Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. / B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, MAY / JUNE 2024
Department of Industrial Engineering
VIII Semester
IE5015 & Cost Estimation and Cost Control
(Regulation 2019)

Time: 3hrs Max.Marks: 100

CO 1	To estimate the manufacturing cost and computation of software cost
CO 2	Able to estimate product cost.
CO 3	To control the manufacturing and software cost
CO 4	To enable both the costing and estimating procedures for all types of industry
CO 5	Able to perform cost analysis.

BL – Bloom's Taxonomy Levels
(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analysing, L5 - Evaluating, L6 - Creating)

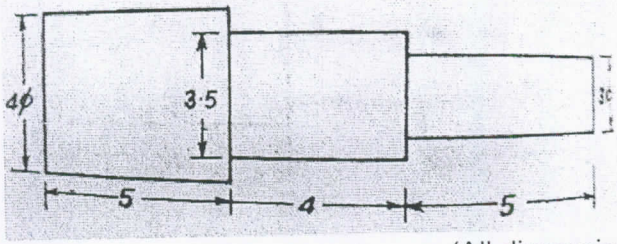
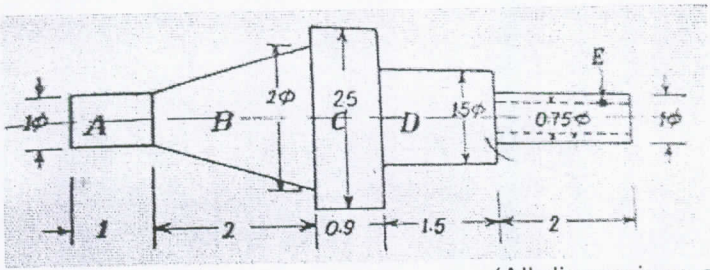
PART- A (10 x 2 = 20 Marks)
(Answer all Questions)

Q. No	Questions	Marks	CO	BL
1	Distinguish between cost control and cost reduction	2	CO1	L4
2	Draw a block diagram to illustrate the relationship between element of cost and component of cost	2	CO1	L2
3	Write down the procedure for calculating the material cost of a product	2	CO2	L1
4	Give the expression for time taken for turning operation a job in a lathe and drilling operation in a drilling machine	2	CO2	L1
5	At what circumstances the spiral model to be used?	2	CO3	L3
6	Differentiate among Basic COCOMO model, intermediate and complete COCOMO Model	2	CO3	L4
7	Name any 4 industries in which process costing is applicable.	2	CO4	L3
8	What do you understand by operating costing?	2	CO4	L2
9	A company produces 500 units at a variable cost of $200 per unit. The price is $250 per unit and there are fixed expenses of $12,000 per month. Calculate the Break Even Point in terms if units and sales.	2	CO5	L5
10	What are the advantages and limitations of standard costing?	2	CO5	L2

PART- B (5 x 13 = 65 Marks)
(Restrict to a maximum of 2 subdivisions)

Q. No	Questions	Marks	CO	BL
11 (a)	From the following particulars, prepare a cost sheet for the year ended 31.12.2022.	13	CO1	L2

Stock of finished goods (1.1.2022)	:	6000
Stock of raw materials (1.1.2022)	:	40000
WIP (1.1.2022)	:	15000
Purchase of raw materials	:	475000
Carriage inwards	:	12500
Factory rent, taxes	:	7250
Other productive expenses	:	43000
Stock of goods (31.12.2022)	:	15000
Wages	:	175000

	Work manger's salary : 30000 Factory employee 's salary : 60000 Power expenses : 9500 General expenses : 32500 Sales of the year : 860000 Stock of the raw materials (31.12.2022 : 50000 WIP (31.12.2022) : 10000			
	OR			
11 (b)	Prepare the stores ledger account by the following FISRT IN FIRST OUT method on the basis of information given below: April 01 : Inventories on hand are 50 units at Rs.2 and 100units at Rs.1.50 April 05 : Purchased 100 units at Rs.1.80 April 06 : 10 units of inventories purchased on 5th April at Rs.1.80 are returned to the supplier April 10 : 80 units issued to factory April 15 : 50 units issued to factory April 20 : 20 units purchased at Rs.1.50 April 25 : 70 units issued to factory April 30 : 50 units purchased at Rs.1.70 April 30 : 10 units returned to store out of units issued to the factory on 25th April.	**13**	CO1	L2
12 (a)	Calculate the time required to turn a stepped shaft to the dimensions as shown in fig from MS Stock of 4cm diameter. Neglect facing and setting up time. The depth of cut should not exceed 0.25cm, Assume the cutting speed to be 20 m per min and feed to be 0.3mm/rev for each cut.  (All dimensions are in mm)	**13**	CO2	L5
	OR			
12 (b)	Estimate the volume of material required for manufacturing 100 pieces of shaft as shown in fig. The shafts are made of M.S weights of 8gm/cc and costs Rs.1 per kg. Calculate also material cost for such shafts.  (All dimensions are in mm)	**13**	CO2	L5
13 (a) (i)	A project size of 200KLOC is to be developed. Software development team has average experience on similar type of projects. The project schedule is not very tight. Calculate the effort, development time, average staff size and productivity of the project in line of codes per PM. (Take a= 3 ,b= 1.12 , c=2.5 and d=0.35).	**5**	CO3	L3
(ii)	Given the following values, complete function point when all complexity adjustment factors and weighing factors are average. User input = 50 User output = 40	**8**	CO3	L3

