CHAPTER-13

STANDARD COSTING

DIRECT MATERIAL VARIANCES

Q1. **(SMN2)** NXE Manufacturing Concern furnishes the following information:

Standard:	Material for 70kg finished products	100 kg.
	Price of material	Rs. 1 per kg.
Actual:	Output	2, 10,000 kg.
	Material used	2, 80,000 kg.
	Cost of Materials	Rs. 2,52,000
Calculate:	(a) Material usage variance, (b) Material price variance, (c) Material cost variance.	

Q2. **(2)**RS Ltd. has established the following standard mix for producing 9 tonnes of product z.

	Rs.
5 tonnes of material A at Rs. 7 per tones =	35
3 tonnes of material B at Rs. 5 per tones =	15
2 tonnes of material C at Rs. 2 per tones =	4
	Rs. 54

A standard loss of 10% of input is expected to occur. Actual input was as under:

53,000 tonnes of material A at Rs. 7 per tones.

28,000 tonnes of materials B at Rs. 5.30 per tones.

19,000 tonnes of material C at Rs. 2.20 per tones.

Actual output for a period was 92,700 tonnes of product Z.

Compute:

(i) Material Mix Variance;

(ii) Material Yield Variance.

Q3. XYZ Ltd. produces two products M and N by using two inputs Material A and B. The standard price per unit of Material A is Rs.20 and of Material B is Rs.10. The standard quantities of materials for each product are as follows:

Product	Materials	
	A (units)	B (units)
M	2	3
N	1	4

The company actually produced 11,000 units of M and 9,000 units of N and used 32,500 units of Material A at a cost of Rs.6,59,750 and 67,000 units of Material B at a cost of Rs.6,83,400.

Calculate:

(i) Material Price Variance;

(ii) Material Usage Variance;

(iii) Material Cost Variance. **(R-M-17/8)**

Q4. (7): Eskay Ltd. produces an article by blending two basic raw materials. The following standards have been set up for raw materials:

Material	Standard Mix	Standard Price per kg.
A	40%	Rs. 4.00
B	60%	Rs. 3.00

The standard loss in processing is 15% During September, 1990, the company produced 1,700 kg. of finished output.

The position of stock and purchases for the month of September, 1990 is as under:

Material	Stock on 1.9.90	Stock on 30.9.90	Purchased during September, 90	
	Kg.	Kg.	Kg.	Cost Rs.
A	35	5	800	3,400
B	40	50	1,200	3,000

Calculate the following variances:

(a) Material price variance
(b) Material usage variance
(c) Material yield variance
(d) Material mix variance
(e) Total material cost variance

Assume first in first out method for the issue of material. The opening stock is to be valued at standard price.

[R-N-16/8, IPC/R-M19/9-Similar]

Q5. (SMN3/SM). The standard cost of a chemical mixture is as follows:

40% material X at Rs. 20 per kg

60% material Y at Rs. 30 per kg

A standard loss of 10% of input is expected in production.

The cost records for a periods showed the following usage:

90 kg. material X at a cost of Rs.18 per kg.

110 kg. material Y at a cost of Rs. 34 per kg.

This quantity produced (Actual Yield) was 182 kg. of good product . Calculate Material Variances.

[INTER/M18/5(A)(ii)-Similar]

Q6. (SMN1). The standard and actual figures of product 'Z' are as under:

	Standard	Actual
Material quantity	50 units	45 units
Material price per unit	Rs. 1.00	Rs. 0.80

Calculate material cost variances.

Q7. (SMP1). For making 10 kg of CEMCO, the standard Material requirements are:

Material	Quantity	Rate per kg. (Rs.)
A	8	6.00
B	4	4.00

During April 1,000 kg. of CEMCO were produced. The actual consumption of materials is as under:

Material	Quantity (Kg.)	Rate per kg. (Rs.)
A	750	7.00
B	500	5.00

Calculate (A) Material Cost Variance: (b) Material Price Variance: (C) Material usage Variance.

Q8. **(SMP2).** The Standard MIX to produce one unit of product is as follows:

Material X 60 units @ Rs. 15 per unit	=	900
Material Y 80 units @ Rs. 20 per unit	=	1,600
Material Z 100 units @ Rs. 25 per unit	=	2,500
240 Units		5,000

During the month of April 10 units were actually produced and Consumption was as follows:

Material X 640 units @ Rs. 17.50 per unit	=	11,200
Material Y 950 units @ Rs. 18.00 per unit	=	17,100
Material Z 870 units @ Rs. 27.50 per unit	=	23,925
2460 Units		52,225

Calculate all material variances.

Q9. **(P).** UV Ltd. Present the following information for November, 2013:
Budgeted production of product P - 200 units.
Standard consumption of Raw materials = 2 kg. per unit of P.
Standard price of material A = Rs. 6 per kg.
Actually 250 units of P were produced and material A was purchased at Rs. 8 per kg and consumed at 1.8 kg per unit of P. Calculate the Material Cost Variances.

Q10 (PM). Answer the following:

(a) Following are the details of the product Phomex for the month of April 2013:

Standard quantity of material required per unit	5 kg.
Actual output	1000 units
Actual cost of materials used	Rs. 7,14,000
Material price variance	Rs. 51,000 (Fav)

Actual price per kg of material is found to be less than standard price per kg of material by Rs. 10.
You are required to calculate:
(i) Actual quantity and Actual price of materials used
(ii) Material Usage Variance
(iii) Material Cost Variance.

