120 and 150. Each item of cost is to be indicated separately.

(b) Compute the average cost per student at these levels.

(c) What will be your conclusions regarding the break-even level of students if the school proposes to collect Rs. 450 per student. *(B) (RTP M17)*

(ANS.: A) 19,000; 33,000; 39,000; 53,000; 59,000; B) 633.33; 550.00; 433.33; 441.67; 393.33; C) PRACTICALLY POSSIBLE AT 100 & 150 STUDENTS BUT NOT AT 50 STUDENTS)

CONCEPT QUESTION: what is the impact on the question, if three teachers are employed for each bus.

Note:_____

_____

PROBLEM 8: KLM Limited has prepared its expense budget for 50,000 units in its factory for the year 2019-20 as detailed below:

	(per unit)
Direct Materials	125
Direct Labour	50
Variable Overhead	40
Direct Expenses	15

Selling Expenses (20% fixed)	25
Factory Expenses (100% fixed)	15
Administration expenses (100% fixed)	8
Distribution expenses (85% variable)	20
Total	298

Prepare an expense budget for the production of 35,000 units and 70,000 units.

(RTP NOV19NEW)(ANS:AT 35,000u=1,08,95,000 AT 70,000=2,02,40,000)

(SOLVE PROBLEM NO 7,8 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTION: what is the impact on the question, if fixed cost is increased by 10%

Note:_____

_____

MODEL 4: BUDGETED RATIO'S

PROBLEM 9: (PRINTED SOLUTION AVAILABLE): Following data is available for DKG and Co:

	8 hours per day of 5 days per week
Maximum capacity	50 employees
Actual working	40 employees
Actual hours expected to be worked per four week	6,400 hours
Std. hours expected to be earned per four weeks	8,000 hours
Actual hours worked in the four- week period	6,000 hours
Standard hours earned in the four- week period	7,000 hours.

The related period is of 4 weeks. In this period there was a one special day holiday due to national event. Calculate the following ratios:

i) Efficiency Ratio

ii) Activity Ratio

iii) Calendar Ratio

iv) Standard Capacity Usage Ratio

v) Actual Capacity Usage Ratio

vi) Actual Usage of Budgeted Capacity Ratio.

(A) (NEW SM) (ANS.: I) 116.67% II) 109.375% III) 95% IV) 80% V) 75% VI) 93.75%)

(MAY 19 SIMILAR PROBLEM)

(SOLVE PROBLEM NO 9 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTION: what is the impact on the question, if two special holidays due to national events.

Note:_____

_____

MODEL 5: COMPREHENSIVE BUDGET

NIL

PRINTED SOLUTIONS TO SOME SELECTIVE PROBLEMS

PROBLEM NUMBERS TO WHICH SOLUTIONS ARE PROVIDED: 2, 3,4,7,9

PROBLEM NO. 2

Number of days in budget period = 4 weeks × 5 days = 20 days

Number of units to be produced

	Product-A (units)	Product-B (units)
Budgeted Sales	2,400	3,600
Add: Closing stock $\left[\frac{2,400 \text{ units}}{20 \text{ days}} \times 4 \text{ days}\right]$ $\left[\frac{3,600 \text{ units}}{20 \text{ days}} \times 5 \text{ days}\right]$	480	900
Less: Opening stock	400	200
	2,480	4,300

(i) Material Purchase Budget:

	Material-X (Kg.)	Material-Y (Kg.)
Material required :		
Product-A	12,400 (2,480 units × 5 kg.)	9,920 (2,480 units × 4 kg.)
Product-B	12,900 (4,300 units × 3 kg.)	25,800 (4,300 units × 6 kg.)
	25,300	35,720
Add: Closing stock $\left[\frac{25,300 \text{ Kgs.}}{20 \text{ days}} \times 10 \text{ days}\right]$ $\left[\frac{35,720 \text{ Kgs.}}{20 \text{ days}} \times 6 \text{ days}\right]$	12,650	10,716
Less: Opening stock	1,000	500
Quantity to be purchased	36,950	45,936
Rate per kg. of Material	Rs. 4	Rs. 6
Total Cost	Rs. 1,47,800	Rs. 2,75,616