	User enquires = 35 User files = 6 External Interventions = 4			
	OR			
13 (b)	Describe classical waterfall model and prototyping development model of software development. Draw appropriate diagrams and compare the two model	**13**	CO3	L3
14 (a)	As newly appointed chief clerk you find that the selling price of job No.1234 has been calculated on the following basis: Materials = Rs.120.80 Direct wages: 22 hours at Rs.2.50per hour = Rs. 55.00 175.80 Dept A :10hr Dept B : 4 hr Dept C :8hr Plus 33.33% on prime cost 58.60 234.40 An analysis of the previous year's profit and loss account shows the following:	**13**	CO4	L4

Profit and Loss A/c

Materials Used		Rs 7,75,000	Sales	Rs.13,50,000
Direct wages				
Dept A	50,000			
Dept B	60,000			
Dept C	40,000	1,50,000		
Factory Overhead				
Dept A	25,000			
Dept B	40,000			
Dept C	10,000	75,000		
Gross Profit c/d		3,50,000		
		Rs.13,50,000		13,50,000
Selling Cost		3,00,000	Gross Profit	Rs. 3,50,000
		50,000		
Net profit		3,50,000		3,50,000

You are required to:

a) Draw up a job cost sheet
b) Calculate and enter the revised costs using the previous year's figure as a basis
c) Add to the total job cost 10% for profit and give the final selling price.

	OR			
14 (b)	A transport service company is running 5 buses between two towns which are 50kms apart. Seating capacity of each bus is 50 passengers. The following particulars were obtained from their books for April,2022:	**13**	CO4	L4

	Rs
Wage of drivers, conductors and cleaners	: 24,000
Salaries of office staff	: 10,000
Diesel oil and other oil	: 35,000
Repair and Maintenance	: 8,000
Taxation, insurance etc.,	: 16,000
Depreciation	: 26,000
Interest and other expenses	: 20,000
	1,39,000

	Actually, passengers carried were 75 percent of seating capacity. All buses ran on all days of the month. Each bus made one round trip per day. Find out the cost per passenger km			
15 (a)	Your company has a production capacity of 12,500 units and normal capacity utilization is 80%. Opening inventory of finished goods on 1-1-1999 was 1000 units. During the year ending 31-12-1999, it produced 11,000 units while it sold only 10000 units. Standard variable cost per unit is Rs.6.50 and standard fixed factory cost per unit Rs.1.50. Total fixed selling and administration overhead amounted to Rs.10,000. The company sells its product at Rs.10 per unit. Prepare income statements under Absorption Costing and Marginal Costing. Explain the reasons for difference in profit, if any	**13**	CO5	L4
	OR			
15 (b)	The standard materials cost to produce a tonne of chemical X is: 300kg of material A @ Rs.10 per kg 400kg of material B @ Rs.5 per kg 500kg of material C @ Rs.6 per kg During a period, 100 tonnes of mixture X was produced from the usage of: 35tonnes of material A at a cost of Rs.9000 per tonne 42tonnes of material B at a cost of Rs.6000 per tonne 53 tonnes of material C at a cost of Rs.7000 per tonne Calculate the price, usage and mix variances.	**13**	CO5	L4

PART- C (1 x 15 = 15 Marks)

(Q.No.16 is compulsory)

Q. No	Questions	Marks	CO	BL
16.	The finished product of a manufacturing company passes through three processes I, II and III. The normal wastage in each process is 5%, 7% and 10% for the processes I, II and III respectively (calculated with reference to the number of units fed into each process). The scrap generated out of wastage has a sale value of 70paise per unit, 80paise and Rupee 1 per unit in the process I, II and III respectively. The output of each process is transferred to the next process and the finished output emerges from the process III and transferred to stock. There is no stock of work-in-progress in any process in a particular month. The details of cost data for the month are given below.	**15**	CO4	L3

Particulars	Processes		
	I	II	III
Materials used (Rs)	1,20,000	40,000	40,000
Direct Labour cost (Rs)	80,000	60,000	60,000
Production Expenses (Rs)	40,000	40,000	28,000
Output in units (actuals)	38,000	34,600	32,000

Process I was fed with 40,000 units of raw input at cost of Rs.3,20,000
Prepare the Process Accounts