Q11. (PM) Jigyasa Pharmaceuticals Ltd. is engaged in producing dietary supplement 'Funkids' for growing children. It produces 'Funkids' in a batch of 10 kgs. Standard material input, required for 10 kgs. of 'Funkids' are as below:

Material	Quantity (in kgs.)	Rate per kg. (in Rs.)
Vita-X	5	110
Proto-D	3	320
Mine-L	3	460

During the month of March, 2014, actual production was 5,000 kgs. of 'Funkids' for which the actual quantities of material used for a batch and the prices paid thereof are as under:

Material	Quantity (in kgs.)	Rate per kg. (in Rs.)
Vita-X	6	115
Proto-D	2.5	330
Mine-L	2	405

You are required to calculate the following variances based on the above given information for the month of March, 2014 for Jigyasa Pharmaceuticals Ltd.:
(i) Material Cost Variance;
(ii) Material Price Variance;
(iii) Material Usage Variance;
(iv) Material Mix Variance;
(v) Material Yield Variance. **[R-N-15/7]**

Q12. **(SMP10)** J.K. Ltd. manufactures NXE by mixing three raw materials. For every batch of 100 kg. of NXE, 125 kg. of raw materials are used. In April, 2012, 60 batches were prepared to produce an output of 5,600 kg. of NXE. The standard and actual particulars for April, 2012, are as follows:

Raw Materials	Standard		Actual		Quantity of Raw Materials Purchased
	Mix	Price per kg.	Mix	Price per kg.	
	(%)	(Rs.)	(%)	(Rs.)	(Kg.)
A	50	20	60	21	5,000
B	30	10	20	8	2,000
C	20	5	20	6	1,200

Calculate all variances.

Direct Labour variances

(14)100 skilled workmen, 40 semi-skilled workmen and 60 unskilled workmen were to work for 30 weeks to get a contract job completed. The standard weekly wages were Rs. 60, Rs. 36 and Rs. 24 respectively. The job was actually completed in 32 weeks by 80 skilled, 50 semi-skilled and 70 unskilled workmen who were paid Rs. 65, Rs. 40 and Rs. 20 respectively as weekly wages. Find out the labour cost variance, labour rate variance, labour mix variance and labour efficiency variance.

(15) Calculate the labour variances from the following information:

Standards Wages:

Grade X:	90 labourers at Rs. 2 per hour
Grade Y:	60 labourers at Rs. 3 per hour

Actual Wages:

Grade X:	80 labourers at Rs. 2.50 per hour
Grade Y:	70 laboureres at Rs. 2.00 per hour

Budgeted Hours 1,000; Actual Hours 900

Budgeted Gross Production 5,000 units;

Standards Loss 20% ; Actual loss 900 units.

Q15. (SMN4-Similar). (Calculation of labour cost variance, labour efficiency and labour rate variance)

The standard and actual figures of a firm are as under :

Standard time for the job	1,000 hours
Standard rate per hour	Rs. 0.50
Actual time taken	900 hours
Actual wages paid	Rs. 360
Compute the variance	

Q16. (SMN5). The standard labour employment and the labour engaged a week for a job are as under

	Skilled Workers	Semi- skilled workers	Unskilled workers
Standard of workers in the gang	32	12	6
Actual no. of worked employed	28	18	4
Standard wage rate per hour	3	2	1
Actual wage rate per hour	4	3	2

During the 40 hours working week, the gang produced 1,800 standard labour hours of work, Calculate

(a) Labour Cost Variance	(b) Labour Rate Variance
(c) Labour Efficiency Variance	(d) Labour Mix Variance
(e) Labour Yield Variance	

[MTP-MAR18/5(A)-Similar]

Q17. The standard labour component and the actual labour component engaged in a week for a job are as follows:

	Skilled Workers	Semi-skilled Workers	Un-Skilled workers
Standard number of workers in the gang	32	12	6
Standard wage rate per hour (Rs.)	30	20	10
Actual number of workers employed in the gang during the week	28	18	4
Actual wages rate per hour (Rs.)	34	23	12

During the 40 hours working week the gang produced 1,800 standard labour hours of work. CALCULATE:

(i) Total labour cost variance;

(ii) Labour yield variance;

(iii) Labour mix variance; and

(iv) Labour wage rate variance. **[MTP-M18/5(A)]**

Q18. (PM). The standard labour employment and the actual labour engaged in a 40 hours week for a job are as under:

Category of Worker	Standard		Actual	
	No. of workers	Wages Rate per hour (Rs.)	No. of Workers	Wages Rate per hour (Rs.)
Skilled	65	45	50	50
Semi- skilled	20	30	30	35
Unskilled	15	15	20	10

Standard output: 2,000 units; Actual output: 1,800 units.

Abnormal Idle time 2 hours in a week

Calculate:

(i) Labour Cost Variance

(ii) Labour Efficiency Variance

(iii) Labour Idle Time Variance,

Q19. The following information has been provided by a company:

Number of units produced and sold	6,000
Standard labour rate per hour	Rs.8
Standard hours required for 6,000 units -	
Actual hours required	17,094 hours
Labour efficiency	105.3%
Labour rate variance	Rs.68,376 (A)

You are required to calculate:

(i) Actual labour rate per hour

(ii) Standard hours required for 6,000 units

(iii) Labour Efficiency variance

(iv) Standard labour cost per unit

(v) Actual labour cost per unit. **(R-M-16/9) (R-N-17/7-Amt Half]**

Q20. A company planned to produce 2,000 units of a product in week of 40 hours by employing 65 skilled workers. Other relevant information are as follows:

- Standard wages rate : Rs. 45 per hour
- Actual production : 1800 units
- Actual number of worker employed : 50 workers in a week of 40 hours
- Actual wages rate: Rs. 50 per hour
- Abnormal Time loss due to machinery breakdown: 100 hours.