(ii) Wages Budget

	Product-A (Hours)	Product-B (Hours)
Units to be produced	2,480 units	4,300 units
Standard hours allowed per unit	3	5
Total Standard Hours allowed	7,440	21,500
Productive hours required for production	$\frac{7,440 \text{ hours}}{80\%} = 9,300$	$\frac{21,500 \text{ hours}}{80\%} = 26,875$
Add: Non-Productive down time	1,860 hours. (20% of 9,300 hours)	5,375 hours. (20% of 26,875 hours)
Hours to be paid	11,160	32,250

Total Hours to be paid = 43,410 hours (11,160 + 32,250)

Hours to be paid at normal rate = 4 weeks × 40 hours × 180 workers = 28,800 hours

Hours to be paid at premium rate = 43,410 hours - 28,800 hours = 14,610 hours

Total wages to be paid = 28,800 hours × Rs. 25 + 14,610 hours × Rs. 37.5

= Rs. 7,20,000 + Rs. 5,47,875

= Rs. 12,67,875

PROBLEM NO 3

(i) (A) Production Budget (in units) for the year ended 31st March 2018:

	Product A	Product B
Budgeted sales (units)	36,000	16,700
Add: Increase in closing stock	860	400
No. of good units to be produced	36,860	17,100
Post production rejection rate	3%	5%
No. of units to be produced	$38,000\left[\frac{36,860}{0.97}\right]$	$18,000\left[\frac{17,100}{0.95}\right]$

(B) Purchase budget (in kgs and value) for Material C

	Product A	Product B
No. of units to be produced	38000	18000
Usage of Material C per unit of production	4 kg.	5 kg.
Material needed for production	1,52,000 kg	90,000 kg.
Materials to be purchased	1,60,000 kg. $\left[\frac{1,52,000}{0.95}\right]$	93,750 kg. $\left[\frac{90,000}{0.96}\right]$
Total quantity to be purchased	2,53,750 kg.	
Rate per kg. of Material C	45	
Total purchase price	1,14,18,750	

(ii) Calculation of Economic Order Quantity for Material C

$$EOQ = \sqrt{\frac{2X2,53,750X250}{45X9\%}} = \sqrt{\frac{12,68,75,000}{4.05}} = 5,597 \text{ kg. (Approx.)}$$

PROBLEM NO 4

(i) Production Budget of 'X' for the Second Quarter

Particulars	Bags (Nos.)
Budgeted Sales	50,000
Add: Desired Closing stock	11,000
Total Requirements	61,000
Less: Opening stock	15,000
Required Production	46,000

(ii) Raw–Materials Purchase Budget in Quantity as well as in Rs. for 46,000 Bags of 'X'

Particulars	'Y' Kgs	'Z' Kgs	Empty Bags Nos.
Production Requirements Per bag of 'X'	2.5	7.5	1.0
Requirement for Production	1,15,000 (46,000 × 2.5)	3,45,000 (46,000 × 7.5)	46,000 (46,000 × 1)
Add: Desired Closing Stock	26,000	47,000	28,000
Total Requirements	1,41,000	3,92,000	74,000
Less: Opening Stock	32,000	57,000	37,000
Quantity to be purchased	1,09,000	3,35,000	37,000

Cost per Kg./Bag	Rs.120	Rs.20	Rs.80
Cost of Purchase (Rs.)	1,30,80,000	67,00,000	29,60,000

(iii)Computation of Budgeted Variable Cost of Production of 1 Bag of 'X'

Particulars	(Rs.)
Raw – Material	
Y 2.5 Kg @120	300.00
Z 7.5 Kg. @20	150.00
Empty Bag	80.00
Direct Labour (Rs.50× 9 minutes / 60 minutes)	7.50
Variable Manufacturing Overheads	45.00
Variable Cost of Production per bag	582.50

PROBLEM NO. 7

a) **Flexible Budget**

Level of students	30	60	90	120	150
Variable Costs (Rs.)					
Breakfast at Rs. 50	1,500	3,000	4,500	6,000	7,500
Lunch at Rs. 100	3,000	6,000	9,000	12,000	15,000
Tea at Rs. 30	900	1,800	2,700	3,600	4,500
Entrance fee at zoo at Rs. 20	600	1,200	1,800	2,400	3,000
Variable cost at Rs. 200	6,000	12,000	18,000	24,000	30,000
Semi-variable costs (Rs.)					
Bus hire charge	6,500	13,000	13,000	19,500	19,500
Special permit fee	500	1,000	1,000	1,500	1,500
Allowance to teachers	1,000	2,000	2,000	3,000	3,000
	8,000	16,000	16,000	24,000	24,000
Fixed costs (Rs.)					
Block entrance fee other than zoo	2,500	2,500	2,500	2,500	2,500
Prizes to students for games	2,500	2,500	2,500	2,500	2,500
	5,000	5,000	5,000	5,000	5,000
Total Cost	**19,000**	**33,000**	**39,000**	**53,000**	**59,000**
b) Average cost per student (Total Cost /Number of Students)	633.33	550.00	433.33	441.67	

c) Calculation of Break-even level of students:

Collection per student	Rs. 450
Variable cost per student	Rs. 200
Contribution per student	Rs. 250

Semi-variable costs for levels of 50, 100 and 150 students.

Level of students	50	100	150
Semi-variable costs	8,000	16,000	24,000
Fixed costs	5,000	5,000	5,000
	13,000	21,000	29,000
Break- even students [Fixed cost / Contribution per student]	52	84	116

There are two practically possible break-even levels, i.e., 84 students and 116 students. Break-even level of 52 is outside the level of 50 and hence shall be ignored.

PROBLEM NO. 9

Maximum Capacity in a budget period = 50 Employees × 8 Hrs.× 5 Days × 4 Weeks = 8,000 Hrs.

Budgeted Hours = 40 Employees ×8 Hrs.×5 Days×4 Weeks= 6,400 Hrs.

Actual Hrs. = 6,000 Hrs. (given)

Standard Hrs. for Actual Output = 7,000 Hrs.

Budget No. of Days = 20 Days = 20 Days (4 Weeks x 5 Days)

Actual No. of Days = 20 - 1 = 19 Days

$$\text{Efficiency Ratio} = \frac{\text{Standard Hours}}{\text{Actual Hours}} \times 100 = \frac{7,000 \text{ Hours}}{6,000 \text{ Hours}} = 116.67\%$$

$$\text{Activity Ratio} = \frac{\text{Standard Hours}}{\text{Budgeted Hours}} \times 100 = \frac{7,000 \text{ Hours}}{6,400 \text{ Hours}} \times 100 = 109.375\%$$

$$\text{Calendar Ratio} = \frac{\text{Available working days}}{\text{Budgeted working days}} \times 100 = \frac{19 \text{ days}}{20 \text{ days}} \times 100 = 95\%$$

$$\text{Standard Capacity Usage Ratio} = \frac{\text{Budgeted Hours}}{\text{Max. possible Hours in the budgeted period}} \times 100 = \frac{6,400 \text{ Hours}}{8,000 \text{ Hours}} \times 100 = 80\%$$

$$\text{Actual Capacity Usage Ratio} = \frac{\text{Actual Hours worked}}{\text{Max. possible working in a period}} \times 100 = \frac{6,000 \text{ Hours}}{8,000 \text{ Hours}} \times 100 = 75\%$$

$$\text{Actual usage of Budgeted Capacity Ratio} = \frac{\text{Actual Hours worked}}{\text{Budgeted Hours}} \times 100 = \frac{6,000 \text{ Hours}}{6,400 \text{ Hours}} \times 100 = 93.75\%$$

ASSIGNMENT PROBLEMS

MODEL 1: PRODUCTION BUDGET RAW MATERIAL PURCHASE BUDGET AND DIRECT WAGES BUDGET

PROBLEM 1: AK Limited produces and sells a single product. Sales budget for calendar year 2012 by quarters is as under:

Quarters	I	II	III	IV
No. of units to be sold	18,000	22,000	25,000	27,000

The year is expected to open with an inventory of 6,000 units of finished products and close with inventory of 8,000 units. Production is customarily scheduled to provide for 70% of the current quarter's sales demand plus 30% of the following quarter demand. The budgeted selling price per unit is Rs. 40. The standard cost details for one unit of the product are as follows:

Variable Cost Rs. 34.50 per unit, Fixed Overheads Rs.2 hours 30 minutes @Rs. 2 per hour based on a budgeted production volume of 1,10,000 direct labour hours for the year. Fixed overheads are evenly distributed throughout the year.

You are required to:

a) Prepare Quarterly Production Budget for the year.

b) In which quarter of the year, company expected to achieve break-even point.