You are required to calculate :

(i) Labour cost, rate, idle time and efficiency variances.

(ii) Reconcile the variances. **[IPCC-M18/1(B)][M-5]**

Material & Labour Variances

Q21. **(PM)**ABC Ltd. had prepared the following estimation for the month of April:

	Quantity	Rate (Rs.)	Amount (Rs.)
Material-A	800 kg.	45.00	36,000
Material-B	600 kg.	30.00	18,000
Skilled labour	1,000 hours	37.50	37,500
Unskilled labour	800 hours	22.00	17,600

Normal loss was expected to be 10% of total input material and an idle labour time of 5% of expected labour hours was also estimated.

At the end of the month the following information has been collected from the cost accounting department:

The company has produced 1,480 kg. finished product by using the following:

	Quantity	Rate (Rs.)	Amount (Rs.)
Material-A	900 kg.	43.00	38,700
Material-B	650 kg.	32.50	21,125
Skilled labour	1,200 hours	35.50	42,600
Unskilled labour	860 hours	23.00	19,780

You are required to calculate:

(a) Material Cost Variance;

(b) Material Price Variance;

(c) Material Mix Variance;

(d) Material Yield Variance;

(e) Labour Cost Variance;

(f) Labour Efficiency Variance and

(g) Labour Yield Variance. **[R-M-15/7][R-M18/12][R-M19/11]**

Q22. **(15/PM)**Sun Ltd. Turns out only one article, the prime cost standards for which have been established as follows:

	Per Completed Piece
Material 5 lbs @ Rs. 4.20	Rs. 21
Labour 3 Hour @ Rs. 3.00	Rs. 9

The production schedule for the month of July 1998 required completion of 5,000 pieces. However, 5,120 pieces were actually completed.

Purchases for the month of July 1998 amounted to 30,000 Ibs. Of material at the total invoice price of Rs. 1,35,000. Production records for the month of July, 1998 showed the following actuals results:

Material requisition and used	25,700 Ibs
Direct labour hours 15,150, hours	Rs.48,480

Calculate appropriate material and labour variances.

Q23.(C1N/PM)KPR Limited operates a system of standard costing in respect of one of its products which is manufactured within a single cost centre. The standard cost card of a product is as under:

Standard		Unit cost (Rs.)
Direct Material	5 Kgs @ Rs. 4.20	21.00
Direct Labour	3 Hours @ Rs. 3.00	9.00
Factory Overhead	Rs. 1.20 per labour hour	3.60
Total manufacturing cost		33.60

The production schedule for the month of june, 2011 required completion of 40,000 units. However, 40960 units were completed during the month without opening and closing work in process inventories. Purchase during the month of june, 2011, 2,25,000 kgs. Of material at the rate of Rs. 4.50 per Kg. production and sales records for the month showed the following actual results.

Material used	2,05,600 Kgs
Direct Labour 1,21,200 hours, cost incurred	Rs. 3,87,840
Total factory overhead cost incurred	Rs. 1,00,000
Sales	40,000 Units

Selling price to be so fixed as to allow a mark up of 20% on selling price.

Required:

(i) Calculate material variances based on consumption of material.
(ii) Calculate labour variances and the total variance for factory overhead.
(iii) Prepare income statement for June, 2011 showing actual gross margin.
(iv) An incentive scheme is in operation in the company whereby employees are paid a bonus of 50% of direct labour hour saved at standard direct labour hour rate. Calculate the Bonus amount.

[Nov 2007]

Q24. (C3N/PM-Budget) Following is the sales budget for the first six months of the year 2011 in respect of PQR Ltd.

Month:	Jan.	Feb.	March	April	May	June
Sales (Units)	10,000	12,000	14,000	15,000	15,000	16,000

Finished goods inventory at the end of each month is expected to be 20% of budgeted sales quantity for the following month. Finished goods inventory was 2,700 units on January 1, 2011. There would be no work in progress at the end of any month.

Each unit of finished product requires two types of materials as detailed below:

Material X: 4 Kgs @ Rs. 10/kg
Material Y: 6 Kgs @ Rs. 15/kg

Material on hand on January 1, 2011 was 19,000 kgs of material X and 29,000 kgs of material Y.

Monthly closing stock of material is budgeted to be equal to half of the requirements of next month's production.

Budgeted direct labour hour per unit of finished product is ¾ A Hour.

Budgeted direct labour cost for the first quarter of the year 2011 is Rs. 10,89,000.

Actual data for the quarter one, ended on March31, 2011 is as under:

Actual production quantity : 40,000 units

Direct Material Cost

(purchase cost based on materials actually issued to production)

Material X: 1,65,000 kgs @ Rs. 10.20/kg
Material Y: 2,38,000 Kgs @ Rs. 15.10/kg

Actual direct labour hours worked:	32,000 Hours
Actual direct labour cost:	Rs. 13,12,000

Required:

(a) Prepare the following budgets:

(i) Monthly production quantity for the quarter one.
(ii) Monthly raw material consumption quantity budget from January, 2011 to April, 2011.
(iii) Materials purchase quantity budget for the quarter one.

(b) Compute the following variances:

(i) Material cost variance
(ii) Material price variance
(iii) Material usage variance
(iv) Direct labour cost variance
(v) Direct labour rate variance
(vi) Direct labour efficiency variance **[June 2009]**

Q25. **(SMP3).** The following standards have been set to manufacture a product:

Direct Material	(Rs.)
2 units of A @ Rs. 4 per unit	8.00
3 units of B @ Rs. 3 per unit	9.00
15 units of C @ Rs. 1 per unit	15.00
	32.00
Direct Labour 3 hrs @ Rs. 8 per hour	24.00
Total standard prime cost	56.00

The company manufactured and Sold 6,000 units of the product during the year Direct material costs were as follows
12,500 units of A at Rs. 4.40 per unit
18,000 units of B at Rs. 2.80 per unit
88,500 units of C at Rs. 1.20 per unit
The company worked 17,500 direct labour hour during the year for 2,500 of these hours, the company paid at Rs. 12 per hour while for the remaining, the wages were paid at standard rate.
Calculate maternal price variance and Usage variance and labour rate and efficiency variances.
[MTP-MAR19/3(A)-10 Times]

Q26. **(PM).**The following information is available from the cost records of Vatika & Co. For the month of August, 2013
Material purchased 24,000 kg Rs. 1, 05,600
Material consumed 22,800 kg.
Actual wages paid for 5,940 hours Rs. 29,700
Unit produced 2,160 units.
Standard rates and prices are:
Direct material rate is Rs. 4.00 per kg.
Direct labour rate is Rs. 4.00 per hour
Standard input is 10 kg for one unit
Standard labour requirement is 2.5 hours. per unit.
Calculate all material and labour variances for the month of August, 2013.

VARIABLE OVERHEADS VARIANCES

(21): Find variable overheads variance:

Actual variable overhead	Rs. 10,000
Budgeted variable overhead	Rs. 12,000
Budgeted production	500 units
Actual production	450 units
Actual hours	200
Standard time for 1 unit	30 minutes

Q28. (48): The following data is given:

	Budget	Actual
Production (in units)	400	360
Man hours to produce above	8,000	7,000
Variable overheads (in rupees)	10,000	9,150

The standard time to produce one units of the product is 20 hours.
Calculate variable overhead variances.

FIXED OVERHEAD VARIANCES

Q29. (SMP8/25/SM): S. Ltd. has furnished you the following data:

	Budget	Actual
		July 2007
No. of working days	25	27
Production in units	20,000	22,000
Fixed overheads	Rs. 30,000	31,000

Budgeted fixed overhead rate is Rs. 1 per hour. In July, 2007 the actual hours worked were 31,500.

Calculate the following variances:

1. Fixed O/H cost Variance
2. Fixed O/H Exp. Variance
3. Fixed O/H Vol. Variance
4. Fixed O/H Eff. Variance
5. Fixed O/H Cap. Variance
6. Fixed O/H Cal. Variance
7. Fixed O/H Rev. Cap. Variance

[ICAI-M17/1(B)][INTER/N18/1(B)-Similar]

Q30. (SMP5/26/SM):A company has a normal capacity of 120 machines, working 8 hours per day of 25 days in a month. The fixed overheads are budgeted at Rs. 1,44,000 per month. The standard time required to manufactures 1 unit of product is 4 hours. In April, 1998, the company worked 24 days of 840 machine hours per day and produced 5,305 units of output. The actual fixed overheads were Rs. 1,42,000.

compute

(i) Efficiency variance

(ii) Capacity variance

(iii) Calendar Variance

(iv) Expense variance

(v) Volume variance

(vi) Total fixed overheads variance

Q31. (SMP6/19/SM) The following information is available from the records of a factory:-

	Budget	Actual
Fixed overhead for June	Rs. 10,000	Rs. 12,000
Production in June (units)	2,000	2,100
Standard time per units (hours)	10	-
Actual hours worked in June	-	22,000

Compute:-

(i) Fixed overhead cost variance

(ii) Fixed overhead Expenditure variance

(iii) Fixed overhead Volume variance

(iv) Fixed overhead Capacity variance

(v) Fixed overhead Efficiency variance

Q32. (SMP9). (Calculation of fixed overhead volume, expenditure and cost variance)

The following data has been collected from the cost records of a unit for computing the various fixed overhead variances for a period.

Number of budgeted working days	25
Budgeted man-hours per day	6,000
Output (budgeted) per man-hour (in units)	1
Fixed overhead cost as budgeted	Rs. 1,50,000
Actual number of working days	27
Actual Man-hours per day	6,300
Actual output per man-hour (in units)	0.9
Actual fixed overhead incurred	Rs. 1,56,000

Calculate fixed overhead Variances:

(a) Expenditure Variance

(b) Volume Variance,

(c) Fixed Cost Variance

Fixed & Variable Overheads Variances

Q33. **(SMN9-Similar/SMO):**The following information was obtained from the records of a manufacturing unit using standard costing System:

	Standard	Actual
Production	4,000 units	3,800 units
Working Days	20	21
Fixed Overheads	40,000	39,000
Variable Overheads	12,000	12,000

You are required to calculate the following Fixed Overheads Variances:-

(i) Cost Variance
(ii) Expenditure Variance
(iii) Volume Variance
(iv) Efficiency Variance
(v) Capacity Variance

Check in SM

Q34. **(C1N/PM)**SJ Ltd. Has finished the following information:

Standard overhead Absorption rate per unit	Rs. 20
Standard rate per hour	Rs. 4
Budgeted Production	12,000 Units
Actual Production	15,560 units
Actual overheads were Rs. 2,95,000 out of which Rs.62,500 fixed.	
Actual Hours	74,000

Overheads are based on the following flexible Budget.