(A) (OLD PM, M12 - 5M) (ANS.: I. 19,200 UNITS, 22,900 UNITS, 25,600 UNITS, 26,300 UNITS, II. BEP ACHIEVED IN 2ND QUARTER)

PROBLEM 2: XYZ Limited is drawing a production plan for its two products - Product 'xml' and 'Product 'yml' for the year 2015-16. The company's policy is to maintain closing stock of finished goods at 25% of the anticipated volume of sales of the succeeding month.

The following are the estimated data for the two products:

	Xml	Yml
Budgeted Production (in units)	2,00,000	1,50,000
Direct Material (per unit)	Rs.220	Rs.280
Direct Labour (per unit)	Rs.130	Rs.120
Direct Manufacturing Expenses	Rs.4,00,000	Rs.5,00,000

The estimated units to be sold in the first four months of the year 2015-16 are as under:

	April	May	June	July
Xml	8,000	10,000	12,000	16,000
Yml	6,000	8,000	9,000	14,000

Prepare:

i) Production Budget (Month wise)

ii) Production cost Budget (for first quarter of the year)

(A) (M15 - 8M) (ANS.: XML: I) 8,500, 10,500, 13,000; YML: 8,000, 8,250, 10,250; II) 1,12,64,000, 1,00,83,333)

PROBLEM 3: Jigyasa Ltd. is drawing a production plan for its two products Minimax (MM) and Heavy high (HH) for the year 2013-14. The company's policy is to hold closing stock of finished goods at25% of the anticipated volume of sales of the succeeding month. The following are the estimated data for two products:

	Minimax (MM)	Heavy high (HH)
Budgeted Production units	1,80,000	1,20,000
	(Rs.)	(Rs.)
Direct material cost per unit	220	280
Direct labour cost per unit	130	120
Manufacturing overhead	4,00,000	5,00,000

The estimated units to be sold in the first four months of the year 2013-14 are as under

	April	May	June	July
Minimax	8,000	10,000	12,000	16,000
Heavy high	6,000	8,000	9,000	14,000

Prepare production budget for the first quarter in month wise. *(B) (NEW SM - TYK, OLD PM, RTP N13, RTP N18 (N&O))*

(ANS.: MM (IN UNITS): 8,500, 10,500, 13,000; HH (IN UNITS): 6,500; 8,250; 10,250)

PROBLEM 4: G Ltd. manufactures two products called 'M' and 'N'. Both products use a common raw material Z. The raw material Z is purchased @ Rs. 36 per kg from the market. The company has decided to review inventory management policies for the forthcoming year.

The following forecast information has been extracted from departmental estimates for the year ended 31st March 2016 (the budget period):

	Product M	Product N
Sales (units)	28,000	13,000
Finished goods stock increase by year-end	320	160
Post-production rejection rate (%)	4	6
Material Z usage (per completed unit, net of wastage)	5 kg	6 kg
Material Z wastage (%)	10	5

Additional information:

- Usage of raw material Z is expected to be at a constant rate over the period.

- Annual cost of holding one unit of raw material in stock is 11% of the material cost.

- The cost of placing an orders is Rs. 320 per order.

- The management of G Ltd. has decided that there should not be more than 40 orders in a year for the raw material Z.

Required

a) Prepare functional budgets for the year ended 31st March 2016 under the following headings:

i) Production budget for Products M and N (in units).

ii) Purchases budget for Material Z (in kgs and value).

b) Calculate the Economic Order Quantity for Material Z (in kgs).

c) If there is a sole supplier for the raw material Z in the market and the supplier do not sale more than 4,000 kg. of material Z at a time. Keeping the management purchase policy and production quantity mix into consideration, calculate the maximum number of units of Product M and N that could be produced.

(A) (OLD PM, RTP - N15, RTP - M18, RTP - N17) (ANS.: A) (I) 29,500, 14,000; (II) 2,52,310, 90,83,160; B) 6,385.72; C) 18,707, 8,878)

PROBLEM 5: A fruit juice manufacturer is in the process of preparing budgets for the next few months, and the following draft figures are available:

Sales	Forecast
June	6,000 Litres
July	7,500 Litres
August	8,500 Litres
September	7,000 Litres
October	6,500 Litres

A litre of fruit juice has a standard cost of Rs. 75 and a standard selling price of Rs. 105. Each litre of juice uses 3.5 kg. of fruits and it is policy to have stocks of fruits at the end of each month to cover 50 per cent of next month's production. There are 5,800kg in stock on 1st June.