Production (Units)	8,000	10,000	14,000
Total Overheads (Rs.)	1,80,000	2,10,000	2,70,000

You are required to calculate the following overhead variances (on hour's basis) with appropriate workings:

(i) Variable overhead Efficiency and Expenditure Variance.
(ii) Fixed Overhead Efficiency and Capacity Variance. **[May 2012][ICAI-M15/2(A)]**

Q35. **(SMN8). (Calculation of production volume variance and overhead expense variance)**
The overhead expense budge for a factory producing to a capacity of 200 units per month is as follows:

Description of overhead	Fixed cost per unit in Rs.	Variable cost per unit in Rs.	Total cost per unit in Rs.
Power and fuel	1,000	500	1,500
Repair and maintenance	500	250	750
Printing and stationary	500	250	750
Other overheads	1,000	500	1,500
	Rs. 3,000	Rs. 1,500	4,500

The factory has actually produced only 100 units in a particular month. Details of overheads actually incurred have been provided by the account department and are as follows:

Description of overhead	Actual Cost
Power and fuel	Rs. 4,00,000
Repair and maintenance	Rs. 2,00,000
Printing and stationary	Rs. 1,75,000
Other overheads	Rs. 3,75,000

You are required to compute the production volume variance and the overhead expenses variance.

Q36. (SMP4) (Calculation of production volume variance and overhead expense variance)

XYZ Company has established the following standards for factory overheads.

Variable overhead per unit	Rs. 10/-
Fixed overheads per month	Rs. 1,00,000
Capacity of the plant 20,000 units per month.	

The actual data for the month are as follows:

Actual overheads incurred	Rs. 3,00,000
Actual output (units)	15,000 units

Required:

Calculate overhead variances viz

(i) Production volume variance

(ii) Overhead expense variance

Q37. (SMP7). (Calculation of Fixed overhead variance and variable overhead variance)

XYZ Ltd. has furnished you the following information for the month of August 2012:

	Budget	Actual
Output (units)	30,000	32,500
Hours	30,000	33,000
Fixed overhead	Rs. 45,000	50,000
Variable overhead	Rs. 60,000	68,000
Working days	25	26

Calculation overhead variances

Material, Labour, Fixed Overheads & Variable Overheads Variances

Q38. **(C6N/PM)**Gama Ltd. Has furnished the following standard cost data per unit of production:

- Material 10 kg @ Rs. 10 per kg.
- Labour 6 Hours @ Rs. 5.50 per hour.
- Variable overhead 6 hours @ Rs. 10 per hour.
- Fixed overhead Rs. 4,50,000 per month (Based on a normal volume of 30,000 labour hours).

The actual cost data for the month of August 2011 are as follows:

- Material used 50,000 kg at cost of Rs. 5,25,000.
- Labour paid Rs. 1,55,000 for 31,000 hours worked.
- Variable overheads Rs. 2,93,000.
- Fixed Overheads Rs. 4,70,000.
- Actual production 4,800 units.

Calculate: (i) Material cost variance (ii) Labour cost variance (iii) Fixed overhead cost variance.(iv) variable overhead cost variance. **[Nov 2011]**

Q39. **(PM).** SP Limited produces a product 'Tempex' which is sold in a 10 Kg. packet. The standard cost card per packet of 'Tempex' are as follows:

	(Rs.)
Direct materials 10 kg. @ Rs. 45 per kg.	450
Direct labour 8 hours @ Rs. 50 per hour	400
Variable Overhead 8 hours @ Rs. 10 per hour	80
Fixed Overhead	200
	1,130

Budgeted output for the third quarter of a year was 10,000 Kg. Actual output is 9,000 Kg.
Actual cost for this quarter are as follows :

	(Rs.)
Direct materials 8,900 kg. @ Rs. 46 per kg.	4,09,400
Direct labour 7,000 hours @ Rs. 52 per hour	3,64,000
Variable Overhead incurred	72,500
Fixed Overhead incurred	1,92,000

You are required to calculate :

(i) Material Usage Variance
(ii) Material Price Variance
(iii) Material Cost Variance
(iv) Labour Efficiency Variance
(v) Labour Rate Variance
(vi) Labour Cost Variance
(vii) Variable Overhead Cost Variance
(viii) Fixed Overhead Cost Variance.

Q40. The following information is available from the cost records of a Company for the month of July, 2016:

(1)	Material purchased	22,000 pieces	Rs. 90,000
(2)	Material consumed	21,000 pieces	
(3)	Actual wages paid for	5,150 hours	Rs. 25,750
(4)	Fixed Factory overhead incurred		Rs. 46,000
(5)	Fixed Factory overhead budgeted		Rs. 42,000
(6)	Units produced	1,900	
(7)	Standard rates and prices are:		
	Direct material	Rs. 4.50 per piece	
	Standard input	10 pieces per unit	
	Direct labour rate	Rs. 6 per hour	
	Standard requirement	2.5 hours per unit	
	Overheads	Rs. 8 per labour hour	

You are required to calculate the following variances:

(i) Material price variance

(ii) Material usage variance

(iii) Labour rate variance

(iv) Labour efficiency variance

(v) Fixed overhead expenditure variance

(vi) Fixed overhead efficiency variance

(vii) Fixed overhead capacity variance. **[ICAI-N16/6(A)][M-8]**

Budget Ratio

Performance Report: Reporting through well designed performance report is an integral part of budgetary control . A performance report is a document that periodically communicates to achieved, exceeded or not achieved. A performance report will give the management an insight into the operational inefficiencies. There should be separate performance report for each budget centre. Performance report should be regularly made to the required level of management.