There are 750 litres of finished fruit juice in stock on 1st June and it is policy to have stocks at the end of each month to cover 10% of the next month's sales.

Requirements:

a) Prepare a production budget (in litres) for June, July, August and September.

b) Prepare a fruits purchase budget (in kg.) for the months of June, July and August.

c) Calculate the budgeted gross profit for the quarter June to August.

(C) (MTP N15) (ANS.: A) 6,000, 7,600, 8,350, 6,950; B) 28,500, 27,912.5, 26,775; C) 1,80,000, 2,25,000, 2,55,000

MODEL 2: SALES BUDGET

NIL

MODEL 3: FLEXIBLE BUDGET

PROBLEM 6: The budgeted cost of a factory specializing in the production of a single product at the optimum capacity of 6,400 units per annum amounts to Rs.1,76,048 as detailed below:

	Rs.	Rs.
Fixed costs		20,688
Variable costs:		
Power	1,440	
Repairs, etc.	1,700	
Miscellaneous	540	

Direct Material	49,280	
Direct labour	1,02,400	1,55,360
		1,76,048

Taking note of the possible impact on sales turnover by market trends, the company decides to have a flexible budget with a production target of 3,200 and 4,800 units (the actual quantity proposed to be produced being left to a later date before commencement of the budget period). Prepare a flexible budget for production levels at 50% and 75%. Assuming the selling price per unit is maintained at Rs. 40 as at present, indicate the effect on net profit. Administration, selling and distribution expenses continue at Rs. 3,600. *(B) (MTP N15) (ANS.: 26,032, 51,192, 76,352)*

PROBLEM 7: RST limited is presently operating at 50% capacity and producing30,000 units. The entire output is sold at a price of 200 per unit. The cost structure at the 50% level of activity is as under:

Direct material	75 per unit
Direct wages	25 per unit
Variable overheads	25 per unit
Direct expenses	15 per unit
Factory overheads (25%fixed)	20 per unit
Selling and distribution exp.(80%variable)	10 per unit
Office and administrative exp.(100%fixed)	5 per unit

The company anticipates that the variable costs will go up by 10% and fixed costs will go up by 15%.

You are require to prepare an expense budget, on the basis of marginal cost for the company at 50% and 60% level of activity and find out the profits at respective levels.

(B) (OLD PM, N14 - 8M) (ANS.: 2,07,000, 3,31,200

PROBLEM 8:PJ Ltd manufactures hockey sticks. It sells the products at 500 each and makes a profit of 125 on each stick. The Company is producing 5000 sticks annually by using 50% of its machinery capacity.

The cost of each stick is as under :

Direct Material	150
Direct Wages	50
Works Overhead	125 (50% fixed)
Selling Expenses	50 (25% variable)

The anticipation for the next year is that cost will go up as under:

Fixed Charges	10%
Direct Wages	20%
Direct Material	5%

There will not be any change in selling price.

There is an additional order for 2000 sticks in the next year.

Calculate the lowest price that can be quoted so that the company can earn the same profit as it earned in the current year? **(NOV 19 NEW 10M)**

MODEL 4: BUDGETED RATIO'S

PROBLEM 9: Following data is available for ABC Ltd:

Standard working hours	8 hours per day of 5 days per week
Maximum Capacity	60 employees
Actual Working	50 employees
Actual hours expected to be worked per four week	8000 hours

Standard hours expected to be earned per four week	9600 hours
Actual hours worked in the four week	7500 hours
Standard hours earned in the four week period	8800 hours

The related period is four weeks

Calculate the fallowing ratios

(i) Efficiency Ratio

(ii) Activity Ratio

(iii) Standard capacity Usage ratio

(iv) Actual Capacity Usage ratio

(v) Actual Usage of Budgeted Capacity ratio

(may 19 new 5m)(ans: i) 117.33%,ii) 110% iii) 83.33% iv) 78.125% v) 93.75%)

MODEL 5: COMPREHENSIVE BUDGET

NIL

ADDITIONAL QUESTION BANK FOR STUDENTS SELF PRACTICE

PROBLEM 1: A company is engaged in the manufacture of specialized sub-assemblies required for certain electronic equipments. The company envisages that in the forthcoming month, December, 2012, the sales will take a pattern in the ratio of 3: 4: 2 respectively of subassemblies, ACB, MCB and DP.