Control Ratio : Management also makes use of ratios in controlling operations. These ratios are generally known as Control Ratios. These ratios are commonly used by the management to find out whether the deviations of actuals from budgeted results are favorable or otherwise. These ratios are expressed in terms of percentages. If the ratio is 100% or more, the trend is taken as favorable. The indication is taken as unfavourable if the ratio is less the 100%.
The following ratios are usually used by the management to measure development from budget.

Capacity Usage Ratio: This relationship between the budgeted number of working hours and the maximum possible number of working hours in a budget period.
Standard Capacity Employment Ratio: This ratio indicates the extent to which facilities were actually utilized during the budget period.
Level of Activity Ratio: This may be defined as the number of standard hours equivalent to work produced expressed as a percentage of the budget of standard hours.
Efficiency Ratio: This ratio may be defined as standard hours equivalent of work produced expressed as a percentage of the actual hours spent in producing the work.
Calender Ratio: This ratio may be defined as the relationship between the number of working days in a period and the number of working as in the relative budget period.

Budget Ratios:

Efficiency–Ratio	It is defined as "the standard hours equivalent to the work produced expressed as a percentage of actual hours spent in production". Thus, this ratio shows whether actual time taken in production is more or less than the time allowed by the standard. It can be related to Overhead Efficiency Variance or Labour Efficiency variance. It is calculated as follows: Efficiency Ratio $= \frac{\text{Standard hours for actual output (SH)}}{\text{Actual hours worked (AH)}} \times 100$
Activity Ratio or Production volume Ratio	It is defined as "The standard hours equivalent to the work produced, expressed as percentage of budgeted standard hours". Thus this ratio shows the extent to which the production facilities have been utilized as compared with that contemplated in budgets. It can be related to fixed Overhead Volume Variance. It is calculated as follows: Activity Ratio $= \frac{\text{Standard hours for actual output (SH)}}{\text{Budgeted Hours (BH)}} \times 100$ = Efficiency Ratio × Capacity Ratio
Capacity Ratio	It expresses actual hours worked as a percentage of the budgeted hours. It is calculated as follows: Capacity Ratio $= \frac{\text{Actual Hours worked (AH)}}{\text{Budgeted Hours (BH)}} \times 100$ or $\frac{\text{Activity Ratio}}{\text{Efficiency Ratio}}$

Calender Ratio	Calender Ratio indicates the extent of actual working days availed during the budget period. It is calculated as follows: Calender Ratio = $\frac{\text{Actual Number of working days in the budget period}}{\text{Budgeted number of working days in the budget period}} \times 100$
Idle Capacity Ratio	It indicates the percentage of Budgeted Capacity which is not actually utilized during the budget period. It is calculated as follows: Idle Capacity Ratio = $\frac{\text{Budgeted Capacity} - \text{Actual Capacity}}{\text{Budgeted Capacity}} \times 100$ = 100 – Capacity Ratio
Standard Capacity Usage Ratio	It expresses budgeted Hours as a percentage of the Maximum Possible Hours. It is calculated as follows: $= \frac{\text{Budgeted Hours}}{\text{Maximum Possible Hours in Budget Period}} \times 100$

Q41. **(C1N)**Calculate Efficiency and Capacity Ratio from the following figures:

Budgeted production	80 Units
Actual Production	60 Units
Standard time per unit	8 Hours
Actual hours worked	500 **[Nov 2007, MTP/OCT-19/1(A)-Similar]**

Q42. **(PM).** Calculate efficiency and activity ratio from the following data:

Capacity ratio	=	75%
Budgeted output	=	6,000 units
Actual output	=	5,000 units
Standard Time per unit	=	4 hours

Q43. **[SMN7-Budget]** Following data is available for DKG and Co:

Standard working hours	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:

(1) Efficiency Ratio, (2) Activity Ratio, (3) Calendar Ratio, (4) Standard Capacity Usage Ratio, (5) Actual Capacity Usage Ratio. (6) Actual Usage of Budgeted Capacity Ratio. **[INTER/M19/1(A)-Similar]**

Sales variances

(30) The budget and the actual sales for a period in respect of three products are given below:

Budget Figures

Product	Quantity	Price Rs.	Value Rs.
A	1,000	5	5,000
B	750	10	7,500
C	500	15	7,500
	2,250		20,000

Actual

		Rs.	Rs.
A	1,200	6	7,200
B	700	9	6,300
C	600	14	8,400
	2,500		21,900

Calculate sales variance.

Q45. (SM). Computer the sales variances from the following figures:

Product	Budgeted Quantity	Budgeted Price	Actual Quantity	Actual Price
		(Rs.)	(Rs.)	(Rs.)
A	2,000	2.50	2,400	3.00
B	1,500	5.00	1,400	4.50
C	1,000	7.50	1,200	7.00
D	500	10.00	400	10.50

Q46. (PM). Compute the sales variances (total, price and volume) from the following figures:

Product	Budgeted quantity	Budgeted Price per Unit (Rs.)	Actual quantity	Actual Price per unit (Rs.)
P	4000	25	4800	30
Q	3000	50	2800	45
R	2000	75	2400	70
S	1000	100	800	105

Sales margin variances

(36) X Ltd. had budgeted the following sales for the month of August, 1998:

Product A : 800 units @ Rs. 100 per unit

Product B : 700 units @ Rs. 200 per unit

The actual sales for the month were as follows:

Product A : 900 units @ Rs. 110 per unit.

Product B : 800 units @ Rs. 180 per unit.

The costs per unit of products A and B were Rs. 80 and Rs. 170 respectively.

You are required to compute the different variances to explain the difference between the budgeted and actual profits.

Material, Labour, Fixed Overheads, Variable Overheads, Sales Variances & Budget

Q48. (SMP3]-Budget-C2N/PM-Budget)TQM Ltd. Has furnished the following information for the month ending 30th june, 2011:

	Master Budget	Actual	Variance
Units produced and sold	80,000	72,000	
Sales (Rs.)	3,20,000	2,80,000	40,000 (A)
Direct Material (Rs.)	80,000	73,600	6,400 (F)
Direct Wages (Rs.)	1,20,000	1,04,800	15,200 (F)
Variable overheads (Rs.)	40,000	37,600	2,400 (F)
Fixed overhead (Rs.)	40,000	39,200	800 (F)
Total Cost	2,80,000	2,55,200	

The standard costs of the products are as follows:	Per Unit (Rs.)
Direct materials (1 kg at the rate of Rs.1 per kg	1.00
Direct wages (1 hour at the rate of Rs. 1.50)	1.50
Variable overheads (1 hour at the rate of Rs .50)	.50

Actual results for the month showed that 78,400 kg. of material were used and 70,400 labour hours were recorded.

Required:

(i) Prepare Flexible budget for the month and compare with actual results.

(ii) Calculate Material, labour , Variable overhead and fixed overhead Expenditure variances .**[May 2008]**

Q49. **[SMN7]**A contractor has entered into a long term contract at an agreed price of Rs.17,50,000 subject to an escalation clause for materials and wages as spelt out in the contract and corresponding actual are as follows :

	Standard		Actual	
Material	**Qty (tons)**	**Rate (Rs.)**	**Qty (tons)**	**Rate (Rs.)**
A	5,000	50.00	5,050	48.00
B	3,500	80.00	3,450	79.00
C	2,500	60.00	2,600	66.00
Wages	**Hours**	**Hourly Rate (Rs.)**	**Hours**	**Hourly Rate (Rs.)**
X	2,000	70.00	2,100	72.00
Y	2,500	75.00	2,450	75.00
Z	3,000	65.00	3,100	66.00

Reckoning the full actual consumption of material and wages the company has claimed a final price of Rs.17,73,600. Give your analysis of admissible escalation claim and indicate the final price payable.

Q50. **(C5N/PM-Contract)**SB constructions limited has entered into a big contract at an agreed price of Rs. 1,50,00,000 subject to an escalation clause for material and labour as spent out on the contract and corresponding actual are as follows:

Material:	**Standard** Quantity (Tonnes)	**Standard** Rate per tone (Rs.)	**Actual** Quantity (Tonnes)	**Actual** Rate per Tonne (Rs.)
A	3,000	1,000	3,400	1,100
B	2,400	800	2,300	700
C	500	4,000	600	3,900
D	100	30,000	90	31,500
Labour	Hours	Hourly Rate	Hours	Hourly Rate
L1	60,000	15	56,000	18
L2	40,000	30	38,000	35

You are required to:

(i) Give your analysis of admissible escalation claim and determine the final contract price payable.

(ii) Prepare the contract Account, if the all expenses other than material and labour related to the contract are Rs. 13,45,000.

(iii) Calculate the following variances and verify them:

(a) Material cost variance.

(b) Material Price variance.

(c) Material usage variance.

(d) Labour cost variance.

(e) Labour Rate variance.

(f) Labour Efficiency Variance. **[May 2010, MTP-APR-19/2(B)-Similar]**

Q51. **(C9).**The escalation clause of a long term contract stipulates the following quantities and rates of materials of A, B and C and following number of labour hours of X, Y and Z and their rates of pay. The corresponding actuals are also shown below:

	Standard		Actual	
Materiáls	**Qty.**	**Price**	**Qty.**	**Price**
	Tonnes	**Rs.**	**Tonnes**	**Rs.**
A	500	50	750	45
B	1,000	30	900	35
C	20	1,000	21	1,010
Labour	**Hours**	**Hourly Rate**	**Hours**	**Hourly Rate**
		Rs.		**Rs.**
X	4,800	2.00	4.500	2.25
Y	2,400	1.00	3,000	1.50
Z	9,600	1.50	13,000	1.50

Required: Compute the amount of the final claim so far as rate is concerned.

Material Purchase Budget and Wage Budget

Q52. **(PM).** 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 unilts)	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 worked by the direct workers in actually manufacturing the products is 80%. In addition the non-productive-down time 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.

ADDITIONAL QUESTIONS FOR PRACTICE

Q53. JVG Ltd. produces a product and operates a standard costing system and value material and finished goods inventories at standard cost. The information related with the product is as follows:

Particulars	Cost Per unit (Rs.)
Direct materials (30 kg at Rs. 350 per kg)	10,500
Direct labour (5 hours at Rs. 80 per hour)	400

The actual information for the month just ended is as follows :

(a) The budgeted and actual production for the month of September 2019 is 1,000 units.

(b) Direct materials – 5,000 kg at the beginning of the month. The closing balance of direct materials for the month was 10,000 kg. Purchases during the month were made at Rs. 365 per kg. The actual utilization of direct materials was 7,200 kg more than the budgeted quantity.

(c) Direct Labour – 5,300 hours were utilized at a cost of Rs. 4,34,600.

Required :

Calculate (i) Direct material price and usage variance (ii) Direct labour rate and efficiency variances.