The following is the schedule of components required for manufacture:

Component requirements					
Sub-assembly	**Selling price**	**Base board**	**IC08**	**IC12**	**IC26**
ACB	520	1	8	4	2
MCB	500	1	2	10	6
DP	350	1	2	4	8
Purchase price (Rs.)		60	20	12	8

The direct labour time and variable overheads required for each of the sub-assemblies are:

Labour hours per sub-assembly			
	Grade A	**Grade B**	**Variable overheads per sub - assembly (Rs.)**
ACB	8	16	36
MCB	6	12	24
DP	4	8	24
Direct wage rate per hour (Rs.)	5	4	—

The labourers work 8 hours a day for 25 days a month.

The opening stocks of sub-assemblies and components for December, 2012 are as under:

Sub - assemblies		**Components**	
ACB	800	Base Board	1,600
MCB	1,200	IC08	1,200
DP	2,800	IC12	6,000
		IC26	4,000

Fixed overheads amount to Rs. 7,57,200 for the month and a monthly profit target of Rs. 12 lacs has been set. The company is eager for a reduction of closing inventories for December, 2012 of subassemblies and components by 10% of quantity as compared to the opening stock.

Prepare the following budgets for December 2012:

a) Sales budget in quantity and value.

b) Production budget in quantity

c) Component usage budget in quantity.

d) Component purchase budget in quantity and value.

e) Manpower budget showing the number of workers and the amount of wages payable.

(B) (NEW SM, OLD SM) (ANS.: A) 6,300, 32,76,000, B) 6,220, C) 74,160, D) 18,260, 10,95,600, E) 576, 5,76,000)

(SOLVE PROBLEM NO 1 OF ASSIGNMENT PROBLEMS AS REWORK)

PROBLEM 2: S Ltd., manufactures and sells 2 products, S1 and S2. The following data is relevant for drawing budget 1997.

a) Projected Sales:

Product	Units	Price (Rs.)
S1	60,000	140
S2	40,000	200

b) To produce one unit of S1 and S2 the following raw materials are used:

Raw Material	Unit	Amount used per unit	
		S1	S2
A	Kgs	4	5
B	Kgs	2	3
C	Kgs	2	1

c) Inventories in Units:

Product	Expected January 1, 1997	Target December 31, 1997
S1	20,000	25,000
S2	8,000	9,000
Raw Material		
A	32,000 Kgs	36,000 Kgs
B	29,000 Kgs	32,000 Kgs
C	6,000 Kgs	7,000 Kgs

d) The anticipated purchase price of raw material A, B and C are Rs.12, Rs.5 and Rs.3 per kg. respectively.

e) Projected direct labour requirements for 1997, and rates of pay are:

Product	Hours per Unit	Rate per hour
S1	2	12
S2	3	16

f) Overhead is applied at the rate of Rs.20 per direct labour hour.

Based on the above projections & budget requirements for 1997, prepare the following budgets:

i) Sales budget in Rupees;

ii) Production budget in units;

iii) Raw material purchase budget in quantities;

iv) Raw material purchase budget in Rupees;

v) Direct labour budget in Rupees;

vi) Budgeted finished goods at 31/12 in Rupees;

vii) Profit and Loss Budget.

(C) (Ans.: (1) Rs. 1,64,00,000; (2) S1 - 65,000 units, S2 - 41,000 units; (3) A - 4,69,000 Kgs, B - 2,56,000 Kgs, C - 1,72,000 Kgs; (4) A - Rs. 5,62,8000, B - Rs. 12,80,000, C - Rs. 5,16,000; (5) Rs. 35,28,000 (6) S1 - Rs. 32,00,000, S2 - Rs. 16,74,000; (7) S1 - Rs. 7,20,000, S2 - Rs.5,60,000)

PROBLEM 3: A Light Motor Vehicle manufacturer has prepared sales budget for the next few months, and the following draft figures are available:

Month	No. of vehicles
October	4,000
November	3,500
December	4,500
January	6,000
February	6,500

To manufacture a vehicle a standard cost of Rs. 2,85,700 is incurred and sold through dealers at a uniform selling price of Rs. 3,95,600 to customers. Dealers are paid 12.5% commission on selling price on sale of a vehicle.

Apart from other materials four units of Part-X are required to manufacture a vehicle. It is a policy of the company to hold stocks of Part-X at the end of each month to cover 40% of next month's production. 4,800 units of Part-X are in stock as on 1st October.