[R-N19/12]

Q54. Aaradhya Ltd. manufactures a commercial product for which the standard cost per unit is as follows:

	(Rs.)
Material:	
5kg. @ 4 per kg.	20.00
Labour:	
3 hours @ Rs. 10 per hour	30.00
Overhead	
Variable: 3 hours @ Rs. 1	3.00
Fixed: 3 hours @ Rs. 0.50	1.50
Total	54.50

During Jan. 20X8, 600 units of the product were manufactured at the cost shown below:

	(Rs.)
Materials purchased:	
5,000 kg. @ Rs. 4.10 per kg.	20,500
Materials used:	
3,500 kg.	
Direct Labour:	
1,700 hours @ Rs. 9	15,300
Variable overhead	1,900
Fixed overhead	900
Total	38,600

The flexible budget required 1,800 direct labour hours for operation at the monthly activity level used to set the fixed overhead rate.

COMPUTE:

(a) Material price variance, (b) Material Usage variance; (c) Labour rate variance; (d) Labour efficiency variance; (e) Variable overhead expenditure variance; (f) Variable overhead efficiency variance; (g) Fixed overhead expenditure variance; (h) Fixed overhead volume variance; (i) Fixed overhead capacity variance; and (j) Fixed overhead efficiency variance.

Also RECONCILE the standard and actual cost of production. **[R-N18/12]**

Q55. Z Ltd. uses standard costing system in manufacturing of its single product 'M'. The standard cost per unit of M is as follows :

Particulars	Rs.
Direct material -2 meters @ Rs. 6 per metre	12.00
Direct labour-1 hour @Rs.4.40 per hour	4.40
Variable overhead -1 hour @ Rs. 3 per hour	3.00

During July, 2016, 6,000 units of M were produced and the related data are as under:
Direct material acquired - 19,000 metres @ Rs. 5.70 per metre.
Material consumed-12,670 metres.
Direct labour -?hours @ Rs. ? per hour Rs.27,950
Variable overheads incurred Rs.20,475
The variable overhead efficiency variance is Rs. 1,500 adverse. Variable overheads are based on direct labour hours. There was no stock of the material in the beginning .
You are required to Determine the missing figures and work out all the relevant variances.

[MTP-AUG18/5(A)]

Q56. In a manufacturing company the standard units of production of the year were fixed at 1,20,000 units and overhead expenditures were estimated to be:

Fixed Rs. 12,00,000; Variable Rs. 6,00,000;
Semi-Variable Rs. 1,80,000

Actual production during the April, 2019 of the year was 8,000 units. Each month has 20 working days.
During the month there was on public holiday. The actual overhead amounted to:

Fixed Rs. 1,10,000; Variable Rs. 48,000;
Semi-Variable Rs. 19,200

Semi-variable charged are considered to include 60 per cent expenses of fixed nature and 40 per cent of variable character.
CALCULATE the followings:
(i) Overhead Cost Variance
(ii) Fixed Overhead Cost Variance
(iii) Variable Overhead Cost Variance
(iv) Fixed Overhead Volume Variance
(v) Fixed Overhead Expenditure Variance
(vi) Calendar Variance.

[MTP-OCT19/4(A)]

Q57. BBC Ltd. manufactures Ordinary Portland Cement (OPC). The standard data for the raw materials that are used to manufacture OPC are as follows:

Material	Composition (%)	Rate per Metric Ton (Rs.)
Limestone	65	565
Silica	20	4,800
Alumina	5	32,100
Iron ore	5	1,800
Others	5	2,400

During the month of February 20X8, A Ltd. produced 500 MT OPC. Actual data related with the consumption and costs are as follows:

Raw Material	Quantity (MT)	Total Cost (Rs.)
Limestone	340	1,90,400
Silica	105	5,09,250
Alumina	25	8,12,500
Iron ore	30	53,400
Others	23	51,750

You are required to CMPUTE the following variances related with the production of OPC for the month of February 20X8:
(i) Material Price Variance
(ii) Material Mix Variance
(iii) Material Yield Variance
(iv) Material Cost Variance.

[MTP-APR-19/2(A)]

Q58. Following information relates to labour of KAY PEE Ltd. :

Particulars	Skilled	Semi- skilled	Unskilled	Total
Number of workers in standard gang	12	8	5	25
Standard rate per hour (Rs.)	75	50	40	-
Number of workers in actual gang				25
Actual rate per hour (Rs.)	80	48	42	

The standard output of gang was 12 units per hour of the products M. The gang was engaged for 200 hours during the month of March 2019 out of which 20 hours were lost due to machine breakdown and 2295 units of products M were produced. The actual number of skilled workers was 2 times the semi- skilled workers. Total labour mix variance was Rs. 10800 (A).

You are required to calculate the following :

(i) Actual number of workers in each category.

(ii) Labour rate variance.

(iii) Labour yield variance.

(iv) Labour efficiency variance. **[IPC/M19/3(A)]**

Q59. A manufacturing firm produces a specific product and adopts standard costing system. The product is produced within a single cost centre.

Following information related to the product are available from the standard cost sheet of the product:

	Unit Cost (Rs.)
Direct material 5 kg. @Rs. 15 per kg.	75.00
Direct wages 4 hours @ Rs. 20 per hour	80.00

During the month of October 2019, the firm purchased 3,50,000 kg. of material at the rate of Rs. 14 per kg. Production records for the month exhibits the following actual results:

Material used	3,20,000 kg
Direct wages- 2,20,000 hours	Rs. 46,20,000

The production schedule requires completion of 60,000 units in a month. However ,the firm produced 62,000 units in the month of October,2019. There are no opening and closing work-in-progress.

You are required to:

(i) Calculate material cost, price and usage variance.

(ii) Calculate labour cost, Rate and efficiency variance and

(iii) Calculate the amount of bonus , as an incentive scheme is in operation in the company whereby employees are paid a bonus of 50 % of direct labour hour saved at standard direct labour hour Rate. **[IPC/N19/6(A)]**

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HOME WORK