There are 950 nos. of completed vehicles are in stock as on 1st October and it is policy to have stocks at the end of each month to cover 20% of the next month's sales.

You are required to

a) Prepare Production budget (in nos.) for the month of October, November, December and January.

b) Prepare a Purchase budget for Part-X (in units) for the months of October, November and December.

c) Calculate the budgeted gross profit for the quarter October to December.

(B) (OLD PM, RTP N14, MTP M15, MTP2 M19 (N&O)) (ANS.: A) 3,750, 3,700, 4,800, 6,100; B) 16,120, 16,560, 21,280; C) 7,254)

PROBLEM 4: The cost accountant of manufacturing company provides you the following details for year 2012:

	(Rs.)		(Rs.)
Direct materials	1,75,000	Other variable costs	80,000
Direct Wages	1,00,000	Other fixed costs	80,000
Fixed factory overheads	1,00,000	Profit	1,15,000
Variable factory overheads	1,00,000	Sales	7,50,000

During the year, the company manufactured two products A and B and the output and costs were:

	A	B
Output (units)	2,00,000	1,00,000
Selling price per unit	Rs. 2.00	Rs. 3.50
Direct materials per unit	Rs. 0.50	Rs. 0.75
Direct wages per unit	Rs. 0.25	Rs. 0.50

Variable factory overhead are absorbed as a percentage of direct wages. Other variable costs are been computed as: Product A Rs. 0.25 per unit; and B Rs. 0.30 per unit. During 2013, it is expected that the demand for product A will fall by 25 % and for B by 50%. It is decided to manufacture a further product C, the cost for which are estimated as follows:

	Product C
Output (units)	2,00,000
Selling price per unit	Rs. 1.75

Direct materials per unit	Rs. 0.40
Direct wages per unit	Rs. 0.25

It is anticipated that the other variable costs per unit will be the same as for product A. Prepare a budget to present to the management, showing the current position and the position for 2013. Comment on the comparative results. *(B) (NEW SM - TYK, OLD SM) (ANS.: RS.1,15,000, RS.1,25,000)*

PROBLEM 5: Aditya Ltd. manufactures two products K596 and H852. The sales director has anticipated to sale 8,000 units of Product K596 and 4,200 units of Product H852. The Standard cost data for the products for next year are as follows:

	Product - K596 Per unit	Product - H852 Per unit
Direct materials:		
- Material X @ Rs. 15 per kg.	12 kg.	15 kg.
- Material Y@ Rs. 16 per kg.	15 kg.	6 kg.
- Material Z @ Rs. 5 per ltr.	8 ltr.	14 ltr.
Direct wages:		
- Unskilled @ Rs. 40 per hour	12 hours	10 hours
- Skilled @ Rs. 75 per hour	8 hours	5 hours

Budgeted stocks for next year are as follows:

	Product- K596 Per unit	Product- H852 Per unit
1st January, 2015	800	1,600
31st December, 2015	1,000	2,100

	Material-X (kg)	Material - Y (kg)	Material - Z (kg)
1st January, 2015	25,000	30,000	14,000
31st December, 2015	30,000	18,000	7,500

Prepare the following budgets for next year:

a) Production budget, in units;

b) Material purchase budget, in quantity and in value;

c) Direct labour budget, in hours and in value.

(B) (RTP N16, MTP N14) (ANS.: A) 8,200, 4,700; B) 1,73,900, 1,39,200, 1,24,900; C) 1,45,400 HRS, 89,100 HRS, 58,16,000, 66,82,500)

PROBLEM 6: S Ltd. has prepared budget for the coming year for its two products A and B.

	Product A (Rs.)	Product B (Rs.)
Production & Sales unit	6,000 units	9,000 units
Raw material cost per unit	60.00	42.00
Direct labour cost per unit	30.00	18.00
Variable overhead per unit	12.00	6.00
Fixed overhead per unit	8.00	4.00
Selling price per unit	120.00	78.00

After some marketing efforts, the sales quantity of the Product A & B can be increased by 1,500 units and 500 units respectively but for this purpose the variable overhead and fixed overhead will be increased by 10% and 5% respectively for the both products.

You are required to prepare flexible budget for both the products:

a) Before marketing efforts b) After marketing efforts.

(B) (OLD PM, RTP M15, RTP M19 (N&O), MTP1 N18 (N)) (ANS.: A) 60,000, 72,000; B) 75,600, 70,500)

THE END